**THE VIRTUAL MUSEUM OF CANADA:
EVALUATING THE POTENTIAL OF
THE DIGITAL ENVIRONMENT
FOR THE DISPLAY OF ART**

By

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A thesis submitted to the Faculty of Graduate Studies and Research

in partial fulfillment of the requirements for the degree of

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of Graduate Studies and Research acceptance of the thesis

**The Virtual Museum of Canada: Evaluating the Potential of the
Digital Environment for the Display of Art**

submitted by Kimberly Bauer, B.A. Hons.(Carleton)
in partial fulfilment of the requirements for the degree of
Master of Arts.

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ABSTRACT

The Canadian Heritage Information Network (CHIN) has long been at the forefront of providing the museum profession, and latterly, all Canadians, with access to information about collections of heritage material. With the launch of the *Virtual Museum of Canada (VMC)* – a meta-museum – in 2001, CHIN broke new ground in the presentation of art and the shaping of knowledge. This thesis considers the implications of the *VMC* for the display of art objects in the digital environment of the World Wide Web. By using a semiotic square (after Greimas and Jameson), it is possible to demonstrate that the ‘virtual’ object digitally displayed is a simulacrum, and not a poor reproduction of the ‘real’ artwork. When used in ‘virtual’ exhibition projects that exploit the inherent properties of the digital environment – procedural, participatory, spatial, and encyclopaedic – simulacra are effective instruments to shape knowledge about art. The effectiveness is demonstrated by an evaluation of two projects in the *VMC*: *Group of Seven* (2001) by the Tom Thomson Memorial Art Gallery and *Panoramas: The North American Landscape in Art* (2001) CHIN.

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LIST OF ABBREVIATIONS

Advanced Research Projects Agency Network	ARPANET
Canadian Conservation Institute	CCI
Canadian Heritage Information Network	CHIN
Conservation Information Network	CIN
Canadian Museums Association	CMA
Cathode Ray Tube	CRT
Local Area Network	LAN
Museums Assistance Programmes	MAP
National Inventory Programme	NIP
National Museums of Canada	NMC
Ontario Museum Association	OMA
Saskatchewan Heritage Information Network	SHIN
Technology Assessment Centre	TAC
Tom Thomson Memorial Art Gallery	TTMAG
Virtual Museum of Canada	VMC
Virtual Reality	VR
World Wide Web	WWW

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INTRODUCTION

Engaging audiences of all ages in Canada's diverse heritage through a dynamic Internet service freely available to the public in French and English.¹

—*Virtual Museum of Canada*, Mission Statement, 2000

The Canadian Heritage Information Network (CHIN) has been at the forefront of developing a World Wide Web (WWW) portal to facilitate access to Canada's cultural heritage in the digital environment. The *Virtual Museum of Canada (VMC)*, launched on March 22, 2001, is CHIN's realization of this Web portal concept. The objectives of the *VMC*, deriving from the mission statement in the opening epigraph, are to provide high-quality content for the digital environment, to invest in museum content development projects, and to establish a subject-based search engine that helps users locate branded information on the WWW. Now, over one year after its launch, the *VMC*'s success, or lack of success, in fulfilling the objectives begs an evaluation through both a practical and theoretical lens.

This thesis developed out of the museum community's expressed skepticism and will interrogate the efficacy of the WWW in the presentation of 'virtual'² exhibitions of museum objects, in particular the art object. I will argue that the digital environment is indeed a legitimate space for the presentation of artwork by means of 'virtual' exhibitions if the designers of these exhibitions embrace rather than ignore the unique properties of the digital medium. Through evaluations of the *VMC* and two of its 'virtual' exhibitions, I will come to conclusions about the success of this state-sponsored initiative in relation to its recognition and exploitation of these digital properties. My argument draws upon phenomenological, new museological, and reception theories, which demonstrate the

significance of the user's (reader's, viewer's) active engagement with the digitized reproduction in the context of its presentation. The discussion is grounded further in an historical review of CHIN, which describes the organization's phases of development over its thirty-year existence, including the realization of the *VMC* project. An awareness of this history is critical for my thesis because it illustrates CHIN's origins in database development which set a precedent for our current understanding of the 'virtual' memory of objects even before digitized images were available for viewing via the widely accessible medium of the Internet.

'Virtual' memory refers to the viewer's ability to relate the data (text and image) they are seeing on a monitor to a physical art object that exists in an institution's holdings. 'Virtual' memory is dependent upon the individual needs, background, and interpretations of each viewer. The experience of objects as digitized images, particularly when they are arranged into complex 'virtual' exhibitions is directly affected by the 'virtual' memory evoked by their presence on the computer monitor (screen). My argument, therefore, is dependent on the existence of the physical art object represented in the digital environment by means of a digital reproduction. I limit my discussion to the efficacy of the digitized reproduction and choose not to explore the implications of new media art created specifically for display in the digital environment (although, this is a topic of further interest).

The experience that occurs when a viewer interacts with digitized images arranged into 'virtual' exhibitions is articulated for the reader through a linear diagram that I've termed the "Experience of the Reproduction". I base this construct on the semiotic square that A. J. Greimas first realized, and Fredric Jameson later adapted, for expanding meaning. Using the square, I illustrate how an art object can shift between quadrants of

understanding according to the viewer's comprehension (and 'virtual' memory) of said object. For the digitized image, its association with the properties inherent in the digital environment, which it may or may not derive from its integration within a 'virtual' exhibition, facilitates this movement between quadrants. I argue that as the digitized image moves from the digital information quadrant towards that of 'virtual' materiality, helped by its placement within an effective 'virtual' exhibition design, the efficacy of its presence for the viewer is enhanced.

In order to demonstrate my argument about the efficacy of the digitized image, I have chosen to focus my attention on two 'virtual' exhibitions, which illustrate both ends of the spectrum in exhibition design for the WWW – ineffective and effective. Each 'virtual' exhibition, *Group of Seven* (2001) by the Tom Thomson Memorial Art Gallery (TTMAG) and *Panoramas: The North American Landscape in Art* (2001) developed by CHIN, is accessible through the *VMC* site. My argument includes evaluations of how each of these projects incorporates digital images, with the potential of becoming more powerful simulacra, into a larger construct that takes advantage of the inherent properties of the digital environment and approaches the condition of an immersive and interactive multimedia production. As well as these two 'virtual' exhibitions, I consider the implications of the *VMC* site itself in understanding the digital experience. The distinctions between 'virtual' exhibition and 'virtual' museum are dealt with throughout the thesis.

In this introduction I review selections from the abundant literature that has been produced about the topic of exhibiting art on the WWW, and indicate its significance in supporting my thesis. I also comment on the ephemerality of many of these resources and indicate how many of the more traditional texts used in art historical analysis played

important roles in my thesis. Finally I briefly summarize what will be covered in the subsequent chapters.

The resources that I used to build my argument in this thesis can be grouped into three large categories: technological, cultural, and historical. The first category includes literature that explores the impact of technology, firstly on humans and secondly on the humanities. The second broad category compiles resources that are more specific to the study of culture and deal very little with the implications of technology. The third category includes material that records historical events – from government policy to the invention of new technologies – that are related to significant developments in the field of the ‘virtual’ display of art.

The copious amount of literature being written on the subject of human interaction with technology is increasing exponentially. One of the most challenging parts of my research was keeping abreast of new work that dealt with the topic. It is far too vast even with its short history, to point out every article, book, or website; however, for my purposes I have organized the category of technology-oriented resources into three main groups. The first group includes material that deals with the broad implications of technology for everyday experiences which I apply to the study of art display – Michael Heim, George P. Landow, and Jerry Everard are theorists who fit into this first category. The second group examines technology’s impact on cultural experience and can be broken down into two subgroups. The first subgroup consists of information that takes a more theoretical approach to new technologies and museum practices – Selma Thomas, Michelle White, and Diane M. Zorich have all contributed to my knowledge of this area. The second subgroup provided me with the tools to make critical evaluations of the cultural projects produced for the ‘virtual’ environment – specifically it is Janet Murray’s

and Suzette Worden's contributions that form the basis of the practical evaluations undertaken in the thesis. Finally, the third group in this category deals with the more technical specifications of digital imagery and computer screen displays – significant scholars from this section include William J. Mitchell and Peter Lunenfeld. Associated with this final grouping are several Web-resources, including the Microsoft Support Website that I've referenced for facts about technological specifications and definitions.

The theories that I have chosen from the first group of literature are not art history specific, but rather they stem from studies of the impact of technology in general – more specifically the implications of hypertext, virtual reality, and the Internet for the human experience. These studies inform my thesis argument, which depends on acknowledging the uniqueness of the digital environment. The distinct characteristics of this environment are strongly shaped by the properties of hypertext that the literary scholar George P. Landow theorizes and applies in his book *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology* (1997). The philosopher Michael Heim in *Virtual Realism* (1998) strengthens this distinction between physical and 'virtual' worlds in his explanation of true Virtual Reality (VR) as a simulacrum and not a replacement of the real. And, the distinctions between physical and 'virtual' continue to be developed in Jerry Everard's exploration of the geo-political and social implications of the Internet for nation states, specifically its contribution to the disintegration of geographic boundaries in *Virtual States: The Internet and the Boundaries of the Nation-State* (2000).

The second group of technology-oriented literature that I used in developing this thesis deals more specifically with distinguishing the characteristics of digital media, which I place in the first subgroup, and theorizing evaluation criteria appropriate for digital projects occurring on the WWW and in other media (eg. CD-ROM's), which I

place in the second subgroup. Although both subgroups take a theoretical approach, I associate the first predominantly with the theoretical underpinnings of my argument, whereas I use the literature in the second subgroup for more practical applications. In the first subgroup, Michelle White's considerations, in her essay "Where is the Louvre?" (2000), of the conditions that arise when Web museums use the metaphor of the "traditional" (real) museum, have strongly influenced my perspectives on the efficacy of Web museums. In the second subgroup, both Janet Murray's *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (1997) and Suzette Worden's "From the Expository to the Declarative: Interpreting the World Wide Web" (1999) greatly affected my understanding of effective 'virtual' exhibition design. In fact, most of the third chapter of this thesis is based on criteria they advocate for evaluating humanities projects in the digital environment.

The third group of literature in this technology-based category provided me with the background to understand the specific make-up of digital images and their display. William J. Mitchell in his book *The Reconfigured Eye: Visual Truth in the Post-Photographic Era* (1992) describes the range of technologies that have been employed to produce images and solidifies my argument about the uniqueness of the digital image. The distinctive properties of the digital image are expanded in *Snap to Grid: A User's Guide to Digital Arts, Media, and Cultures* (2000), in which Peter Lunenfeld exposes the challenge of maintaining authenticity when representing an object with such a mutable medium as digital reproduction. In addition to explaining the technological specifics of digitization, these authors revealed to me the similarities and differences between historical (traditional) methods of photomechanical reproduction and contemporary digital

reproduction, which helped to shape my own ideas about the benefits and drawbacks of any reproductive process.

Along with the technology-based resource material, my argument for the efficacy of the digital image in the 'virtual' environment is supported by theories that relate to the study of art and culture on a more general level. To facilitate my use of the resources in this culture-oriented category, I organize them within two broad groups. The first of these includes the experiential philosophies of art interpretation theorized by philosophers and scholars like Martin Heidegger, Jean Baudrillard, Hans Robert Jauss, and Fredric Jameson, among others. The second group of literature in this category includes the traditional museological analyses of practitioners and theorists like David Dean and Eilean Hooper-Greenhill.

The first group of literature from this category was in fact the starting point in developing my thesis argument. I recognized the importance of phenomenology in affecting the experience of physical art exhibitions and was intrigued by Martin Heidegger's ideas on the topic. His description of the hermeneutic experience in "The Origin of the Work of Art" (1935), where he declares that 'thingness' is not predicated on the presence of the 'thing', supports my argument for the power of the descriptive interpretation of art objects to induce legitimate phenomenological experiences. Jean Baudrillard's work in *Simulations* (1983) strengthened my position about the legitimacy of the experience evoked by a digital image. His ideas directed me towards recognizing the simulacrum as a powerful entity in its own right, distinct from the objects (material or informational) that it may resemble.

My argument for the efficacy of the digitized image is dependent also on the theories that Hans Robert Jauss articulates in his book *Toward an Aesthetic of Reception*

(1982). Presented alongside those of Heidegger and Baudrillard, Jauss' ideas about the reception of literature (and artwork) inform my conclusions because the experience of digital images of art objects, like any other form of reproduction, is entirely dependent on each individual's "horizon of experience" at any particular point in time. Indeed, it is the concatenation of phenomenological reception theory that fuels the movement of information on the semiotic square that I have termed the "Experience of the Reproduction". I derived this construct following Fredric Jameson's adaptation of A.J. Greimas' semiotic square, from Greimas' book *On Meaning: Selected Writings in Semiotic Theory* (1987), where he advocates it to encourage multiple interpretations. Jameson's method, in relation to the other theorists in this grouping, plays a fundamental role in supporting my argument for the efficacy of the digital image represented in the 'virtual' environment.

The second grouping of literature from this culture-based category both theorizes the museum in historical contexts and provides guidance to those concerned with practical exhibition design. I reference David Dean's straightforward explanations of effective exhibition design from his book *Museum Exhibition: Theory and Practice* (1994) to illustrate the benefits that are inherent in well-designed 'virtual' exhibitions.³ The positive aspects of 'virtual' exhibitions and their arrangement into 'virtual' museums are explored as extensions of Eilean Hooper-Greenhill's descriptions of the different types of museums in her book *Museums and the Shaping of Knowledge* (1992). Following her notion that there is no essential museum, but rather a multitude of museum *epistemes* that function in myriad ways, I place the 'virtual' museum in relation to the other *epistemes* and suggest that the 'virtual' museum has the potential to surpass the postmodern type in its ability to engage audiences with, and disseminate information about, art.

Many of the conclusions that I reach about the efficacy of the *VMC* are dependent on an understanding of past developments that were significant for the realization of the project. This is the main reason for my inclusion of the third category of resources that document the history of CHIN. This category is comprised of mainly government publications covering policies, recommendations for organizational development, and an assortment of newsletters, which provided the factual information required to develop CHIN's chronology. In addition to these publications, I had access to some pseudo-archival records held at the *VMC*'s office in Hull, Québec, which document the complex undertaking of developing and launching *Panoramas: The North American Landscape in Art*.

As a whole, I use all three categories of material – technology-oriented, cultural theory, and historical evidence – to develop my argument about the efficacy of the digital image within the 'virtual' environment. Although the range of resources available that relate to my topic is diverse, I was able to find inherent connections between them that helped me to construct my argument. In Chapter One, "The Journey from Text to Image: NIP to *VMC*" I explore the evolution leading to the current *VMC* production, highlighting significant stages in CHIN's history – from its beginnings as the National Inventory Programme (NIP) through to the fully interactive electronic databases that form the foundations of the *VMC* at present. Due solely to the timing of my research, I was able to capture the transition that CHIN experienced right before the *VMC* launch on March 22, 2001. This chapter provides the background required to understand the current shape of CHIN's digital environment. The steps involved in the realization of the *VMC* project also illustrate important connections between state policy making and high technology. The

historical information presented in this chapter is supplemented by a chronology in Appendix A.

In Chapter Two, “Digitized Art Objects and ‘Virtual’ Experiences: Theories and Key Concepts,” I address the ongoing debate around the museum’s role in presenting the art object through direct experience versus the presentation of its surrogate through digital representation. I situate the discussion within an historical framework that identifies the theoretical models that have played out a similar argument before and now offer some direction. In this chapter I propose that the digital image accomplishes a similar task as the conventional photographic reproduction in terms of its ability to disseminate visual information, but that within the ‘virtual’ environment the digital image takes on unique properties that raise it from mere copy to simulacrum. In doing this, the digital image lends a new sense of authority to a project like the *VMC*, particularly if the designers of the ‘virtual’ museum take advantage of the properties inherent in the digital environment. To accompany the discussion, the shift from copy to simulacrum is illustrated by the semiotic square “Experience of the Reproduction” in Appendix B.

Chapter Three, “Evaluating the *VMC* as a Digital Environment,” integrates the theories discussed in the previous chapter through an evaluation of the *VMC* site as a whole and two of the ‘virtual’ exhibitions it hosts. In it I demonstrate the innovative ways that CHIN is breaking boundaries and setting new standards for curatorial practices in Canada through its *VMC* initiative. To supplement my discussion, I have included illustrations of the *VMC*’s opening splash page (Figure 1) and the *VMC* Web portal design (Figure 2). This final chapter also examines the critical issues arising from this new form of communication, which continue to alter the dialogue between the art object and viewer. Using prognostic evaluative strategies tabulated in Appendix C, I come to conclusions

about the success of the *VMC* as a ‘virtual’ museum and the two ‘virtual’ exhibitions according to how effectively they present information about art within the digital environment. My conclusions are based on how well the experience of these ‘virtual’ exhibitions and the *VMC* itself is enhanced from mere digital representation of physical spaces to interactive and immersive environments designed specifically for the WWW.

ENDNOTES

¹ CHIN. *The Virtual Museum of Canada Guidelines: Consultation Draft Version 2*. (Ottawa: CHIN, July 2000), 4.

² The term 'virtual' will be used in this thesis to describe electronic replicas of objects displayed on the computer screen, as well as the implied space of the WWW. The term has been criticized for its extensive use in commercial and pop culture realms, so I will use single quotation marks to signal its problematic usage.

³ Dean does not address 'virtual' museums and exhibitions specifically, but the principles of practice that he uses are eminently suitable when supplemented by good practices of Web design.

CHAPTER ONE

THE JOURNEY FROM TEXT TO IMAGE: NIP TO *VMC*

It is my intention in this chapter to present a selective history of the Canadian Heritage Information Network (CHIN) in order to understand the foundations of the current *Virtual Museum of Canada (VMC)* project. This chapter will describe how the initiative to create the *VMC* was, in fact, inherent in the formation of CHIN three decades ago. Because early computer practices shape the form and content of current uses, it is important to trace the roots of this development in order to see how significant changes in technology have led, in turn, to changes in our relationship with those technologies. The technological revolution did not occur overnight, a fact that has eased the acceptance of computers and their use, even in the Arts. History demonstrates challenges overcome and lessons learned. It reveals why innovations were accepted or rejected and can help explain the reactions to similar changes in the present and future. This is the very reason why it is important to understand and identify the fundamental shifts that occurred to facilitate the development of the *VMC* project.

Throughout its thirty years, the programme we now know as CHIN has had to constantly reinvent itself. Since its establishment in 1972 as the National Inventory Programme (NIP), there have been four distinct phases in CHIN's evolution that have contributed significantly to the organization's present status. The changes that occurred were in response to specific policy directions concerning museums, the altered needs of heritage institutions, and advances in hardware and software design, thus resulting in new visions and new mandates for CHIN. Over the course of its development, CHIN has

completed a full circle in attempting to accommodate its clientele: from a centralized national mandate to a distributed regional system and then back to a centralized perspective again. In the following sections I will elaborate on the phases which took place throughout CHIN's and its predecessor's history: first the organization's inception in 1972; then the changes resulting from the 1990 National Museum Policy; CHIN's acknowledgment of the Internet, beginning in 1995; and finally the shutdown of the mainframe computer in 1998, opening the door to the *VMC* project of 2000/2001.

Developing the National Inventory Programme

CHIN's predecessor, the National Inventory Programme, was born out of a recommendation made by the National Museums of Canada (NMC), in the National Museum Policy of 1972, to provide better access to collections in Canadian museums.¹ The 1972 policy, as implemented by the Crown corporation, had two broad objectives: to ensure the preservation of Canada's cultural heritage and to increase access to the products of cultural activity housed in museums and art galleries. The initiative was meant to increase and expand access to objects, collections and exhibits throughout Canada for the benefit of more Canadians.²

The National Museum Policy of 1972 has come to be viewed in terms of the five programmes, which were developed following its announcement: the Canadian Conservation Institute (CCI); the International Programme; the Mobile Exhibits Programme; the Museum Assistance Programmes (MAP); and the National Inventory Programme, which would later be called the Canadian Heritage Information Network (CHIN). Each fulfilled a unique role in the mandate set out in the 1972 policy.³ The section of the 1972 policy, which gave direction to NIP, proposed a comprehensive computerized data bank to inventory all major collections in the country. This data bank

would be referred to as the *National Inventory of Collections* and it would grow, over the next thirty years, to consist of three discrete inventories containing information on over 25 million artifacts. The three *National Inventories* currently are the Humanities, Natural Sciences, and Archaeological Sites databases.⁴

Canada was the first country to implement such a national inventory of objects in heritage institutions.⁵ And, in order to create it, institutions were required to submit, in a paper form, cataloguing data for their holdings, which would then be entered into the electronic database of NIP.⁶ In the early stages of their implementation, the *National Inventories* were primarily used by client institutions to research their own collections in relation to the collections of other Canadian institutions. Access to the information held in the *National Inventories* was restricted and only retrievable with the help of a museum professional who had institutional access to the electronic databases compiled by NIP.

The development of the *National Inventories* fulfilled only half of NIP's mandate as defined in the 1972 policy. An additional objective was the provision of collections management support to the National Museums and other collecting institutions throughout Canada. NIP accomplished this by facilitating the creation of cataloguing and data standards that ensured consistent and accurate identification and description of objects, and in developing electronic systems to help member institutions manage their collections.⁷

Several problems arose in the realization of these two NIP objectives. For one, the method of submitting the information posed problems for the clients. To them it represented a time-consuming activity that had little perceived benefit for their individual institutions. In addition to this, errors were unknowingly introduced into the information that was re-entered from the paper forms submitted by the various client institutions,

causing problems in retrieving this information later. The introduction of errors into the data being uploaded onto the mainframe in Ottawa directly affected the authenticity and value of the record. Another drawback, not foreseen by NIP administrators, developed from the imposition of the standard methods of documentation. Although originally designed and intended to be helpful, the standards were a source of resentment, causing criticism of the National Inventory Programme by the institutions being served by it.

Often, within these institutions there were pockets of resistance to the idea of one centralized federal government agency dictating how everyone in the regions should function. In fact, at this point in the early 1970s, there was little desire for collaboration between even the federal institutions:

How well has the National Museums of Canada been able to meet the challenges of 1968 and 1972? As has been made explicit in this document, the process of adjustment has been difficult. One could hardly have expected institutions with the individual histories of our National Museums to join together comfortably without a period of adjustment. Several difficulties have been enumerated in this document: inadequate housing, reduced resources, relationship to the government, etc. Some solutions have been found. Others need to be developed.⁸

The original NIP did have its shortcomings to overcome, but it continues to be heralded for its progressive nature. As a result of their collections management services and development of the *National Inventories*, NIP's initiatives provided a foundation that helped Canada take the lead in the shift from working with 'real' objects to working with 'virtual' collections.

CHIN's Inception in 1982

The managers of NIP did acknowledge the problems that arose from the way its services were delivered, and sought to remedy the situation. The best solution for the challenges faced was to create an electronic environment that could be accessed by all

involved, with the goal of minimizing the opportunities for errors and making the data submission process more efficient. So in 1982, after a major evaluation of NIP in 1981,⁹ which revealed some of the fundamental drawbacks in its approaches, the National Inventory Programme was redesigned and transformed into CHIN. This was marked by the introduction of a centralized, automated information management system for Canadian heritage institutions, which was intended to enable CHIN to more effectively carry out its principle objective of establishing a national inventory of objects held in Canadian museums. “Given the cost of computing equipment at the time, beyond the reach of most museums, a central mainframe was acquired on which museums were allocated work space for their individual collections management activities.”¹⁰ The approach and the technology employed by CHIN in 1982, adopted the paradigm of the Internet as it developed in the 1970s, providing free access to information by all those on the network, which at that time were only those institutions that subscribed to the service.

CHIN’s electronic network was supposed to help the NMC realize one of its most important goals – that of increased access to Canadian collections. However, two years after as observed in the report of the Applebaum-Hébert Review Committee of 1982,¹¹ Canadians apparently had less local access to national collections than ten years before, when the National Museum Policy was first proclaimed.¹² The Applebaum-Hébert Report recognized the shortcomings of the original policy but its recommendations – such as the establishment of an arm’s-length agency known as the Canadian Heritage Council – were never fully implemented. The Canadian Heritage Council was meant to operate with autonomy from federal ministerial directives. To help implement this major change, the report supported the structure of five distinct sections, including CHIN, as visible champions of Canadian heritage. In theory, this initiative would decentralize the control of

collecting institutions so that they, with their own boards, could make policy and manage themselves. It was a good idea, but one that was never carried out because of the defeat of Joe Clark's Conservative government in 1980, which had initiated the Review. It wouldn't be until the 1990s, with the shutdown of the mainframe, that it would be possible for CHIN to realize such a degree of decentralization.

Throughout the following decade, several important developments took place at CHIN that were essential to the future direction of the organization. The services that were implemented revolved around the networking communication technologies that were being adopted by universities, corporations and governments throughout the world.¹³ In addition to electronic mail and mainframe networking upgrades, in the early 1980s, CHIN helped to develop a reference information service called the Conservation Information Network or CIN: "The creation of the Conservation Information Network gave rise to the addition of an international component of the network to allow institutions throughout the world access to the information services."¹⁴ The CIN initiative was undertaken by several large institutions, in partnership with CHIN.¹⁵ This international collaborative approach would become a fundamental feature of the organization's future endeavours. The notion of worldwide access to information stored in one location is something that is now taken for granted, but in the early 1980s it was considered innovative.

As well as expanding to serve an international clientele, CHIN took the lead in trying to make information more easily accessible in Canada itself. Perhaps in response to the growing criticism of its centralization and the opportunities offered by the availability of inexpensive and 'powerful' PCs, CHIN established the Regional Networks Policy. Working in regional partnerships with provincial museum associations and provincial and territorial governments, CHIN sought to provide the museum community with expanded

access to its network, and eventually to develop communication networks throughout all of Canada. The Regional Networks were designed to ensure that all Canadian museums would have the opportunity to access the CHIN databases, and it was hoped that all regions would pursue the establishment of their own networks. CHIN's role in the Regional Networks project was to provide advice and technical support as well as facilitate access to information held on the main server by covering the cost of communication hardware, including lines and transmission.

The first step taken in the development of the Regional Networks was the Trillium initiative of 1988. Trillium was a joint project of the Ontario Museum Association (OMA) and CHIN which aimed to provide participating institutions with electronic mail and full access to the national and reference databases.¹⁶ Similar regional network projects followed, first in 1990 in Saskatchewan, with the Saskatchewan Heritage Information Network (SHIN), and then Info-muse, the Quebec network in partnership with the Société des musées québécois. By 1991, SHIN, Info-Muse and Trillium were working to link member institutions directly to CHIN's national databases. Although still administered at the federal level, the Regional Networks policy demonstrated the achievable benefits and successes of local network access. Ultimately, the Regional Networks projects would open the door to new possibilities in collaborative curatorial practice, one result of which is *Panoramas: The North American Landscape in Art*, a 'virtual' art exhibition that will be discussed further in Chapter Three.¹⁷

Throughout the next six years, CHIN persistently promoted the benefits of belonging to the Regional Networks. By participating, institutions would directly profit from services like collections management assistance, inclusion in the *Guide to Canadian Museums and Galleries*¹⁸ and *Scope of Collections* entries, preparation of WWW pages,

support of installation and training on the Internet, e-mail directories, and low-cost consulting services.¹⁹ Although Internet-based services grew in importance before the Regional Networks concept could spread to every province, the ideas introduced continue to survive in different forms on the CHIN website. The Regional Networks initiative has to be credited, for it laid another stone in the path towards the *VMC*, by emphasizing the importance of contributions from institutions in all areas of Canada and substantially increasing accessibility both nationally and internationally.

Focus on Diversity: The New National Museum Policy of 1990

For nearly two decades the Canadian museum community was shaped by the federal museum policy articulated in 1972. The concepts on which it was based, Secretary of State Gérard Pelletier's notions of democratization and decentralization, continued to be relevant to those institutions served by that policy: "Even today [1986], decentralization of collections remains a prerequisite for meeting the goal of democratization."²⁰ However, the broad scope of that policy entailed some very obvious weaknesses that required attention. The concentration of Canada's heritage resources in Ottawa was one of the major sources of criticism of the federal government and the NMC. Even though decentralization was a major policy objective, the original policy was implemented on a national scale using a centralized federal approach to funding and services. The public admired the facilities and collections of the federal museums, but their geographic location rendered them inaccessible to many Canadians. All five of the programmes that were developed as a result of the 1972 policy tended to be universally applied, neglecting the regional diversity of Canadian heritage institutions. It was evident that the centralized delivery of programmes to all museums in Canada was unable to accommodate the needs of Canadian museums.

In 1986, Minister of Communications, Marcel Masse, attended to the shortcomings of the 1972 policy by establishing the Withrow-Richard Commission, which would eventually result in a new National Museum Policy.²¹ The new policy, which was ultimately instituted in 1990 under the direction of Flora MacDonald,²² was the result of lengthy and in-depth analyses of the museum community in Canada, which began in 1984 in response to the recommendations of the Applebaum-Hébert report of 1982.²³ The policy that was developed focused on enhancing “Canadians’ awareness, understanding and enjoyment of their human, natural, artistic and scientific heritage; [objectives that would be fulfilled] by fostering the acquisition, preservation, research and interpretation of significant and representative collections of the heritage.”²⁴ In order to achieve these ambitious objectives, the Withrow-Richard Commission recommended the dismantling of the National Museums of Canada altogether. As freestanding autonomous institutions the four federal museums²⁵ could more efficiently devise new approaches to fulfill their individual roles.

The overall focus of the new policy was on increasing public awareness and the presentation of museum collections. There would be federal support for those organizations that explored ways to bring their collections to the attention of the Canadian public through traveling exhibitions, cultural events, audio-visual materials, and electronic media. The changes stimulated by Masse in 1986 and implemented by MacDonald in 1990 also emphasized the need for public consultations on national issues and assured that appropriate measures would be taken to ensure agreement by the museum community. Perhaps the most dramatic difference between the policies of 1972 and 1990 was the shift from a national to a more regional approach. To further emphasize the importance of decentralization, the new museum policy embraced the idea of shared responsibility with

the provinces. The federal government seized the opportunity created by the new policy, to engage the provinces in protecting local heritage collections – supporting their own museum communities, while it would give priority to support of the newly autonomous federal museums.

Under the new policy of 1990, CHIN was made a Special Operating Agency of the Arts and Heritage Sector of Communications Canada, thereby separating it from the five programmes established by the NMC in the National Museum Policy of 1972. This new designation came about after the Canadian government dismantled the NMC and transferred the administration of the NMC programmes to the Department of Communications. The dissolution of the NMC gave more autonomy to the individual National Museums and led the way towards greater decentralization in federal museum policy. It allowed CHIN to break from the policy framework administered by the NMC, making it more able to design programmes better suited to the community's emerging needs.

Developments at CHIN in the early 1990s reflect its new and more independent stance. Some of the results include the establishment of its own mandate, collaborative initiatives with public and private sectors, and the support of regional partnerships with projects like the Regional Networks policy. The comprehensive and consultative direction that the 1990 federal museum policy prescribed created an atmosphere of creativity and flexibility, and introduced some fundamental concepts that would prove central to the *VMC*.

Towards a National 'Virtual' Museum: The Early 1990s

From its inception as NIP, CHIN was consumed with promoting its collections management services. The focus on these services was meant to satisfy the second

objective of NIP's original mandate, which was to provide support to the National Museums and other custodial institutions. Collections management continued to be a fundamental part of CHIN's role, even when its mandate was expanded in response to the 1990 National Museum Policy. And shortly after its implementation, CHIN announced three expansive initiatives. The first broadened the types of information available through the Network by providing access to a wide range of reference databases; the second involved the expansion of the Network, both internationally and within Canada by means of new regional networks; and the third called for the creation of standards to help in the sharing of information.²⁶ Although collaborative working methods were always key to CHIN's success, a new atmosphere of partnership amongst Canadian heritage institutions emerged from the broadening of CHIN's mandate. The organization felt that cooperation among institutions was essential to provide access to information describing the nation's heritage. This advocacy of partnership and sharing would prove to be a necessary strategy in the realization of the *VMC* and the creation of many of its products.

One manifestation of the new direction taken by CHIN was the creation in 1991 of the Technology Assessment Centre (TAC). TAC was created to test and evaluate new technology for use in museums and other heritage organizations. This was really the beginning of a phase in CHIN's services that would shift the organization's focus from strictly textual collection documentation to a combination of media, including digital images. The *National Inventories* would test the digital implementations that TAC developed. Integrating images, however low the quality, with the textual information held in the *National Inventories* would make the databases more effective and attractive to use, and would help users to gain a deeper understanding of the collections. Once accessible throughout Canada by means of the Regional Networks, the *National Inventories* would

continue to develop and incorporate new technologies like digital imagery, search tools, and interactive components to aid users in finding information about the nation's heritage.

The appointment of the new Director, Lyn Elliot Sherwood, in the fall of 1993, marked the start of a new phase at CHIN, which saw the organization recapture its role as innovator. Due to the growing availability of cheap, 'powerful' computers and the potential of the Internet in the early 1990s, CHIN was forced to rethink its role as manager of Canada's cultural heritage information. Member institutions were no longer willing to pay for services that were now being offered, free of charge, on the Information Highway.²⁷ "Most organizations are fully focused on addressing their own immediate concerns [and] as technology changes so rapidly, organizations are looking for partners with more advanced expertise than their own, or for ones which offer a precise fit. In the opinion of those consulted, CHIN currently does not fulfill either of these criteria."²⁸ So, in 1993 CHIN began making plans to access the mainframe database using the technology being offered by the Internet. CHIN's increased freedom as a special operating agency, resulting from the 1990 National Museum Policy, allowed for the organization to use the Internet and the rise of the affordable PC to its own advantage.

With Sherwood at the helm, CHIN recognized that it must change from its then mainframe technology towards new architectures like LAN, microcomputers, and Web applications. And by 1994, major emphasis was being placed on switching current systems to Internet-based models, forcing individual museums to establish their own data handling capacities and changing CHIN's focus from collections management, as outlined in their original mandate, to Web-oriented applications: "CHIN's goal in working with the heritage community is to provide the services they need to create the kind of showpieces on the Internet that will attract a wider audience and more resources for multimedia

information delivery by museums.”²⁹ The *VMC* is most definitely an integral outcome of CHIN’s transformation to a Web-based service. The Web portal is CHIN’s solution to fulfilling the public part of its mandate. It stakes a claim within myriad Web museums and galleries, drawing the public through it with promises of open access to much of Canada’s museum heritage. Without embracing new technologies so early on, CHIN would never have been able to actualize the gateway or portal idea, and finally make good on their mandate to make widely accessible information about Canada’s heritage. In this regard, the *VMC* as a Web portal is arguably CHIN’s most significant contribution to date.

By developing the gateway to a significant amount of the museum heritage material in Canadian holdings,³⁰ an idea from which the *VMC* evolved, CHIN avoided the situation that Diane Zorich describes in her essay “Beyond Bitslag: Integrating Museum Resources on the Internet.”³¹ Zorich points out that the abundant increase in information providers on telecommunication networks will ultimately diminish the power of any single site. Particularly at risk would be the productions that do not offer innovative services and new information. Portal devices, like the one created by CHIN, have added a much-needed resource for both the museum professional and the general public because they save time and money in retrieving related information.

The gateway concept developed out of CHIN’s mandate to make accessibility a primary goal: first to the museum community, made feasible early on with the subscription-based databases; and second to the public made possible via the Internet.³² One of the projects that was promoted for the task of connecting both the museum community and the public to copious amounts of information was the *Guide to Canadian Museums and Galleries*. This feature acted to link all Canadian institutions with an international audience and allowed for the Canadian public to search for information about

the collections held by Canadian museums via the WWW. The concept of a searchable *Guide* fit CHIN's mission to become the gateway to museum heritage knowledge in Canada. It focused search actions on only museum information resources so that users with diverse interests could retrieve specific information, from several museums or galleries, using simple keyword searches.

The notion of a portal or gateway precluded the existence of a true 'virtual' national museum, because it allowed visitors to access a multitude of websites and see numerous representations of art objects and cultural artifacts from one electronic location. The visitor still must initiate the search, but it wouldn't be long before the information would be presented to them in the form of organized 'virtual' exhibitions. The *Guide* made CHIN an important model for finding solutions to the navigation of the increasingly complex WWW, but it also tested the concept of collaboration between Canadian heritage institutions, as well as increasing the visibility of member institutions to a global public. Throughout the history of the organization, CHIN investigated the potential of group production and working methods, and the projects on the *VMC* would be the ultimate result.

Virtual Vistas: CHIN Embraces the Potential of the Internet

The events that began in 1993, with the appointment of Sherwood, were fundamental for the realization of the *VMC* project, launched on March 22, 2001. In the summer of 1995, CHIN developed a new mission statement, established in response to a federal government program and budget review, focusing on how to more effectively reach the Canadian public by employing new technologies. The new and still current mission statement reads to "broker effective access to Canadian and international heritage information for public education and enjoyment and for the collective benefit of Canadian

museums.”³³ In stating this, CHIN was reasserting its support of client and non-client museums as they embraced the potential of electronic products and services. This new mission statement placed access to information at the forefront of CHIN's responsibilities; the concept of ‘virtual’ exhibitions became an ideal way to fulfill this broader vision.

It was in light of the new mission statement that the first mention of a ‘virtual’ national museum came about, and it was during the time of the major program review of 1995 that Sherwood actually conceived the notion of a ‘virtual’ national museum: “The [Canadian museum] Directors visualized an environment where museums would be creating rich public information resources that would be available electronically. While each museum wishes to be individually visible, the Directors also identified the need for a collective presence in the world of international networks.”³⁴ It seems that CHIN, although still attempting to acknowledge the importance of regional distinctions, had come about once more to promote the concept of a national/collective vision. This fits within the wider government policy to promote the image of a cohesive Canada, on an international scale, while still maintaining cultural diversity.³⁵

A major shift also took place on the technical front in 1995. The conversion of information stored on the old mainframe, available until now only to a closed segment of the heritage community, was made accessible to audiences throughout the world via the Internet. With this conversion, it wasn't only the museum professionals who could access the national and reference databases; these resources were now available to anyone with an Internet connection, although some at a cost. The official launch of CHIN's Internet accessible databases took place in October 1995, featuring the free *Guide to Canadian Museums and Galleries* and the subscription-based research databases. For CHIN, adapting to the conditions created by the widespread growth of the Internet and its

constantly improving capacity to handle multimedia, resulted in a new emphasis on visual display. Never before had the representation of the art object and the cultural artifact been so easy and inexpensive. Management of textual information in electronic form had always been CHIN's focus, but seemingly overnight the presentation of the object (simulacrum or not) on the computer monitor screen became possible.³⁶

Christmas Traditions in France and in Canada was CHIN's first Web-based production to represent the objects in an exhibition or thematic format. It was a collaborative effort created as a demonstration project between Canada and France and consisted of a 'virtual' exhibition, in both English and French, and a media event.³⁷ CHIN hosted the exhibition on its server in collaboration with a server in France, which allowed an international audience to learn, via text and images, about the objects and customs associated with *Christmas Traditions in France and in Canada*.³⁸ Using heritage to form a bridge between the two countries involved in the *Christmas Traditions* exhibition inspired the concept of a national 'virtual' museum which could effectively provide thematically based access to museum collections in Canada.

The following year, in 1996, CHIN produced its own 'virtual' display of objects for educational purposes from Canadian museum and gallery collections. In collaboration with Industry Canada's Digital Collections program,³⁹ CHIN engaged in a large initiative to increase Canadian content on the Internet and to showcase the potential of digitization. The resulting projects, *Endangered Species in Endangered Space*, *Bone Snow Knives and Tin Oil Lamps: Enduring Traditions Among Canada's First Peoples*, and *Highlights of Canadian Collections*, compiled digitized images and text in an informal souvenir scrapbook on the Web. Before the creation of the VMC, *Highlights of Canadian Collections* was one of the only spaces on the CHIN website that represented works of

art.⁴⁰ So, although not produced at the level of a large ‘virtual’ exhibition, requiring lengthy planning and complex design, these projects were critical to CHIN’s progress in the field of ‘virtual’ display. By supporting Canadian museums in developing and sharing rich, deep content for the digital environment, CHIN was tentatively starting to fulfill its new role as a “broker of effective access” to heritage content.

On February 17, 1997 CHIN took another large step towards achieving a national ‘virtual’ museum, by making the *National Inventories* publicly available on the Internet. Before this, they were only accessible to member institutions that contributed data to the *Inventories*: “We know that to serve a wider audience, the *Inventories* need to be more attractive to use and need to be linked to images and more interpretive information that can bring the objects to life.”⁴¹ Adding textual descriptions to the ‘raw’ images stored in the *National Inventories* databases leads to discussions about the experiential nature of ‘virtual’ exhibitions that will be dealt with in Chapter Two, but more importantly for this chapter, it reflects a change in CHIN’s clientele. At this time, publics beyond the museum professional became the potential audience for CHIN’s product. And the incorporation of interpretive texts is the result of this shift, which was ultimately made possible by the integration of the WWW into CHIN’s services. CHIN used the interactivity of this new medium to ensure the satisfaction of its clients by setting up feedback systems to gather user information and opinions about the databases. They then used the information gained to enhance the *National Inventories* in order to attract yet more new audiences.

The use of the WWW by the museum community led to a growing awareness of the risks in making valuable information about cultural material openly available. As a result, CHIN added copyright notices to the *National Inventories* to prevent the use of information for purposes other than research. An Advisory Committee of museum

directors was formed to deal with issues arising in the areas of Intellectual Property and the Digital Image. The results of the initial Committee meeting were published by CHIN and made available, for a subscription fee, on the website under *Professional Resources: Research and Reference*.⁴² CHIN embraced its role as a provider of this type of information to the heritage community and made the areas of Intellectual Property and Digitization a primary focus of its services.

Continuing this direction and always attempting to remain at the forefront of technological innovations for museums and heritage institutions, CHIN expanded its consultation role and began to provide solutions to a wide range of critical issues dealing with information technology. The technological advancements that were being dealt with would prove crucial to the production of the *VMC*. These included initiatives like a 3D digitizing camera, developed in Canada, and used for high resolution imaging; methods to standardize meta-data accompanying digital images; developments in user-friendly search engines which allowed for searches across multiple databases from a single query screen; and a range of issues dealing with the protection of cultural objects and museum copyright and licensing for digitized images.

A New Era for CHIN

The shutdown of the mainframe system on March 31, 1998 marked the beginning of a new era for CHIN. The transition from the centralized collections management service to in-house collections management systems within CHIN's client museums had been consuming CHIN's resources for the previous two years. The final conversion allowed for more time to be spent on acquiring funding for the conception and creation of a massive project like the *VMC*. Although the changeover from the mainframe to Internet servers was challenging, it allowed CHIN and its clients to work with varying database

structures. Contributing institutions were no longer forced to conform exactly to CHIN's database standards. Overall, it created a more user-friendly environment and lessened the commitment which may have been preventing heritage institutions from collaborating with CHIN previously.

Additionally, on April 23, 1998 CHIN unveiled the new version of the *National Inventories*, called *Artefacts Canada*. The new version of this immense resource offered an attractive interface that was easier to use, had more powerful search capabilities and tools, and provided an online contribution system, which allowed collections management clients to contribute data via the Internet and the CHIN website: "CHIN's *National Inventories* were a relatively static repository of information accessed by museum professionals. By contrast, with *Artefacts Canada*, meta-data is integrated with other linked resources in dynamic ways that are determined by the needs of the user."⁴³ Also during this time, CHIN upgraded its servers and connections, making them able to accommodate larger amounts of data, including sound and video clips, which would be incorporated into the *Guide to Canadian Museums and Galleries* and *Artefacts Canada*. By implementing the technologies required for an unlimited number of institutions to submit large amounts of information online, CHIN achieved another critical step that would facilitate the formation of the *VMC*. Now data from any geographic location could be banked and accessed using the Internet.

Throughout the next two years, CHIN continued its involvement in the burgeoning field of 'virtual' exhibitions, making the Canadian heritage community a pioneer of this new exhibition medium. On May 18, 2000 the *Virtual Museum of the Americas* was launched with the purpose of presenting 'virtual' exhibitions and collections from South, Central and North America.⁴⁴ The *Virtual Museum of the Americas* was created in the

spirit of collaboration to provide information about the historic, socio-cultural and economic impact of local festivities on community identity and sustainable development in the Americas.⁴⁵ The creation of a collaborative exhibition that fused heritage information from different American countries would be repeated when developing content for the *VMC. Panoramas: The North American Landscape in Art* is one example of a collaborative exhibition hosted on the *VMC* site, that takes advantage of Canada's foreign policy objectives, specifically related to the trade agenda between the countries participating in NAFTA.⁴⁶ By compiling artworks and information from Canada, the United States, and Mexico, *Panoramas* boasts an international representation that will be analyzed further in Chapter Three.

At the same time as the *Virtual Museum of the Americas* project was going on, CHIN introduced, on June 21, 2000 the successor of the *Guide to Canadian Museums and Galleries*, the new *Great Canadian Guide*. This augmented resource incorporated many new services, including information from the Canadian Museums Association (CMA), Statistics Canada, which provided an online maps service, and CultureNet which allowed visitors to link to theatre and other cultural events. The concentration of links to multiple cultural resources in one location on the Web corresponded to the growing trend for "portals" to organize information on the Internet by category. By combining a wide range of data, CHIN secured a position as an organization with the ability to satisfy an ever expanding and demanding audience of culturally informed Canadians.

The Virtual Museum of Canada

The account of CHIN's history, outlined in this chapter, is essential to understand the current project, the focus of study for this thesis, the *Virtual Museum of Canada* and its representation of the visual art object. At the time of this thesis, CHIN has been

involved with the electronic display of objects from heritage collections around the world for over seven years. Gaining insight from these experiences, CHIN better understood that what it takes for a 'virtual' exhibition to succeed is engaging, high-quality content that takes advantage of the digital medium to create experiences that are not possible in a physical space.⁴⁷ (These 'virtual' experiences will be the object of my discussion in Chapter Three.) The most ambitious project until now had been the *Virtual Museum of the Americas*, which prefigured the *VMC* and provided experience from which CHIN could build its own Canadian concept.

The mission statement for the *VMC*, published in July 2000 follows the precedent set by CHIN's general mandate and makes access to information its primary concern: "Engaging audiences of all ages in Canada's diverse heritage through a dynamic Internet service freely available to the public in French and English."⁴⁸ For CHIN, the *VMC* is the means to carry the museum community into the future, by using the opportunities offered by the Internet. This 'new' medium of communication will allow the *VMC* to accomplish goals that CHIN had been aspiring to achieve since its inception. It would improve the ease of access to information about collections by providing a search engine that showcases specific applications on the site and facilitates content retrievals by users. (These elements will be discussed in Chapter Three, where I will come to conclusions about the success of the *VMC* in satisfying its mandate.)

The project continues the pattern of "partnering" heritage institutions, promising to produce high-quality content and special features designed for Web viewing, through the collaboration of CHIN and Canadian and international museums of all sizes. Above all, CHIN envisions the *VMC* as an opportunity to improve relations among Canadian museums by providing a forum for the discussion of concepts and ideas.⁴⁹ Although a

familiar strategy for CHIN, a working method based on the sharing of resources raises some interesting questions that I will attempt to answer in Chapter Three – questions concerning distributed ownership of knowledge and intellectual property, and the relevance of boundaries and space in the connected realm of the WWW.

CHIN is very specific about the framework and standards for the implementation of exhibitions in the *VMC*. And, in keeping with its historical mandate of access, it will emphasize the digitization of collections – objects and artworks – as a priority for the Web-based *VMC* project. CHIN has set detailed specifications about the dimensions, number and resolution of images, page orientation, and meta-data tagging of each exhibition, in order to effectively represent the objects and artworks. In the *First Call for Proposals*, posted on the CHIN website in November 2000, an exemplary theme and standards for a possible ‘virtual’ exhibition in the *VMC* are outlined in detail:

The product shall consist of three galleries representing each primary colour. The site will focus on Web art and provide an analysis of audience response in relation to colour. The site will include 25 Web-based works, 100 to 150 images, 15-20 sound and video clips (including artist interviews and audience feedback) and between 15,000 and 20,000 words of text in both English and French. It will include an interactive component allowing Web audiences to add responses to the works and to experiment with colour.⁵⁰

For a considerable few, the *VMC* would simply involve following the same principles and methodology of research and presentation used for a ‘physical’ exhibition.⁵¹ And since the entire museum community has not yet realized the full potential of the Web, CHIN hopes that by creating a rigid structure – to which participants must conform – the ‘virtual’ exhibitions produced will develop as entities distinct from ‘physical’ exhibitions.⁵²

This brings up a special feature of exhibitions in the ‘virtual’ space, which CHIN has debated with regards to the *VMC*: the presence of mediated versus open content.

It is precisely the museums’ capacity to speak with knowledge and authority

which will make the *Virtual Museum* distinct and provide one of the major advantages for its branding. This is fully consistent with museums assuming full responsibility for the authenticity and provenance of the artefacts, specimens and works of art that they exhibit in their own facilities. However, it was argued that this approach is not the Web's way of working where an open, interactive and undocumented exchange of opinion is the norm.⁵³

This debate will be discussed further in Chapter Three, but CHIN expects that the *VMC* will incorporate both mediated and open modes of exhibition, and it hopes to integrate stimulating alternate perspectives with traditional curatorial points of view.

An Editorial Board and Technical Advisory Network makes up the *VMC*'s governing mechanism and is responsible for, among other things, suggesting themes for exhibits and evaluating each proposal. The *VMC* will include exhibitions of all object types and will endorse proposals which strive to represent Canada's cultural, linguistic and natural diversity. Always an integral part of CHIN's mission, it is significant that the *VMC* mandate promotes Canadian content, because before its launch, most of the art that forms Canada's visual heritage was, in the most part, conspicuously missing from the 'virtual' exhibitions that could be accessed through the CHIN website.

However, highlighting Canadian content is not the only criterion for inclusion in the *VMC*. The collective nature of the *VMC* will require that each project fit within the overall context of other existing and proposed content to ensure balance among disciplines and themes, approaches to the presentation of content, and target audiences.⁵⁴ As well, the content should represent multicultural diversity in approach and languages. CHIN expects to privilege multiple languages and multicultural content depending on the philosophy and contribution of the individual institutions.⁵⁵ The Board will accept a limited number of experimental projects annually; they will be showcased in the Innovation Corner. In this

way, CHIN, via the *VMC*, will open the door to new and exciting ways of using the Internet to display digital images of art objects.

In each of the projects associated with the *VMC*, CHIN will appear to have power and control over content, since it requires its logo to be present on every Web page. In fact, contractually the institutions involved in the project must grant CHIN, for five years, non-exclusive royalty-free right and license to reproduce, adapt, publish, exhibit and communicate to the public by telecommunication the works used or content created, for the purposes of promoting the 'virtual' exhibition.⁵⁶ As well, by making the primary point of entrance to these projects the *VMC* site, access is ultimately controlled by CHIN.⁵⁷

In stating all of this, it is evident that CHIN will maintain principal control over the content of the *VMC*, returning to a state of centralized command similar to that which CHIN tried to dissolve in response to the National Museum Policy of 1990.⁵⁸ If the museum community sees the *VMC* as just another centrally focused federal institution, it will be harder to gain cooperation from across the country. The challenge will be, as it was in the 1980s, to accommodate and support the needs of the entire museum community, no matter how large or small the museum. CHIN is counting on the interconnected nature of the Internet to solve the potential problem of resistance by local institutions, and will promote the *VMC* as an ideal medium for the dissemination of both regional and national representations throughout Canada and the world.

Conclusion

The National Inventory Programme and the Canadian Heritage Information Network have had a complex history since the former's conception in 1972. Its mandate has evolved from a narrow focus of developing a text-based national inventory of heritage objects, to the provision of collection management services, to a wide-ranging course of

action setting a pace in Internet and WWW development. The *VMC* will help keep CHIN in the ranks of institutions worldwide that are experimenting with the potential of the Internet to display artwork and heritage material to engage audiences beyond the traditional museum audience.⁵⁹

The Internet is essential in the implementation and existence of the *VMC*, and the potential of the Information Highway to reach audiences on a scale unprecedented by any other medium makes it a revolutionary form of communication. However, the *VMC* and other cultural projects like it are likewise extremely important to the Internet, because the vitality of the Information Highway is directly dependent on the content it offers. Since the cultural sector has the greatest potential to fire the imagination of a consuming public, the *VMC* can be seen as a marketing tool for Canada's museums. High-tech is big business in Canada, and North American companies and governments spend twice as much money on information technology as their European counterparts.⁶⁰ In short, a large part of the justification for the *VMC* project is to allow the cultural sector to gain from the private and public funds allocated for these priorities.⁶¹

However, for the *VMC* to succeed in the eyes of its users, it must overcome the limitations that have been inherent in CHIN in the past: avoid in practice, the appearance of centralized control; find adequate funding to keep up with technology; and maintain its relevance to the heritage community by providing quality services. No doubt, the collaborative approach of the *VMC* project will help CHIN to succeed in the face of these obstacles, real and perceived, and will make for a very interesting collection of innovative perspectives.

The *VMC* project developed out of CHIN's shift from a system based on textual information, suited almost solely to the museum professional, to a method of visual

display that is giving the agency a more public role. It is essential, therefore, that both the public and museum professional be persuaded to agree that the preservation and presentation of the 'virtual' object deserves as much consideration as the care and display of the material one. In Chapter Two I will address the implications of the ongoing debate about 'real'/material versus 'virtual'/digital. However, throughout my discussion in the following chapter, it must never be forgotten that in the ever-changing mode of displaying art, the experience of the physical object is always the primary experience.

ENDNOTES

¹ For further information about the changing role of the NMC, see Michael Bell's article, "Museums and Cultural Policy," in *Queen's Quarterly* 94, no. 3 (Autumn 1987), 552-570.

² The National Museums of Canada, *The National Museum Policy: A Programme for Canadian Museums*, (Ottawa: NMC, 1973), 1.

³ The National Museum Policy of 1972 was initiated by Secretary of State, Gérard Pelletier, as a means to help museums throughout Canada.

⁴ The *National Inventories* include data from 90% of museums and galleries across Canada and were designed to be widely accessible online. They are intended to act as a resource for researchers, educators, exhibit designers, and the general public and be a true reflection of Canadian collections.

⁵ N.L. Hushion, *Canadian Heritage Information Network: Partnerships Study Final Report*, (January 1995), 1.

⁶ The Registration Assistance section of the Museums Assistance Program (MAP) was devoted solely to helping institutions to document their collections and to enter information in NIP databases.

⁷ Guidelines regarding the standards of implementation and application of information for the *National Inventories* were set out in a publication titled *The National Inventory Programme* (Ottawa: National Museums of Canada, 1977), which includes a collection of papers which have been released by NIP.

⁸ The National Museums of Canada, Board of Trustees. *To Safeguard and Share the National Heritage: A Brief to the Task Force to Review the Role of the National Museums of Canada*. (Ottawa: National Museums of Canada, May 1986), 35.

⁹ The conclusions of the evaluation were reflected in the *Report of the Federal Cultural Policy Review Committee*. (Ottawa: Department of Communications, Minister of Supply and Services, 1982) a.k.a. Applebaum-Hébert Report, after the co-chairs Louis Applebaum and Jacques Hébert.

¹⁰ Lyn Elliot Sherwood, "The Canadian Heritage Information Network," *Museum Collections and the Information Superhighway Conference*. 10 May 1995, 2. <http://www.nmsi.ac.uk/infosh/sherwood.htm> (16 October 2000).

¹¹ Francis Fox commissioned this report while he was the Minister of Communications. Marcel Masse succeeded him in 1984.

¹² See the report of the National Museums of Canada, "National Museums of Canada After Applebaum-Hébert," (Ottawa: NMC, 1984).

¹³ Refer to Appendix A for a timeline that situates CHIN's progress in relation to the innovations of communications technologies in general.

¹⁴ Sherwood, "The Canadian Heritage Information Network," 2.

¹⁵ Institutions like the Canadian Conservation Institute, the Getty Trusts' Conservation Institute, the Smithsonian Analytical Laboratory, the International Council on Monuments and Sites (ICOMOS), and the International Council of Museums (ICOM).

¹⁶ Communications Canada, *The Canadian Heritage Information Network Communication*, (Ottawa: Communications Canada, 1994), 4.

It is necessary here to define what a reference database is in relation to CHIN's use of the term: "Reference databases are specialized information holdings designed to serve for reference and research purposes to CHIN's clientele, and in particular to the museological community. Unlike the National Databases – developed not as in-depth research tools but as indices to the collections of Canadian museums which participate in CHIN – most reference databases are not directly related to museums collections information. Traditionally, reference databases were developed as by-products of specific research or publication projects undertaken by CHIN or, more frequently, by its clients." CHIN. *Reference Database Creation Policy*. (Ottawa: Department of Communications, June 1993), 3.

¹⁷ Although the benefits included sharing power and control of the electronic information network across Canada, the Regional Network experience reflects the burgeoning developments of the Internet, because it made multiple sources of information accessible to multiple users (both internationally and nationally), albeit managed through the CHIN program.

¹⁸ The *Guide to Canadian Museums and Galleries* currently exists as *Find a Museum* and *Calendar of Events* on the VMC site.

¹⁹ CHIN, *Network News* No. 8, (Fall/Winter 1995), 7.

²⁰ Communications Canada, *Canadian Museum Policy: Temples of the Human Spirit*, (1990), 20.

²¹ The Withrow-Richard Report, released in September 1986 as "The Report and Recommendations of the Task Force charged with Examining Federal Policy" developed from the concerns raised in the Applebaum-Hébert report of 1982, which brought attention to the problems of the divided management structure used in the NMC. This report was the catalyst for the creation of the new National Museum Policy of 1990. The key recommendation in both was the break up of the NMC, which would result in setting the federal museums up as administratively autonomous institutions whose Directors would be responsible and accountable for the management of their respective museum.

²² It was Flora MacDonald who finally approved the breakup of the NMC in 1990.

²³ Applebaum-Hébert, *Report of the Federal Cultural Policy Review Committee*. (Ottawa: Department of Communications, Ministry of Supply and Services, 1982), Chapter 4.

²⁴ Communications Canada, *Temples of the Human Spirit*, 24.

²⁵ The four National Museums being: the National Gallery of Canada; the National Museum of Man, including the Canadian War Museum; the National Museum of Natural Science; and the National Museum of Science and Technology, including the National Aviation Museum.

²⁶ CHIN, *Network News* No. 1, (Spring 1991), 1.

²⁷ Services like e-mail, website production, and search engines.

²⁸ Hushion, *Partnerships Study Final Report*, 18.

²⁹ CHIN, *Network News* No. 7, (Summer 1995), 4.

³⁰ This situation is directly dependent on the number of museums and galleries who participate in the VMC initiative, or that even have a website of their own.

³¹ Diane Zorich, "Beyond Bitslag: Integrating Museum Resources on the Internet," in Katherine Jones-Garmel, ed. *The Wired Museum: Emerging Technology and Changing Paradigms*, (Washington: American Museums Association, 1997), 171-201.

³² However, complete accessibility for all Canadians depended on the realization of the federal government's initiative to connect all Canadians to the Information Highway by the year 2000. CHIN, on its own did not have the budget to physically implement public terminals to access the databases (either via the mainframe or the Internet).

³³ CHIN, *Network News No. 7*, (Summer 1995), 1.

³⁴ *ibid.*, 1.

³⁵ There are multitudes of policy statements, made by the Canadian government that adhere to this mandate of promoting national identity while maintaining cultural diversity. One example can be found on the Department of Foreign Affairs and International Trade website: <http://www.dfait-maeci.gc.ca/tna-nac/canculture-e.asp> (15 May 2001). The report discusses Canadian Cultural Policy and is representative of the federal government's overall viewpoint: "The challenge is to develop, with other nations, open and transparent policies that acknowledge that cultural products are different from other goods and services, and allow us to maintain our national identity and cultural diversity in a rapidly changing world."

³⁶ The possibilities of the digital environment for the display of museum and gallery collections was exhilarating, but the art community made known their reservations about the concept of the digital representation of artwork. In a series of brainstorming sessions that CHIN organized in March 1995, Canadian museum directors explored the question of reaching the public through electronic products and services. The findings of this brainstorming session were the topic of a paper delivered by Lyn Sherwood at the Museum Collections and the Information Superhighway conference held in May 1995: "In exploring the implications of these trends, there was a certain level of tension within the sessions associated with discussions as to whether museums should be primarily sources of entertainment or of education. More specifically, there was debate around the museum's role in presenting the 'object' through direct experience versus presenting the 'surrogate' through electronic experience." Lyn Elliot Sherwood, "The Canadian Heritage Information Network," *Museum Collections and the Information Superhighway Conference*, 10 May 1995. <http://www.nmsi.ac.uk/infosh/sherwood.htm> (16 October 2000), 3.

³⁷ *Christmas Traditions* went live on the Internet on December 18, 1995 and currently resides on the *Virtual Exhibits* section of the *VMC*.

³⁸ The Canadian institutions that were involved in the project included the Musée de la civilisation in Quebec City and the Provincial Museum of Alberta; the French partners were the Ministère de la Culture, the Director des Musées de France, and the Musée national des arts et traditions populaire.

³⁹ Industry Canada's Digital Collections Program is an element of the federal government's Youth Employment Strategy. It pays young people to create websites featuring Canada's vast informational resources for access by all on the Information Highway. The federal government awards contracts to Canadian firms, associations, and institutions to hire teams of young people to digitize text, images, audio, and video material to incorporate into attractive websites for display on SchoolNet. More information about this initiative can be found on the Industry Canada websites: <http://collections.ic.gc.ca> (1 December 2001) and <http://connect.gc.ca/en> (1 December 2001).

⁴⁰ The images that were scanned for each of these scrapbooks can still be found on the *VMC* website, under the *Virtual Exhibits* section.

⁴¹ CHIN, *Network News No. 11*, (Winter 1997-98), 2.

⁴² In 1997, only part of the CHIN website was devoted to providing resources to the museum professional. At that point these tools could be accessed through the *Professional Resources: Research and Reference* section. The only reference that exists for this resource now can be found in CHIN's organizational

newsletter: "Network News No.7," CHIN. Summer 1995. http://www.chin.gc.ca/About_Chin/Network_News/e_news7.html (7 November 2000), 7.

Since 1997, the *Professional Resources* section has evolved in relation to CHIN's own development and has now become the singular focus for CHIN. Since the launch of the VMC in 2001, the CHIN website has been devoted solely to providing professional resources, re-directing all association with images and exhibitions to the VMC site. The professional resources that are currently available through CHIN's main site are *Creating and Managing Digital Content*, *Intellectual Property*, *Collections Management*, *Standards*, *Artefacts Canada*, *Reference Library*, *Centre for Exhibition Exchange*, and *Conservation*.

⁴³ CHIN, *Network News No. 12*, (Autumn/Winter 1998-99), 8.

⁴⁴ *Festivities of the Living and the Dead in the Americas* was the primary permanent exhibition to be associated with the site. A second one, *Butterflies North and South* produced as a collective venture between Canada and Peru accompanied the permanent exhibition.

⁴⁵ CHIN, *Network News No. 13*, (Spring 2000), 7.

⁴⁶ Culture is one of the priorities within the federal government's trade agenda which taps into the significant impact that NAFTA has had on the Canadian economy – total merchandise trade across North America surpassing \$752 billion in 1998 (Source: Statistics Canada, U.S. Department of Commerce and SECOFI). "The trade agenda is about economic prosperity and an integral part of a broader socio-economic agenda – across borders, that embraces the range of economic, social and political realities that we face together, ranging from environmental to cultural diversity to human security." Statement by Hon. Pierre S. Pettigrew (Minister for International Trade) to the Ottawa Diplomatic Association and the Diplomatic Press Attachés Network at the National Press Club, Ottawa February 16, 2000. http://198.103.104.118/minpub/publication.asp?FileSpec=/Min_Pub_Docs/103030.htm, (15 May 2001).

⁴⁷ CHIN, *The Virtual Museum of Canada Guidelines: Consultation Draft Version 2*, (CHIN, July 2000), 10.

⁴⁸ *ibid.*, 4.

⁴⁹ CHIN, *The Virtual Museum of Canada: Consultations with the Canadian Museum and Heritage Communities*, (CHIN, July 2000), 7.

⁵⁰ CHIN, "The Virtual Museum of Canada: Sample Contract B: Terms of Agreement," CHIN. November 2000. http://www.chin.gc.ca/VMC/Documents/e_host_sample.pdf (15 May 2001), 1-2.

⁵¹ CHIN, *The Virtual Museum of Canada: Consultations*, 6.

⁵² A condition, which I argue, is imperative to the success of the 'virtual' art exhibition.

⁵³ CHIN, *The Virtual Museum of Canada: Consultations*, 4.

⁵⁴ CHIN, *The Virtual Museum of Canada Guidelines*, 15.

⁵⁵ French and English are mandatory languages for content on the VMC site, but they will support the publication of texts in other languages based on the involvement of particular cultural communities in content development or on the need to reach specific target audiences. See CHIN, *The Virtual Museum of Canada Guidelines: Consultation Draft*, Version 2 (Ottawa: The Canadian Heritage Information Network, July 19, 2000), 10.

⁵⁶ CHIN, "The Virtual Museum of Canada: Sample Contract A: Terms of Agreement," CHIN. November 2000. http://www.chin.gc.ca/VMC/Documents/e_non_host_sample.pdf, (15 May 2001), 4.

⁵⁷ The *VMC* portal is designed to provide visitors with one entrance point to the virtual exhibitions of member institutions; however, not every member has restricted access to their project to the *VMC* portal. The results of the inconsistencies in using the *VMC* portal service are explored in Chapter Three.

⁵⁸ Even though the content produced outside of CHIN will ultimately be delivered by the contributing museum, CHIN still maintains the power to accept or refuse proposed projects.

⁵⁹ For example, the Art Museum Image Consortium (AMICO) that also aims to work collaboratively with art collecting institutions, but on a more international basis. AMICO differs from CHIN and the *VMC* because its focus is to "enable educational use of museum multimedia" by digitizing images of artwork to make them accessible through subscription. There is no interpretation or organization of the images into exhibition-like display. The presentation of the approximately 78,000 images held on their server resembles a conventional slide library. For more information about AMICO see <http://www.amico.org> (20 May 2002). *Picture Australia* www.pictureaustralia.org (20 May 2002) is an example of a project that has a national mandate similar to that of the *VMC*: "*Picture Australia* has been provided for 'all Australians to discover our heritage through pictures.' It consists of links to over 450,000 digitised images from the pictorial collections of Australia's leading cultural heritage institutions including The Australian War Museum, National Library of Australia, and the State Libraries of NSW, Tasmania, and Victoria." Unlike the *VMC*, *Picture Australia* only documents the collections of the national and state institutions.

⁶⁰ Fact taken from Leen d'Haenens, "Beyond Infrastructure. Europe, the United States and Canada on the Information Highway: Where business and culture collide," *Images of Canadianness*. (Ottawa: University of Ottawa Press, 1998), 242.

⁶¹ The *VMC* served to expand CHIN's limited annual budget of \$3.5 million planned spending for 2000-01. It took advantage of the federal government's Canadian Digital Cultural Content Initiative (CDCCI) which is designed to bring Canadian culture into the digital age. The CDCCI is the Department of Canadian Heritage's partnership with private and public institutions and organizations across Canada. The CDCCI runs alongside another federal program called the New Media Content Initiative. This initiative serves to promote the creation and production of Canadian cultural digital content by developing the capacity of cultural and new media industries, institutions, creators and communities. Funding for this initiative was approved in the spring of 2000 with a budget allocation of \$20 million for 2000-01, \$25 million for 2001-02 and \$30 million for 2002-03. As part of the Canadian Legacies element of the CDCCI, and as a priority in the New Media Content Initiative, the *VMC* is allocated additional funds, above CHIN's annual budget, to complete the task of linking the collections of over 1000 Canadian museums and support at least 250 special online exhibitions by 2003. This information can be found on the Government of Canada's websites: http://www.pch.gc.ca/cdcci-iccn/eng/intro_2htm, (December 2000) and http://www.pch.gc.ca/pubs/rpp2001/devl-culturel_eng.htm#depenses, (2001). The Canadian Digital Cultural Content Initiative (CDCCI) was terminated in 2002, and its mandate was integrated into other federal programs now connected with the Canadian Culture Online Funding Program: http://www.pch.gc.ca/cdcci-iccn/main_e.cfm, (19 June 2002).

CHAPTER TWO

DIGITIZED ART OBJECTS AND 'VIRTUAL' EXPERIENCES: THEORIES AND KEY CONCEPTS

Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. ... The presence of the original is the prerequisite to the concept of authenticity.¹

—Walter Benjamin, 1935

All works have this thingly character. What would they be without it?²

—Martin Heidegger, 1935

I demonstrated in Chapter One that the *VMC* initiative undertaken by CHIN fulfilled the organization's mandate and objectives. I pointed out how implementation of various projects throughout the organization's thirty-year history established conditions for the transition from the dominance of the textual to the visual. I explained that these conditions coincided with the opportunities brought about by the Internet as a communication medium that is widely accessible to Canadians. However, the fulfillment of both CHIN's role as a provider of effective access to heritage content, and the *VMC* mandate to engage audiences of all ages in the experience of Canada's diverse heritage, remains solely dependent on the quality of the users' experience of this heritage material online. My particular interest is in visual art objects and their arrangement into 'virtual' exhibitions.

The purpose of this second chapter, therefore, is to acknowledge the differences and describe the specificities of experiencing the presentation of artworks on the computer monitor (screen), as opposed to the direct experience of the art object. This chapter will

demonstrate that the digitized object presented in the digital environment has the power to invoke legitimate experience on its own merits. This position moves beyond what the editors of a recent compilation of studies published under the auspices of the American Museum Association contend: “Even on the World Wide Web, the referential presence of real objects and real experiences adds the subtext of cultural authority.”³ I am arguing, in this second chapter that digitized images of real art objects remove themselves of the responsibilities given to material objects, because the digital experience need not replicate actual experience. Furthermore, these digitized images are only empowered further through their reference to real objects.

However, it’s not only the shift from real to ‘virtual’ that informs this discussion. Wollheim points out the obvious, that pictures allow us to have visual experiences of “things that are not present to the senses.”⁴ His assertion identifies another aspect of the debate, which was played out before in the “Age of Mechanical Reproduction,” when concerns arose over the impact of photographs and photographic reproduction on the primacy of the direct experience of the authentic artwork. For the purposes of this thesis, the term authenticity will refer to the degree to which a reproduction resembles the original model.⁵ I will contest Benjamin’s point of view, as stated in the opening epigraph, by showing how the original is not necessarily the only requirement for a meaningful experience of a work of art. In sum, there are two threads to the argument that I make in this chapter: real (or material) versus ‘virtual’ and analogue versus digital reproduction.

It is not my goal here to define what art is or its purpose. Many a more skilful thinker has tried in vain to do that. For instance, Tolstoy suggested that the purpose of art is the communication of emotion.⁶ And Kristeller may have taken the wisest course in his essay “The Modern System of the Arts” in *Renaissance Thought II: Papers on Humanism*

and the Arts, when he explained that art has never had, and will never have, a finite meaning.⁷ What we learn from Kristeller's account is that the definition of a work of art is ever changing and that human beings have always found ways to embrace difference once the shock of change subsided. So who's to say that the acceptance of a work of art online won't also arrive?

My focus in this chapter then, is on the experience of real art objects that have been preserved in digital format suitable for viewing on the screen. This is very different from new media art specifically intended to exist only in the electronic environment. The scope of this thesis is limited to discussion only of the former, even though the latter case does provoke some very important questions. I introduce the distinction to suggest that each phenomenon is quite unique and to indicate which one I am addressing.

Theories Contributing to the Debate

It is acknowledged that the images of actual art objects held in collections are not themselves art, but mere representations of it. What is the viewer's experience of these digitized images? To answer this question I will consider the theories of Jean Baudrillard, Martin Heidegger, Walter Benjamin and Michael Heim. The ideas of all four philosophers can be easily linked together to help in our understanding of the current experience of a 'virtual' art object. I will employ the theories of all four to illustrate the challenges and benefits inherent in the display of art objects on the screen. My focus then, is the rethinking of the problems of vision, representation and experience which display on the screen elicits.

Baudrillard's ideas on the simulacrum, as expressed in *Simulations*⁸ offer a starting point on which to ground the concepts of the other three theorists. For Baudrillard the simulacrum is in fact a copy without an original. This chapter will attempt to illustrate that

the digital reproduction is more than a mere copy, and is in fact a simulacrum, taking on distinctive qualities above those of the photographic reproduction and the original model. Applying this concept to the theories of the other three thinkers – Heidegger, Benjamin, and Heim – will help to demonstrate that the experience of the digital reproduction as simulacrum is significant for the success of the *VMC* and the ‘virtual’ exhibitions it hosts.

Heidegger’s existentialist approach, parts of which appear in Baudrillard’s analysis of the simulacrum, provides a means to investigate the implications of a specific technology, that of the digital image, and all its ambiguities. His ideas are useful because they are open-ended and don’t claim to produce definitive solutions, wholesale rejections or acceptances of new technologies. His philosophy is also appropriate because it accepts historical drift, meaning that he sees technology as a thread in a larger history, as a part of our knowledge process, resisting conclusions in a single cumulative narrative. In considering these points, it becomes evident that Heidegger would have appreciated the history of CHIN’s technological development as laid out in Chapter One. He would recognize that such a chronology is a means to help us see where we came from and to avoid forgetting the old.

Benjamin and Heidegger both recognized the significant impact that technology would have on human experience, and it is from this line of thought that I draw ideas from the former. Benjamin argued, quite persuasively, that the authenticity of the art object is lost in its reproduction, and that the original is required for authentic experience. A Marxist perspective of Benjamin’s essay suggests that he was in effect ridiculing the exclusivity of the original art work⁹ by exposing the democratizing power of the mechanical reproduction – with its ability to transform the experience of art from one largely of cult value to one of exhibition value. His views about the indexical relationship

between the photograph and its referent, and the concurrent obliteration of photography's assumed truth value, provide a jumping-off point for discussing the implications of the digital image. And, even though the philosophies of both Benjamin and Heidegger are fundamentally based on the idea that the mechanical and/or digital reproduction cannot replace the real thing, analysis of their thought does offer a path to understand the digital reproduction as a form of reproduction that is at least as legitimate as the conventional photographic reproduction in documenting resemblance.¹⁰

Heim is a contemporary scholar who has considered the theories of both Heidegger and Benjamin when dealing with the specifics of twenty-first century technologies. He doesn't criticize Heidegger's views on technology, as many have; rather he draws from them. In doing so, Heim develops an approach that is very relevant to this project of trying to understand the experience of the work of art online.

Functions of the Semiotic Square

I will structure my discussion around the theoretical model of A.J. Greimas'¹¹ semiotic square, which was adapted for the purposes of cultural criticism by Fredric Jameson in 1981.¹² Jameson transformed Greimas' square into "A Machine for Making Authenticity". Greimas' initial concept involved a closed system of meaning which had the capacity to expand simple binary oppositions (good/bad, black/white) into a multitude of possible meanings by the addition of variables which revealed the terms that help to stabilize meanings and generate significance.

Jameson's adaptation of the square establishes semiotic quadrants in which art objects can be classified. In Jameson's case, the four quadrants include the zone of authentic masterpieces; the zone of authentic artifacts; the zone of inauthentic masterpieces; and the zone of inauthentic artifacts. Objects either fit precisely into one of

these zones or move into the ambiguous space between quadrants. Even though the states derived from Jameson's adaptation appear to be infinite, his prescription actually does have limits. For instance, he suggests that there can be no direct movement from zone 4 (tourist art and commodities) to zone 1 (connoisseurship and the art market).¹³

The premise of this thesis is that the qualification and categorization of a work of art is not black and white as Jameson would have us believe. There are an infinite number of variables at work in the experience of an artwork that Jameson, using Greimas' square, neglects to consider. Some of these variables will be discussed, in relation to the images displayed on the *VMC*, in order to open the limited system that he presents. I stated earlier, that this paper is not concerned with defining art, but Greimas' square provides a theoretical model upon which to frame a discussion of the experience of digital reproductions. The square, which I have renamed the "Experience of the Reproduction", can be adapted to my own needs by setting the four quadrants as the figure in Appendix B illustrates.

The upper horizontal axis represents the dynamic interaction between the binary opposites of the real object and the 'virtual' object. The lower horizontal axis articulates the interplay between the second binary pair of analogue (conventional photographic) and digital reproduction. The square functions only because the paired terms that I have chosen to identify each of the four quadrants (real, 'virtual', analogue, digital) are dependent on each other and can expand their individual significance when considered in relation to one another. Keep in mind that the viewer's role in the reception of the reproduction, in any form, is key to the shifts that occur within the semiotic square.

The axes connecting the four quadrants of the square need to be identified through interpretation of their interaction. As seen in the diagram in Appendix B, the horizontal

axis connecting the upper pair of real and ‘virtual’ is labeled *materiality* because the interplay between these two terms interrogates the experience of material objects. The lower horizontal axis considers two diverse forms of dissemination, and is therefore labeled as the *informational* axis. Identifying the diagonal and vertical axes further expands the square. As the diagram shows, the relationship between the real and analogue quadrants can be identified as *replication*, where the power and efficacy of the copy is derived from its close association, through resemblance, with the original. The diagonal axis connecting the ‘virtual’ and digital quadrants is called *attenuation*, since both terms represent a condition where the reproduction need never be associated with the original at all.

Baudrillard called this state of the simulation being attenuated or detached from the original as the hyperreal, because the resulting simulation takes on a life of its own, as simulacrum. It is Baudrillard’s notion of the *hyperreal* that provides the name for another axis on this square, that of the vertical axis between the ‘virtual’ and analogue quadrants. According to the semiotic square, the phenomenon of the hyperreal is derived from the interplay between the axes of materiality and information. Likewise, the vertical axis linking the real and digital quadrants is also predicted by the interaction of materiality and information, and takes the name of *authenticity*. What the dynamics of the square show is that the experience of any art object, whether observed directly or on the screen of a computer is complex, infinitely shifting between the four quadrants of the square – dependent on the unique conditions of each viewer – a situation that Heidegger, Benjamin, and Heim consider in their own work. As well, it demonstrates that digitized images of objects lose the properties and responsibilities associated with the real quadrant, by moving along the axes of attenuation and hyperreal towards the ‘virtual’ quadrant.¹⁴

Characteristics of Digital Reproduction: Colour, Light, Pixels

Continuing the analysis of the experience of the reproduction requires an understanding of the technological details of electronic imagery, paying particular attention to the differences between the processes of conventional photographic (analogue) and digital reproduction. The shift from analogue to digital reproduction, along the information axis of the square, seems like it would be a somewhat smooth transition. In terms of their ability to disseminate and display images of actual art objects, both analogue and digital reproductions achieve similar results. However, the inherent qualities of the digital method give it the capabilities to surpass conventional photographic reproductions in terms of dissemination and display.

This analysis will force us to consider the use of digital images as distinct from conventional photographic media, and thus will focus on one thread of my argument, that of the lower horizontal axis of the semiotic square – analogue versus digital reproduction.¹⁵ The array of experiences that occur in response to the different categories of media will be discussed in later sections of this chapter. But an understanding of the physical differences distinguishing conventional and digital reproduction is necessary here, so that I may progress into a deeper discussion about the phenomenological implications inherent in the change from analogue to digital imagery.

The goal of mechanical and chemical reproduction is to produce a copy that is indistinguishable from the original in as many ways as possible. In comparison, the computer's mode of reproduction actually makes copies that are fundamentally very different than the original, composed of a code of numbers and projected as a pattern of points or pixels.¹⁶ Each pixel in the grid of the digital image receives a numerical code which tells the computer the location and colour of that specific picture element.

Generally, digital images lack the smooth gradation of tones of a photograph or painting and resemble somewhat a mosaic of coloured points. However, the geometric composition of digital images is the format required for their projection onto a computer screen, because this mode of output was designed to handle only numbers.

William J. Mitchell, in his book *The Reconfigured Eye: Visual Truth in the Post-Photographic Era*,¹⁷ describes the differences between the technologies of image production. His description of digital imagery is worth quoting here: "Images encoded digitally by uniformly subdividing the picture plane into a finite Cartesian grid of cells (known as *pixels*) and specifying the intensity or colour of each cell by means of an integer drawn from some limited range. The resulting two-dimensional array of integers (the *raster*¹⁸ grid) can be stored in computer memory, transmitted electronically, and interpreted by various devices to produce displays and printed images."¹⁹ In essence, the digital image will always be composed of a numerical code that does not exist in its analogical source.

Resolving that a digital reproduction is something quite different from a mechanical reproduction (the goal of which is to produce a copy that is indistinguishable from the original in as many ways as possible) parallels the position that Baudrillard takes on the issue of copy versus simulacrum, in his book *Simulations*. As stated earlier, for Baudrillard, the simulacrum is a copy of a copy. It is so attenuated from the original model that it takes on an identity of its own and becomes realer than real, or *hyperreal*.²⁰ Baudrillard's nostalgia for the original model leads him to claim that the simulacrum killed reality. But Gilles Deleuze, in his article "Plato and the Simulacrum",²¹ provides a more useful point of view for my argument when he criticizes the inadequacy of Baudrillard's definition of the simulacrum. According to Deleuze, the simulacrum is

distinguishable from the copy because it is based on difference rather than resemblance, and because the copy holds the model as original whereas the simulacrum questions the fundamental significance of copy and model.

Perhaps it would serve, on one level, to think of the digital image as having the same truth value (or lack thereof) as a written text. Text is a human product that is already distanced from true experience, therefore also has the characteristics of simulacra. That being said, digital representation is more like a textual (really numeric) description of the actual object. The ideological problem, in terms of degrees of authenticity, is that the process of digitizing uses algorithms to render the product. In this way, the digital image becomes a symbol of the object, twice removed. To common sense this seems more removed and therefore less authentic than a conventional photographic representation of the same object. And random errors in the coding of representation and the extremely mutable form of the digital image in the 'virtual' environment further test the concept of authenticity.²² As Peter Lunenfeld notes in his book about the digital arts, "Within the realm of the digital, all images are subject to the visual alchemy of the paint program, which offers the user a set of tools to modify every quality of the pixel."²³

This sheds light on the biggest obstacle facing initiatives that use digital collections: the objects/images are not 'real' in the true sense. They cannot be held and manipulated in the hand.²⁴ "In traditional plastic art forms, the artwork is embedded in the material itself and is directly accessible to the human senses. In computer arts the artwork itself, embedded in digital data and software, is not directly accessible to the human senses."²⁵ However, if the digitized image of a physical art object online is more like a simulacrum than a conventional photographic copy because of its numerical composition, method of display, and other properties inherent in the digital environment,²⁶ then the

digital image becomes a distinctive entity capable of creating its own meaning. The semiotic square in Appendix B illustrates this condition and shows how the simulacrum takes on a life of its own through the interplay of the categories of materiality and information. Much as a metaphor can represent something larger than the sign itself, the simulacrum, by means of social and cultural understanding of what is material and what is information, stands for something larger than a mere copy of the object. In terms of projects like the *VMC*, claiming the digital image has the power of a simulacrum implies that its experience will outweigh what it lacks in substance.

Beyond the theoretical implications, the format of digital imagery brings with it substantial benefits that are lacking in analogue forms of reproduction. The conversion of the original into numeric code gives the ‘virtual’ object a permanence that exists in no other medium. The digital reproduction, compared to a photomechanical or slide reproduction, is protected from forms of deterioration like colour shifts, fading and scratching. In theory, one other benefit is that no details are lost in the reproduction or transfer of these images. Yet, in reality, the need for image compression to reduce file sizes and increase download/transfer rates causes the digital image to degrade with every compression and expansion. As well, there are issues around archival permanence of the storage media – can data be safely stored in storage media and in software formats that continuously become obsolete?

The increases in digital image resolution and dynamic properties necessary to satisfy contemporary audiences requires an expansion of information that demands enormous amounts of storage space. Looking back to Chapter One, where I described the growth of and current storage capabilities of CHIN’s network, it seems that its sheer scale and reputation of adaptability would encourage partnerships with other cultural

institutions. Considering that the quality of the digital image is directly proportional to storage requirements, smaller museums and galleries that are interested in using the Internet to display their collections would definitely benefit from a collaboration with CHIN. Such a partnership would ease the costs entailed by the massive amount of storage needed to support the use of high quality digital images.

In making JPEG the standard format for the *VMC*, CHIN has actually set quite a high standard for their displays, because it is the best format to limit the amount of degradation that occurs in the transfer of its image files. JPEG²⁷ has become the most widely used format for transmitting images on the WWW, because it stores full colour information at 24 bits per pixel (16 million colours).²⁸ Considering the resolution²⁹ that the *VMC* has chosen to use, the quality of the images remains a priority. Ranging from 72X72 to 300X300 pixels per inch, the majority of the images are of the highest quality available on the Internet.³⁰

After saying that however, it should be pointed out that the JPEG format does have its limitations. One of the major challenges it faces is lossy compression.³¹ Lossless image compression algorithms do exist, but they are just not feasible when trying to achieve quick file transfer rates. And, although JPEG was designed to exploit known limitations of the human eye,³² the degradation that occurs in each transfer threatens the degree to which the digital reproduction can achieve authentic representation. The semiotic square in Appendix B illustrates this point. The interplay between the real object and its digital reproduction along one of the vertical axes tests the concept of authenticity by asking if and how the digital image can ever be expressed in the physical world. Recalling that the analogue gains its power by being close to the real referent, as illustrated by the diagonal axis labeled replication, the condition of authenticity depends entirely on whether the

digital reproduction can gain its power by interacting with the 'virtual' along the diagonal axis called attenuation.³³

Some other factors that affect the quality of digital image perception include the need for scrolling, which distorts the total viewing experience, and slows download times. However, the most problematic aspect of viewing these digital reproductions is the variation in the size and quality of the output device: the screen. The digitized image must be projected or transformed into a form apprehensible by the human senses through its display on a screen. The dominant form of display screen is the cathode ray tube monitor (CRT), an analogue display that produces images by illuminating phosphors with an electron beam. The phosphors generate separate red, green and blue light signals that when mixed create the colours on the screen. The meeting of these three phosphors constitutes one pixel. The image quality of every CRT monitor depends on the amount, arrangement, and illumination speed of these phosphors. Therefore, with the limits of digital resolution, and inconsistencies in brightness, contrast, size, age and overall quality of the individual computer monitors used to view artworks, the accuracy of the reproduction will constantly be modified.³⁴

The invention of photography made the discipline of art history as we practice it possible, and the computer screen is yet another mode of display that is now being promoted as a replacement or supplement to photographic slides.³⁵ This method of output tends to homogenize the size, style and context of an art object, allowing seamless transitions between all examples. Further differences between digitally reproduced and analogue images are derived from the ways that colour behaves, in terms of its physical properties. Colours can be mixed using either light or pigment in an additive or subtractive

method. Colour mixing using pigments, as in paintings, is based on combining the primary colours of red, blue, and yellow in an additive fashion.

All printed images on the other hand, including coloured photographs and slides, are produced using a subtractive method in which the primary colours of Cyan, Magenta, and Yellow are combined in register with Black (CMYK). The fact that digital reproduction relies on visible transparent light, in contrast to the opaque nature of the original pigments, makes it theoretically impossible to capture the qualities required to imbue the digital reproduction with an authentic aura according to standards used in the real (physical) world. And, even though conventional printed reproductions use the subtractive system, unlike an actual painting, they tend to have a closer connection to the original because material inks and opaque dyes are used to produce the representation. Colour is an integral part of most images, printed, projected, or pixelated, and the changes that have occurred in the fundamental registration of making colour emphasize the distance between the original and the reproduction, whether mechanical or digital. What is important for this discussion is to recognize that the digital reproduction categorically differs from the mechanical reproduction, which directly affects each format's movement on the semiotic square.

The current discussion about the efficacy of the digital image recalls the debates that arose around the desirability of using slides, prints and conventional photographs to study art. Scholars have come to grips with the idea of using these forms to view art objects that are not directly accessible at the same time and in the same place. They have been accepted and justified because the mechanical and chemical means of capturing the image have gradually approached more and more the condition of a facsimile of the original, rather than a mode of reproduction that is easily open to human manipulation.

The seemingly indexical quality of a photographic reproduction, although an arguable point, made it seem as if the reproduction was a more objective presentation than drawings, prints, and now, digital reproductions. Barthes' formulation is familiar: "The photograph is not simply a product or a channel but also an object endowed with a structural autonomy... the image is not the reality but at least it is its perfect analogon and it is exactly this analogical perfection which, to common sense, defines the photograph."³⁶ A photograph seems to represent the 'real', as if the photograph is a perfect replica of the subject itself. The digital reproduction has the potential to exist without this indexical relationship because of the 'virtual' environment in which it exists.

Suffice it to say that the digitization of artworks for use on the Internet has caused quite a stir in the museum and scholarly community. The topic has developed into a hotbed of debate, and in a lot of ways, I see the current resistance as the predictable preliminary rejection of something new and different. It will probably prove true, in this case, that time cures everything and that in several years people will wonder what all the fuss was about. But as it stands now, there is a lot of work that needs to be done on the topic in order to set standards of production and deal with the legalities that arise from the display of artworks on the Internet. It should also be said that discrepancies in colour, texture, and resolution occur in all forms of reproduction, and digital imagery is just another one to deal with. This should not overshadow the benefits of the medium and our experience of it.

Heideggerian Perspective: Shedding Light on the Experience of Art

What I've been approaching in the above discussion of conventional and digital reproductive processes is really the notion of authenticity, where authenticity refers to the degree to which the reproduction resembles the original model. But how can a

reproduction, of any sort, ever be authentic? According to Baudrillard, neither the copy nor the simulacrum will ever achieve the status of the original. But the simulacrum, which I contend the digital image within the 'virtual' environment is, has a more significant presence because it can exist as an entity all its own – unlike a conventional photograph that has difficulty existing without referring to its referent.

Heidegger's prolific output of ideas, albeit often controversial, offers some useful grounds on which to further the discussion of authenticity and the value of experience over substance. The thinking with which he is identified, and which is of interest here, ranges from the origin of the work of art to humanity's relationship with technology. The underlying motivation of all his thinking is his quest to determine the ontological differences between being and things. The two essays that I will use for my analysis in this chapter are "The Origin of the Work of Art"³⁷ and "The Question Concerning Technology".³⁸

Although there have been many critics of Heidegger's aversion to technology, as professed in both of these works, I see his ideas as useful for understanding the existentialist experience of our world, regardless of historical drift.³⁹ I believe that Heidegger would be concerned and utterly consumed with the experience of the Internet generation – from both social and phenomenological points of view. And, his theories will contribute to expanding the categories of the semiotic square: specifically, along the vertical and diagonal axes of the square, where the art object shifts between material and information.

Heidegger's thinking stems from the transcendental phenomenology of Husserl, who derived his views from the Cartesian philosophical tradition which saw a human's relationship to the world in terms of subjects knowing objects, activated only by direct

contact. Descartes conceived of space algebraically as a system of linear coordinates. So, to Cartesian theorists, things can be explained in terms of mathematics and sciences, all reduced to numbers, much like digital imagery itself. (This is unlike the Aristotelian line of thinking that sees perception as an integral part of understanding – our own individual experience is everything.) Heidegger rebelled against Husserl's reductionist views of human experience, and was driven to question whether the subject-object relation provided enough explanation for our experience of things.

If Husserl's philosophical method was titled transcendental phenomenology, then Heidegger's thinking would be called hermeneutic phenomenology. His method is based on the interpretive descriptions of things and doesn't rely solely on direct contact. In breaking from Husserl's doctrine of returning to the things themselves for an understanding of their significance, Heidegger provides a path away from the authority of the physical towards the recognition of the imaginative as significant. This interplay, between the physical (real) and the imaginative (one might even say the 'virtual') is articulated on the semiotic square as the upper horizontal axis – that of materiality. This train of thought is developed by Sartre and Merleau-Ponty who go so far as to say that human freedom comes from our capability to imagine the existence of an object not present to our senses.⁴⁰ But it was Heidegger who planted the seed to move from the Husserlian ideal of a Cartesian existence towards a world explained by hermeneutic (interpretive) experiences.

Heidegger's thought further evolves from Husserl's, by clarifying that it is shared social memory and consciousness that allow for the individual to have a meaningful experience of an object anywhere and in any form. He disagreed with Husserl's ideas in part, because Husserl neglected to take the awareness and consciousness of the subject

into account. For Heidegger, the subject is an interactive being, who doesn't sit passively thinking about objects. On the contrary, the subject understands, through social memory, the world of objects and is therefore able to cope with the world and not only observe it. Furthermore, he insisted that remembrance is an integral part of our engagement with works of art. And, in thinking back to my days as an undergraduate student of Art History, memorizing details of 'masterpieces' from slides and reproductions in books, I begin to understand his idea. We can and do recuperate the essence of art through remembrance, and indeed, it is the thought processes of human beings that are the catalyst for preserving the meaning of art. And, since the viewer will most definitely have a subjective experience with images displayed on the *VMC*, it must be true that the digital reproduction of an original artwork will also be effective in revealing the nature or essence of that artwork in a way that is specific to the digital environment.

But what is the essence of art and can it really be manifested through reproductions of art objects? Heidegger claims that the essence of art is to reveal, disclose, or bring into unconcealment the Being of particular sorts of things.⁴¹ To clarify, he believed that works of art could achieve their essence if they met two criteria: thingness and remembrance:

The art work is, to be sure, a thing that is made, but it says something other than the mere thing itself is, *allo agorenei*. The work makes public something other than itself; it manifests something other; it is an allegory.... The work is a symbol.... It seems almost as though the thingly element in the art work is like the substructure into and upon which the other, authentic element is built.⁴²

Therefore, according to Heidegger, the phenomenon of the art object would not be lost if experienced through any form of reproduction; we still experience cognitively, the true essence of the object.

To some extent Heidegger did follow Husserl in believing that works required what he called a thingly dimension to inspire an art-like experience, as stated in the opening epigraph. But he also saw another side to their existence. The ‘thingness’ of the object in question was not the only criteria necessary for the subject to have a phenomenological experience of said object. And, I would argue that he would insist this subjective experience is what makes a work of art come-to-presence. In fact, Heidegger’s explanation of human experience suggests that an image is all that may be necessary to evoke feelings enough to satisfy our desires about art. For example, we can examine his well-known discussion of Van Gogh’s painting of the peasant women’s shoes, *Old Shoes with Laces*, 1886, in “The Origin of the Work of Art”. He speaks of the shoes as though they are actual objects, never mentioning the mimetic value of the painting. He insists that we, the viewer, understand the nature of the object merely by Van Gogh’s rendering of it.

The ability of the shoes to take on a deeper meaning through the medium of painting has parallels, in my mind, to what Baudrillard called the simulacrum. In an earlier part of this chapter, the simulacrum was defined as something that could stand in for something greater than the object itself. And this state of the hyperreal arose through elaborate interpretations based on metaphor and difference. Recognizing the similarity between the ideas of Heidegger and Baudrillard supports my choice to link the theories of both theorists. But more importantly, it suggests that there is a similar understanding of objects as they move vertically on the semiotic square between materiality and information. That similarity being: seeing the simulation of an actual object as something beyond a mere copy if the simulation takes on an identity of its own, through attenuation and expanded experience, attained through its interaction in the digital environment.

So why can't a digitized image induce the same memory response and experience as the painted shoes? By exposing the value of the experiential, as a fundamental means of building the authentic element in art, Heidegger provides a position from which I can prove part of my argument in this chapter: that authentic experience of an art object can in fact be transferred through its copy. Ideas surrounding Baudrillard's theories tighten this portion of my argument even more, by showing how the digital image, as simulacrum, can convey something more real, even hyperreal, than the conventional photographic copy. In the case of the digital version of any object, we as interactive coping beings see the image on the screen and understand that it is both a reproduction and an object that exists in its own right in the digital environment. After recognizing the properties inherent in such a reproduction, the viewer carries on with the experience of the entire exhibition.⁴³

Earlier on in this chapter, I argued that the digitized image on the screen ventures into the state of the hyperreal by taking on the characteristics of the simulacrum. This condition is an illustration of what Heidegger feared. He saw something more sinister in the phenomena of observing art objects through the seamless mediation of technology. He thought that the blind immersion of human thought in the technology that humans in fact created, would diminish human experience to a level where we could no longer see what modes of thinking came before us; i.e., we would not be able to see the historical path: "Technology would not sweep the older things away but would transform them while placing them before us as though nothing had changed."⁴⁴ This point of view is shared by Baudrillard who saw this state of hyperreality as a space that no longer had any relation to reality. And in that space, signs no longer refer to an external object, thereby erasing the tie to any understandable process.

Heidegger's fear was not that technology would develop a mind of its own and run amuck, but that human beings would become unable to see the effects of technology on our ways of experiencing things.⁴⁵ He feared that advances in technology, which proclaimed to ease the work of humans, would in fact result in destroying human capacity to perceive truth. And this is what Heidegger considered to be the paradox of technology. He thought that the real threat was the unseen change of human thinking into a non-primordial form of information processing, which to him meant the end of human beings' connection with the actual world of physical things.⁴⁶ He believed that we would grow so accustomed to this new mode of viewing art (a thing), that we would be at risk of forgetting the origins of the actual artwork and become oblivious to the changes in our ways of thinking that developed because of our total immersion in technology.⁴⁷

The software interface of any computer operating system illustrates this point. Most users of personal computers and viewers of online art exhibitions don't consciously think about the interface or the image made up of pixels. In fact, the interfaces of today's operating systems are designed to allow for an ease of use that, for the most part, makes the structure transparent, unnoticeable to the conscious mind, and thereby allows the user to see unthinkingly past the digital medium to enjoy the greater experience. Heidegger would agree that the digitization of art images is neither good nor bad, but the unconsciousness of the effect is to be feared – especially when human beings made the effect possible in the first place. He realized that the alteration of thought processes and subsequent modes of knowledge would result in a changed sense of reality from which humans could no longer comprehend the historical path.

Although I understand his point of view, I disagree with Heidegger's pessimistic view of technology and emphasize, rather, the importance of human choice in directing

and selecting the consequences of technological innovation. The current situation is not as Heidegger would have us believe: that technology is analogous to a sponge that absorbs human thought and eliminates the freedom to choose. In fact, I see the *VMC* project as quite the opposite to this sponge analogy. The use of digitized images of real art objects acts more like a map directing the user to consider the construction of this ‘virtual’ space. Even if the digital image in the ‘virtual’ environment is considered as a simulacrum, it still has the capacity to prompt the viewer to visit the original at some point, making the *VMC* a potential catalyst for the viewer’s reevaluation of the value of unique material art objects. The digital image is a thing in its own right, and its obvious characteristics make it distinguishable from the real object it represents. Its qualities are distinct enough to make itself easily recognizable – making the *VMC*, and projects like it, a means of unmasking the blanket of Heidegger’s technology rather than perpetuating it.

To sum up, I discuss in the above sections the implications of the philosophies of both Heidegger and Baudrillard for our understanding of our experience of digital reproductions. I am stating that there are indeed fundamental differences in the ways that humans experience physical works of art, photographic printed reproductions, and digitized images of art. However, I am also arguing that the viewer, as a human being equipped with the ability to think and cope, will understand these differences and make the decision to move on to a significant phenomenological experience inspired by the digitized images within the digital environment, or not.

In the case of the *VMC*, the description, in textual or audio form, will contribute to a greater contextualization of the artworks and help to bring about this significant phenomenological experience by evoking a moving set of associations in the viewer, thereby engaging them in a deeper understanding of the artworks displayed. And, when

structured within the ‘virtual’ exhibition space of the digital environment, this accompanying information will help to augment the digitized image from a mere copy to a simulacrum. The associations that arise, when the user engages with a project like the *VMC*, are based on the viewer’s own memories and grounded in their own social outlook. In this sense, the viewer plays a major role in moving the ‘virtual’ art object towards the zone of materiality on the semiotic square. Through the experience of the viewer, the power of the real art object is relocated, not erased, to a general ‘virtual’ realm.⁴⁸

Benjamin: Aura in the Digital Realm

No discussion about issues of authenticity and essence in artwork would be complete without making reference to Walter Benjamin’s famous essay “The Work of Art in the Age of Mechanical Reproduction.” This work remains the preeminent discussion of the social implications of the reproduction of works of art. His main focus was the transformation of culture and the reception of art in the face of new technologies of reproduction. For Benjamin, the technology in question in the early 1930s was not the digitization of art objects, but the photographic and photomechanical reproduction of such objects. However, his ideas about the dissemination of printed matter have informed my views about the former issue.

Benjamin saw the potential of new technologies for democratizing the experience of art. And, although he could not have predicted that these technologies would also reinforce the status of the elite, his insight continues to be relevant today, and to the current phase in the history of art, as we try to understand the implications of yet another mode of reproduction and dissemination – that of the digital. Using the concepts that he introduced in combination with Heidegger’s contributions, I will re-examine and critique his original discussion in order to further develop the meaning of the “Experience of the

Reproduction” illustrated by the semiotic square in Appendix B. This discussion will question if it is only the ‘real’ that can carry the ‘aura’ and wonder that we prize so highly from direct experiences with art.

Benjamin saw the proliferation of reproduced images of artworks as contributing to the loss of a sense of history.⁴⁹ According to this point of view, the reproduction could never gain enough power (or authenticity), through its experience, to venture upwards from the axis of information to that of materiality on the semiotic square. Benjamin did not deplore the rise of mechanical reproduction, which he realized could not be stopped. He believed that technology and mass production promoted the loss of a certain spiritual quality and the devaluation of the status of objects: “That which withers in the age of mechanical reproduction is the aura of the work of art.”⁵⁰ Benjamin’s understanding of the transformation that the art object undergoes in its reproduction and dissemination can be connected to Heidegger’s theories about existential experience. In fact, I see Heidegger’s writings as providing a means to validate the auratic quality of even a digital reproduction.

In “The Origin of the Work of Art” Heidegger deals with the notion of the essence of a work of art, that has parallels, in my mind, to what Benjamin called ‘aura’. Heidegger sees essence as that which springs forth from the origin of the work of art. It was Benjamin who insisted that for an artwork to have an auratic quality, it must be anchored in its original place and time. But I believe that Heidegger would disagree with Benjamin on this stance, because he saw that it was not only the presence of the original that inspired an auratic reception, but that art “comes-to-presence” in the memory of the object. Heidegger argued that the true character of any object is derived not from direct contact with it, but from the experience of the process of apprehension – the understanding of the object.⁵¹

The problem with Benjamin's thesis is that he confuses the conditions of the physical and the cultural. He fails to recognize or accept that art can still have authentic aesthetic qualities even after its physical alteration. To him, the copy threatens the authenticity of the original. However, mechanical reproductions really have nothing to do with authenticity, for it is the cultural context of the time, which affects the perspective of the viewer that plays the bigger role in determining what is and what is not authentic.⁵² In fact, mechanical reproductions may actually define, even affirm the authentic value of the original because they are understood as distinct copies. Benjamin misconstrues what the arts of the pre-industrial era made possible. Now, with the luxury of distance and perspective, Benjamin's ideas about the potential of technology seem inapplicable.

In recognizing the limitations of Benjamin's view of technology and incorporating Heidegger's position on the importance of experience, the meaning of the digitized art object shifts closer towards materiality on the semiotic square. The status of the work of art online moves from an inauthentic copy to a symbol of a symbol capable of bringing about an authentic experience based on the memory and interactivity of the user.⁵³ This alteration in significance throws into question whether the simulacrum, unlike the mechanically reproduced copy, is capable of corrupting the aura of the original. The answer again is no, because although the simulacrum does challenge the very notion of copy and model, it does so by becoming an entity in its own right, capable of evoking its own individual auratic experience, separate from the original. I am proposing in this section, that the digital image within the 'virtual' environment of the WWW is indeed a simulacrum, and even though it appears similar to the original in visual terms, its fundamental differences can inspire a whole new set of connotations for each viewer.

Heim: Optimism for the Future of Technology

Michael Heim's theories play an integral role in this discussion because they are derived, yet move beyond, the nostalgic historical grounding of the thoughts of Baudrillard, Heidegger and Benjamin. Heim does this by proposing that it is our destiny to redefine ourselves, thereby counteracting the fear that human development will unknowingly become stagnant. He takes both Heidegger's and Benjamin's arguments into consideration but confronts them outright by stating that the reproduced image should not bear the responsibility to represent nature or reality but that it does contribute to the awareness of our own human experience with only the object represented in the image.

Heim takes Baudrillard, Heidegger and Benjamin with a grain of salt. He accepts their fears of technology as valid and not just as a superficial reaction of the time. He even defends Heidegger's aversion to technology and credits him for never making judgments – good or bad. He sees origins and processes as important aspects for the role they play in unmasking assumptions about current forms of knowledge and practices. As Beverly Jones clarifies in her essay about the origins of technologically mediated art: "Those who originate and use new forms of art and technology embed their assumptions in the new symbolic and material forms."⁵⁴ Heim looks at technological innovations with optimism, seeing the positive potential in projects like the *VMC*.

Heim's views on virtual reality provide a release from the constraints and fears that Baudrillard, Heidegger and Benjamin associate with the sweep of technology: "Virtual worlds do not represent the primary world. [...] Denouncing artificial worlds as distractions from the real world is just as off-balance as wanting to dissolve the primary world into cyberspace."⁵⁵ In his work, Heim demonstrates that we can't expect or fear the replacement of the real object or gallery space with a digitally reproduced facsimile. The

real will never be erased or abandoned for the 'virtual'. It's just another method for experiencing the work of art with, when embraced, the additional benefits of the digital environment. These beneficial properties will be the focus of Chapter Three but echo such concepts as democratization and decentralization of resources and provide for open fora for participatory discussions amongst viewers of possibly very different viewpoints.

In addition, Heim, unlike Heidegger, values the fact that human change comes with an ontological shift that happens under our feet, without us even knowing that it has taken place.⁵⁶ The ontological shift refers to a change in the whole context in which our knowledge and awareness are rooted: "Knowledge in a scientific sense can lag only slightly behind this world transformation because knowledge becomes transformed in the process."⁵⁷ In this case, the computer and the concept of the *VMC* act as the agents of change. Heim teaches us that by recognizing both as components in our knowledge process and not as dangerous rivals to human intelligence, we will actually deepen our self-awareness. So what Heim manages to understand from his viewpoint in the 1990s, that Baudrillard, Heidegger and Benjamin could not, is that human beings won't stand by passively and be overwhelmed by the wake of technology. Even as the digitally reproduced image moves upwards toward the realm of the material and gains the power of simulacra in its attenuation from reality, humans, as interactive coping beings will maintain the control over their individual authentic experiences.

Conclusion

There are two opposing theories on how to classify art objects: one as (scientific) cultural artifacts, the other as aesthetic works of art. The current trend in museum culture follows this rift in thinking and defends its collections of originals by negating the value of the digital (scientific) realm. What my discussion, however, has shown thus far is that

the digital image of a work of art may actually transcend both categories of art and science. Using the framework of Greimas' semiotic square, this chapter has illustrated the transition between these opposing positions. The digital image is seen as cross-disciplinary – aesthetically present yet based on numeric code. And, through its engagement with the properties of the digital environment it becomes more and more like a simulacrum, capable of inducing legitimate experiences on its own. The following chapter demonstrates the potential of these digital images to affect the experience of the 'virtual' museum visitor, once they are integrated into a 'virtual' exhibition that is sensitive to the properties of the digital medium.

The importance of origins will continue to influence the new electronic forms that are used to create the *VMC*. Past cultural patterns don't just disappear from the material and symbolic forms observed on-screen. New technologies don't have to be divorced from old ones. The digital reproduction of a work of art may in fact provide a means to connect these two poles instead of severing the cultural past from the present. With this ever-present connection between new technological forms, of which digital images is one, and cultural origins of past forms, I cannot help but see the experience of the reproduction on the screen as authentic in the minds of the viewer: "Authenticity now lies with the viewing experience rather than with the presence of the art object."⁵⁸ The examples that I used to illustrate my point of view support this statement. From Heidegger to Heim, importance has and will continue to be placed on the experience of the individual.

ENDNOTES

¹ Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in Hannah Arendt, ed. *Illuminations*, Harry Zohn, trans. (New York: Harcourt Brace Jovanovich, 1968), 218.

² Martin Heidegger, "The Origin of the Work of Art," in *Poetry, Language, Thought*, Albert Hofstadter, trans. (New York: Harper & Row, 1971), 19.

³ Selma Thomas and Ann Mintz eds, "Introduction," *The Virtual and the Real: Media in the Museum*. (Washington, DC: American Association of Museums, 1998), viii.

⁴ Richard Wollheim, "Seeing-as, Seeing-in, and Pictorial Representation," *Art and its Objects*, 2nd edition. (Cambridge: Cambridge University Press, 1980), 217.

⁵ Authenticity, even in terms of a physical art object is a debatable topic. For an informative view of the term 'authenticity' see David Phillips, *Exhibiting Authenticity*, (Manchester and New York: Manchester University Press, 1997).

⁶ Frank A. Tillman and Steven M. Cahn, *Philosophy of Art and Aesthetics: From Plato to Wittgenstein* (New York, Evanston, London: Harper and Row Publishers, 1969), 373.

⁷ Paul Oskar Kristeller's thoughtful examination of the historical presence of art in his essay, "The Modern System of the Arts," in *Renaissance Thought II: Papers on Humanism and the Arts* (New York, Evanston, and London: Harper Torchbooks, 1965), which lists examples of art from the ancient Greeks to the 19th century, laid out the plethora of examples of what art has been throughout history, encompassing everything from hard science to the craft of weaving textiles.

⁸ Jean Baudrillard, *Simulations*, Paul Foss, Paul Patton and Philip Beitchman, trans. (New York: Semiotext(e), 1983).

⁹ What John Berger termed the "bogos religiosity" of art in his reading of Benjamin's essay in *Ways of Seeing*. London: The British Broadcasting Corporation and Penguin Books, 1972.

¹⁰ This is debatable because of the physical makeup of a digital image versus that of the conventional light and chemically produced photograph. This issue and its implications on the experience of the digitized image will be dealt with more throughout this chapter.

¹¹ Algirdas Julien Greimas, "The Interaction of Semiotic Constraints," *On Meaning: Selected Writings in Semiotic Theory*, Paul J. Perron and Frank H. Collins, trans. (Minneapolis: University of Minneapolis Press, 1987), 48-62.

¹² Fredric Jameson, "Foreword," in A.J. Greimas, *On Meaning*, xvi.

¹³ The system of binary oppositions used by Jameson to classify objects is challenged by many now, including James Clifford in his essay "On Collecting Art and Culture," in *The Predicament of Culture: Twentieth-Century Ethnography, Literature, and Art*, (Cambridge, Massachusetts, and London: Harvard University Press, 1988), 215-251. I use Clifford's contentions as a model for my exploration of 'real' versus 'virtual'.

¹⁴ The digital image distinguishes itself from the real quadrant through its association with the 'virtual' quadrant, and is in fact prevented from attaining the status of the real by the audience's reception of it as inauthentic. This differs from an analogue reproduction, which may come close to the status of the real quadrant through the audience's evaluation of its replication process. As a result, analogue reproductions can never achieve the condition of simulacrum because of their dissociation from hyperreality.

¹⁵ The physical characteristics of real art objects, as opposed to reproductions in any form, are quite obvious and do not warrant further explanation here.

¹⁶ Definition of Pixel: An abbreviation for picture element. The minimum raster display element, represented as a point with a specified colour or intensity level. One way to measure picture resolution is by the number of pixels used to create images. Microsoft, "Glossary of Common Terms," *Microsoft Support Website*. 2001. <http://support.microsoft.com/support/kb/articles/Q108/8/03.asp> (15 May 2001).

¹⁷ William J. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-Photographic Era* (Cambridge: MIT Press, 1992).

¹⁸ Definition of Raster Graphics: Images defined as a set of pixels or dots in a column-and-row format. Also called bit-mapped graphics. Microsoft, "Glossary of Common Terms," *Microsoft Support Website*. 2001. <http://support.microsoft.com/support/kb/articles/Q108/8/03.asp>, (15 May 2001).

¹⁹ Mitchell, *The Reconfigured Eye*, 5.

²⁰ Baudrillard, *Simulations*, 2.

²¹ Gilles Deleuze, "Plato and the Simulacrum," Rosalind Krauss, trans. *October*, no.27 (Winter 1983).

²² Peter Lunenfeld provides a comprehensive list of ways that an electronic image can be manipulated: "Because the digital image is composed of discrete pixels that have mathematical values assigned to them, the whole of the digital image can be shifted by modifying the definitions given to those pixels. The computer allows the artist to morph, clone, composite, filter, blur, sharpen, flip, invert, rotate, scale, squash, stretch, colorize, posterize, even swirl an image around a single point, making the photograph look like it is being sucked into a black hole." Peter Lunenfeld, *Snap to Grid: A User's Guide to Digital Arts, Media, and Culture* (Cambridge, Massachusetts, London: The MIT Press, 2000), 60.

²³ *ibid.*, 60.

²⁴ Under the rubric of Plato's cave and Heidegger's fear of technology, Florian Rotzer in his essay "Images Within Images, or, From the Image to the Virtual World," in Timothy Druckrey, ed. *Iterations: The New Image* (Cambridge, Mass, and London: The MIT Press, 1993), pursues the idea of our inability to see and recognize what we know. He warns that the outcome of this path would result in the use of images that have no physical presence at all – not even numerical coding. He is thinking forward to the time when Virtual Reality systems will replace the microcomputer in homes and will go as far as imprinting colour-images directly upon the retina of the human eye, thereby removing the need for any output devices at all. It's interesting to think of the implications of such a development for the arts.

²⁵ Roger F. Malina, "Digital Image – Digital Cinema: The Work of Art in the Age of Post-Mechanical Reproduction," *Leonardo: Digital Image – Digital Cinema, Supplemental Issue* (1990), 33. Although this quotation refers to artwork and not reproductions, it is relevant to this discussion because it illustrates the significant physical difference between real art objects and digital ones.

²⁶ The digital image of a physical object takes on the characteristics of a simulacrum, over that of a conventional photograph of the same object, because of the properties inherent in the digital environment. This issue, along with the properties of the digital environment, will be discussed further in Chapter Three in relation to two of the 'virtual' exhibitions hosted on the *VMC*.

²⁷ Definition of JPEG: Joint Photographic Experts Group. A working committee under the guidance of the International Standards Organization (ISO) that is attempting to define a proposed universal standard for the digital compression and decompression of still images for use in computer systems. Microsoft, "Glossary of Common Terms," *Microsoft Support Website*. 2001. <http://support.microsoft.com/support/kb/articles/Q108/8/03.asp> (15 May 2001).

²⁸ GIF on the other hand, can only store 8 bits per pixel (256 or fewer colours). JPEG also loses far less information than GIF images in transfer situations. Definition of GIF: (Graphics Interchange Format) A popular bitmapped graphics file format developed by CompuServe. It supports 8-bit colour (256 colours) and is widely used on the Web, because the files compress well. GIFs include a colour table that includes the most representative 256 colours used. For example, a picture of the forest would include mostly greens. This method provides excellent realism in an 8-bit image. The Business Technology Network, "TechEncyclopedia: More than 20, 000 IT terms," *TechWeb*. 2002. <http://content.techweb.com/encyclopedia> (15 May 2002).

²⁹ Definition of Resolution: Number of pixels per unit of area. A display with a finer grid contains more pixels and thus has a higher resolution, capable of reproducing more detail in an image. Microsoft, "Glossary of Common Terms," *Microsoft Support Website*. 2001. <http://support.microsoft.com/support/kb/articles/Q108/8/03.asp> (15 May 2001).

³⁰ However, this is really an irrelevant point when considering that the maximum resolution of a standard screen is limited to 72X72. The important thing to remember is that it is always possible to degrade an image, rather than upgrade its quality. Hence the reason that the images are scanned at such a high quality – making them suitable for other sorts of reproduction.

³¹ Definition of Lossy Compression: The original data is not completely recoverable. Although image quality may suffer, many experts believe that up to 95 percent of the data in a typical image may be discarded without noticeable loss in apparent resolution. Microsoft, "Glossary of Common Terms," *Microsoft Support Website*. 2001. <http://support.microsoft.com/support/kb/articles/Q108/8/03.asp> (15 May 2001).

³² Meaning that small changes in colour are perceived less accurately than small changes in brightness. Microsoft, "Frequently Asked Questions about JPEG," *Microsoft Support Website*. 2001. <http://www.faqs.org/faqs/jpeg-faq/part1/> (15 May 2001), 1.

³³ I resolve this situation later in this chapter and in Chapter Three when Janet Murray's theorization of the digital is introduced.

³⁴ The most common size of personal computer monitors in North American homes in 2001 was the 14-inch, but the most popular seller was the 17-inch. Michael Gowan, "How It Works: CRT Monitors," *PCWorld.com*. 2001. <http://www.pcworld.com/hereshow/article/0,aid,15765,pg,2,00.asp> (18 June 2002).

³⁵ One instance of this discussion can be found in James Elkins' article "What are we seeing exactly?" in *The Art Bulletin*, LXXIX, no. 2 (June 1997). In this article, Elkins criticizes the tendency of the discipline of art history to rely solely on reproductions for studying. Mostly, he outlines the various methods of copying, making sure to point out their shortcomings in accuracy. Although he doesn't explain the process of converting pictures originally made of pigment into images based on coloured light, the hierarchy of reproduction methods that he sets up in his essay is based on this factor. The ease with which coloured light, as opposed to pigments, can be adjusted when reproducing electronically, would be a major threat in Elkins' mind.

³⁶ Roland Barthes, "The Photographic Image," *Image, Music, Text*, Stephen Heath, trans. (New York: The Noonday Press, 1977), 16-17.

³⁷ Martin Heidegger, "The Origin of the Work of Art," in *Poetry, Language, Thought*, Albert Hofstadter, trans. (New York: Harper & Row, 1971).

³⁸ Martin Heidegger, "The Question Concerning Technology," in *The Question Concerning Technology and Other Essays*, William Lovitt, trans. (New York: Harper & Row, 1977).

³⁹ I am not suggesting that Heidegger ignores historicity. On the contrary, he embraces it by recognizing that historical drift tends to cover up the means with which we arrived at our present knowledge. Heidegger breaks with the nature of a unilinear path of history and shows that there can never be one absolute narrative.

⁴⁰ Eugene F. Kaelin, *Art and Existence: A Phenomenological Aesthetics* (Lewisburg: Bucknell University Press, 1970), 69. This line of thought is grounded in the Platonic notion that true understanding cannot be obtained by direct contact with an object, but through contemplating the memory of that object in the privacy of one's own mind.

⁴¹ J. M. Bernstein, *The Fate of Art: Aesthetic Alienation from Kant to Derrida and Adorno* (Cambridge: Polity Press, 1992), 109.

⁴² Heidegger, "The Origin of the Work of Art," 19-20.

⁴³ Which, if designed according to the properties and criteria theorized by Janet Murray and Suzette Worden described in Chapter Three, this 'virtual' exhibition will legitimately exist independently from the constraints of exhibitions in the physical world.

⁴⁴ Michael Heim, "The Computer as Component: Heidegger and McLuhan," *Philosophy and Literature* 16, no. 2 (October 1992), 313.

⁴⁵ There have been many theorists who have considered and contradicted Heidegger's position on technology. Beverly Jones is one who incorporates Heidegger's reaction to technology into a discussion of the variety of views that scholars might take on the future of technology. "Technological development brings unexpected results. In constructing scenarios for the future, writers may be optimistically visionary, pessimistically visionary or unable to envision future effects. In any case, the visions remain rooted in their experience and understanding of the status quo." Beverly J. Jones, "Computer Graphics: Effects and Origins," *Leonardo: Digital Image – Digital Cinema, Supplemental Issue* (1990), 29.

⁴⁶ Although rooted in his older point of view, this line of thought opposes his earlier, pre-war ideas, when he promoted the notion of subjective experience over the direct perception of physical objects.

⁴⁷ Heidegger's fear of the power of technology parallels that of the current art historical community's rejection of and skepticism about the efficacy of digital images for the study (appreciation) of art.

⁴⁸ The idea of an object having the potential to be shifted between zones and relocate its power is developed by James Clifford in *The Predicament of Culture: Twentieth-Century Ethnography, Literature, and Art* (Cambridge, Mass., and London: Harvard University Press, 1988), 226.

⁴⁹ This conclusion is similar to Heidegger's fear of the loss of historical awareness.

⁵⁰ Benjamin, "The Work of Art in the Age of Mechanical Reproduction," 221.

⁵¹ Douglas Crimp furthers this idea by stating that 'aura' in the post-photographic era is a "function not of presence but of absence, severed from the originator, from authenticity. In our own time the aura has become only a presence, which is to say a ghost." In stating this, Crimp supports the idea that the simulacrum, as something severed from the original, does in fact carry its own sort of aura in the post-photographic era. Douglas Crimp, "The Photographic Activity of Postmodernism," *On the Museum's Ruins* (Cambridge: MIT Press, 1993), 124.

⁵² This idea is based on the theories of Wolfgang Iser and Hans Robert Jauss who explain that the reception of literature (and artwork) is entirely dependent on each individual's "horizon of experience" at any particular point in time. For more on the theories of Reader-Response Criticism and Reception Theory, see Wolfgang Iser, *Prospecting: From Reader Response to Literary Anthropology* (Baltimore: Johns Hopkins

University Press, 1989) and Hans Robert Jauss, *Toward an Aesthetic of Reception*, Timothy Bahti, trans. (Minneapolis: University of Minnesota Press, 1982).

⁵³ These are conditions which can not be achieved by analogue copies because they lack the connection with the digital environment which enhances the status of the digital image.

⁵⁴ Beverly J. Jones, "Computer Graphics: Effects and Origins," *Leonardo: Digital Image – Digital Cinema, Supplemental Issue* (1990), 21.

⁵⁵ Michael Heim, *Virtual Realism* (New York and Oxford: Oxford University Press, 1998), 47-48.

⁵⁶ Myron E. Krueger explains this shift in the Foreword of Heim's book: "In the world of the book, the truth is an immutable thing to be captured and recorded. But as the age of electronic information matures and the age of artificial experience commences, we recognize that we are on a journey and while we may question whether the next destiny is better than the place we left, we realize that the journey is ours, for we must see what it is – that what we have made, makes us." Myron E. Krueger, "Foreword," in Michael Heim, *The Metaphysics of Virtual Reality* (New York and Oxford: Oxford University Press, 1993), ix.

⁵⁷ *ibid.*, xiii.

⁵⁸ Dot Tuer, "On Questions of Museum Practices and New Technologies," *Muse* XVIII, no. 2, (2000), 24.

CHAPTER THREE

EVALUATING THE VMC AS A DIGITAL ENVIRONMENT

The partners in the Virtual Museum of Canada are committed to producing content that engages diverse audiences through the quality of both the research and the presentation. They recognize that the digital environment offers the opportunity to create experiences that are not feasible in physical space and that it demands innovative approaches.¹

—CHIN, Operating Principles, 2000

Chapter One laid the groundwork for understanding how the VMC came to be, from its start as a limited access database of textual records describing Canada's natural science, material history, and fine and decorative arts collections, to an integrated and ever-expanding structure of heritage information universally available online. Chapter Two developed the theoretical framework of this thesis, founded upon the notion that the experience of the individual is key to how an art object will be received, whether through direct observation of the object or through viewing it in a form of reproduction. I also introduced in Chapter Two the idea that when this reproduction is displayed in the digital environment, it takes on unique properties that invoke an experience distinct from any other form of observation, yet still a legitimate experience that is dependent for meaning on the "horizon of experience" of each viewer.

In Chapter Three I will propose that when the digitized object takes on the presence of a simulacrum in the digital environment, by moving toward the 'virtual' quadrant along the axes of attenuation and hyperreal, it contributes to the authentication of the 'virtual' exhibition as a whole. Through a design that is sensitive to the properties of the digital environment, these 'virtual' projects take on a metaphysical presence different from the real thing or any analogue form of reproduction. It is because of the inherent and unique

qualities of this digital environment that ‘virtual’ exhibitions cannot and should not be measured against the standards afforded to conventional exhibitions, physical objects and/or analogue representations. Through an application of the knowledge gained in the previous chapters, Chapter Three will examine the experience created by the *VMC*, through an analysis of two of its online exhibitions, evaluated according to the unique properties and standards of the digital environment, as theorized separately by Janet Murray and Suzette Worden. By paying close attention to the structure of the website, this chapter will explore the *VMC* concept and evaluate its effectiveness as a digital environment. I will attempt to answer the obvious questions that arise when discussing the topic of the *VMC*: What is meant by ‘virtual’? What is a museum? What does it mean to be the *Virtual Museum of Canada*? And what makes a ‘virtual’ exhibition good or bad?

It is not my intention here to describe in words, the structure and offerings of the *VMC*: that kind of information is readily available on the site itself.² What I attempt in this third chapter is the analysis of its current realization, highlighting the benefits and drawbacks of the general construct, as well as evaluating two of the ‘virtual’ exhibits that are now active on the site: a production of the Tom Thomson Memorial Art Gallery (TTMAG) entitled, *Group of Seven*³ and CHIN’s own contribution, *Panoramas: The North American Landscape in Art*.⁴ The analysis will help to illustrate and test the theories explored in Chapter Two and discuss some of the many implications of these exhibitions for the study of the history of art.

Along with incorporating the ideas discussed in the previous chapters, this section of the thesis will draw upon the theoretical framework developed by Janet Murray, in her book *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*,⁵ to evaluate the aesthetic properties inherent in the digital environment. Combining Murray’s framework

with Suzette Worden's more pragmatic WWW evaluation strategies in her essay "From the Expository to the Declarative: Interpreting the World Wide Web"⁶ provides a basis for the critical analysis of the *VMC*, allowing me to arrive at conclusions about the pertinence and consequence of the *VMC* in particular and 'virtual' projects in general, to the cultural community.

A name like the *Virtual Museum of Canada* carries with it a lot of social and political baggage. The social construction of projects like these dictates how they will be designed, used, and managed. What does *VMC* imply? Is it seen as merely another project of the federal government created to appease the changing needs of the public it serves, or does it fulfill its role as a geo-political space that will actually act as a meeting place for diverse communities and a venue for the presentation, albeit in the 'virtual' space of the WWW, of extensive collections of artifacts? In order to decipher some of the messages that something like the *VMC* sends out, an analysis of the terms in the name will prove valuable.

'Virtual': What does it mean?

The term 'virtual' has been overused and misused since the onslaught of the computer revolution in the 1970s. The philosopher, Michael Heim bases his book *Virtual Realism*⁷ on this very condition and contends that 'virtuality' need not refer to everything and anything with an electronic core. He explains that Virtual Reality (VR) transubstantiates but does not imitate life. Heim reminds the reader that VR is very different from what most people assume, and that very few people have actually experienced authentic forms of VR. True VR would make visiting an exhibition a completely immersive experience, one that involves more than just looking at the art objects. As Heim explains: "Art here penetrates surface perceptions and throws the mind

into a mood akin to philosophy without, however, relying on concepts or explanations.”⁸ Although Heim, in his book, refers to VR in the fullest sense,⁹ his observations can be used to explore the implications of more limited projects like the *VMC* and to project future directions of WWW exhibitions.

To clarify Heim’s concept and contextualize it within the framework of this thesis, Gordon Graham’s more straightforward explanation of the term ‘virtual’ in his book *The Internet: A Philosophical Inquiry*,¹⁰ is useful because it sheds light on Heim’s contribution. Graham explains that “the virtual is not a semblance of something else, but an alternative to it – an alternative type of entity with properties both similar and dissimilar to that with which it is contrasted.”¹¹ Graham’s explanation is reflected throughout this thesis because it confirms that the success of the digital medium of the WWW for the display of artwork depends not on the ability of this medium to replicate reality but in its capacity to form alternate and equally affective realities. Further understanding of the term ‘virtual’ is informed by Janet Murray’s conceptualization of the four essential properties of digital environments. In *Hamlet on the Holodeck* Murray proposes that “digital environments are procedural, participatory, spatial, and encyclopaedic. The first two properties make up most of what is meant by the vaguely used word *interactive*; the remaining two properties help to make digital creations seem as explorable and extensive as the actual world, making up much of what we mean when we say that cyberspace is *immersive*.”¹²

Perhaps the most significant connotation of the term ‘virtual’ in the case of the *VMC* is that it evokes free and wide-ranging access to collections and associated information via the WWW. Accessibility has, from the start been a key goal for CHIN, the host of the *VMC*.¹³ The chronology of CHIN’s development – from its beginnings as NIP

in 1972 – demonstrates this drive to provide access to the collections of data. The discussions in Chapter Two imply that the experience of the individual and the dissemination of cultural information in accessible forms are critical for the development of an informed public in a civil society. The *VMC* is a logical and effective progression to fulfill CHIN's original mandate to make Canada's heritage collections more accessible, thus encouraging the formation of an "heritage literate" civil society.

Unfortunately, however, the pervasive abuse of the term 'virtual' in relation to art and culture on the WWW has raised users' expectations of what is actually possible, to a level that may not be attainable at this point in time. Its presence in the title of CHIN's online creation not only signifies, to some degree, the electronic and Internet-based format of the portal, but also implies the substitution of the 'virtual' for the real. The truth of this situation accounts for the negative reception that these sorts of initiatives produce among many museum professionals. In appearance, the *VMC* threatens the fundamental philosophies of the conventional museum, which accounts for the fear and resentment that it incites in the museum community. Michelle White alludes to this situation in her article "Where is the Louvre?"¹⁴ stating that: "It is the integrity of the traditional museum, rather than the continued preservation of the reproduction or 'virtual' object, which is in danger."¹⁵ CHIN's use of the term 'virtual' is an obvious attempt to take advantage of the current advocacy of high-tech as a panacea in the knowledge economy, which puts its *VMC* initiative in line to receive funding under federal government priorities. However, I think that its use here attests also to the fact that there is a general shortage of sufficient and more precise terminology to describe these sorts of projects, which should always be recognized as different from any real exhibition.

In conjunction with the term ‘museum’, the meaning of ‘virtual’ starts to evolve into something more complex. White proposes that a ‘virtual’ museum “is a hyperreal¹⁶ structure or a synthetic ‘space’ in which the borders between illusion and reality are obscured; it is produced from the hybrid view of many museums. These web structures are always in a provisional state because they are continually growing, changing and disappearing.”¹⁷ This leads to an analysis of the next term used in the title of CHIN’s *VMC* creation, that of ‘museum.’

Museum: Place or Space?

Why do visitors come to the museum? Recent audience research suggests that they come for the social experience of interacting with other museum visitors in the presence of art objects.¹⁸ However, the traditional answer to this question is that they come in search of ‘things’ – real artifacts, real works of art, real objects.¹⁹ In addition to this, visitors come to the museum in search of professional and knowledgeable interpretation of these objects. As discussed in Chapter Two, contextualization of the art object through the written word, even in association with a reproduced image, has the capacity to reinstall the auratic experience of that object. This is all well and good, but it doesn’t explain what a museum is, let alone ask whether there can be such a thing as a ‘virtual’ museum. So what is a museum? The conventional definition from the Collins English Dictionary defines a museum as a place or building where objects of historical, artistic, or scientific interest are exhibited, preserved, or studied. The same Dictionary defines a gallery as a room or building for exhibiting works of art.

And, according to the Canadian Museums Association (CMA), which serves non-profit museums and art galleries in Canada, a museum should conform to this lengthy definition:

A non-profit, permanent establishment, exempt from federal and provincial income taxes, open to the public at regular hours, and administered in the public interest, for the purpose of collecting and preserving, studying, interpreting, assembling and exhibiting to the public for its instruction and enjoyment, objects and specimens of educational and cultural value, including artistic, scientific (whether animate or inanimate), historical and technological material.²⁰

Carol Duncan, in her book *Civilizing Rituals: Inside Public Art Museums*,²¹ sees the museum as a ceremonial monument that stimulates complex experiences involving the architecture, programmed displays of art objects, and highly rationalized installation practices.²² Regardless of the source, the definitions consistently imply that to exist, these institutions require a physical building or space with material objects for display.

It was stated earlier, with reference to White's article, that the terms 'permanent establishment' and 'architecture' cannot refer to something in cyberspace²³ because of the ephemeral nature of the WWW (sites can exist one day and disappear the next with no real form of accountability). Therefore, it could be simply stated that the CMA definition, as it stands now in 2002, is not broad enough to encompass the existence of a 'virtual' museum. However, this reveals a real issue found in the argument of this chapter, that the majority of 'virtual' sites existing today, although always possessing the ephemeral properties of the digital environment, continue to rely upon the conventional metaphors of architecture and collections. This is a problem because, as Graham and I both contend, display on the Internet should not be considered as a mere simulation of the 'real', but rather as simulacrum.²⁴ Only the producers of 'virtual' art displays in 'virtual' museums who take advantage of the properties of the digital environment, as defined by Murray, and adhere to the standards of production that Worden prescribes, will successfully realize the advantages of the 'virtual' museum.

Unfortunately, the majority of the museum and gallery websites linked to the *VMC* reinforce the conventional notion of the museum as a permanent edifice and try to evoke metaphysically the materiality of a physical institution. This condition is evident even on the opening page of the *VMC*, where different coloured arches, presented using *Flash* graphics, signify the ‘real’ institutions that this website will serve, and echo the well known classical temple façade (Figure 1).²⁵ The ritualistic space of the museum, which Duncan describes, is further evoked in the *VMC* by the adoption of the metaphor of the most familiar kind of public museum, the encyclopaedic museum, dedicated to a broad sweep of the natural, material, and art histories. The Louvre is the prototype for this kind of museum committed to the history of art.²⁶

I am arguing here that the *VMC* is presenting itself as a ‘real’ museum: it does have ritualistic similarities to a physical art institution; visitors to the site, as to ‘real’ museums, shift their states of receptivity in order to absorb the knowledge that is presented to them through the exhibition of digitized objects. And, in presenting itself “architecturally”, the *VMC* evokes a “bricks and mortar” entity that acts to enhance the cultural authority of the project. However, in adhering to the conventional symbols of the museum, ‘virtual’ projects, like most on the *VMC* site, deny the immersive and interactive²⁷ qualities that give ‘virtual’ projects their potential and power.²⁸ Through its evocation of ‘real’ spaces through metaphor, the *VMC* site limits its ‘virtual’ potential within the digital environment – a condition that I am critical of in the evaluations that follow.

The *VMC*’s appropriation of the characteristics of a ‘real’ museum raises some important questions about the concepts of authority, possession, and access. André Malraux makes some useful observations in his book *Museum without Walls*²⁹ where he commends the use of the photograph, and reproductions in general, for the dissemination

of art: "A museum without walls has been opened to us, and it will carry infinitely farther that limited revelation of the world of art which the real museums offer us within their walls: in answer to their appeal, the plastic arts have produced their printing press."³⁰ The *VMC*, through unlimited access to the information it supports, promotes pluralistic interpretations of the collections it displays; Malraux would see it as a natural extension of his proposal.

The conditions required to foster such freedom of interpretation are akin to those of the postmodern museum theorized by Hooper-Greenhill in her book *Museums and the Shaping of Knowledge*.³¹ Hooper-Greenhill describes the postmodern museum as a place where new technologies would be employed to fragment the singular meaning of artifacts and to introduce many perspectives, no longer relying only on the perspective of the curator.³² The attributes that make the *VMC* 'postmodern' in the sense of Hooper-Greenhill's argument, are derived from the fact that it was created by compiling data from many collaborating museums. In this regard the *VMC* is a meta-museum, open to and formed by multiple points of view. Hooper-Greenhill develops this idea of the meta-museum further when she states that: "There is no essential museum. The museum is not a pre-constituted entity that is produced in the same way at all times.... Not only is there no essential identity for museums, ..., but such identities as are constituted are subject to constant change as the play of domination shifts and new relations of advantage emerge."³³ Indeed, Hooper-Greenhill's open-minded views about the ever-changing forms that museums take may persuade even the most conservative museum-goer to accept the legitimacy of the 'virtual' museum and the *VMC*.

So what are the implications of claiming that the *VMC* is a 'real' museum or even a meta-museum, if there are no permanent collection, no building, and no material objects?

Is the *VMC*, and by extension, any ‘virtual’ art exhibition establishing a new paradigm for the museum? Has Hooper-Greenhill’s postmodern museum been surpassed and rendered obsolete? Or has the paradigm of the museum come full-circle, back to something akin to the Cabinet of Curiosities, promoting the revival of the formation of knowledge by seeking diverse personal and professional analogies in collections? Will this meta-museum have to compete with the individual “bricks and mortar” museums containing material collections? And, will the individual museums participating in the *VMC* lose their own identity in this trend towards advancing global access to their culturally specific resources? Do cultural, social and national identities really make sense in the domain of cyberspace? These questions will be attended to throughout the balance of this chapter, following a consideration of what it means to “nationalize the naming” of projects like the *VMC*.

The Internet and National Boundaries

Including “Canada” in the naming of any project suggests official sanction and the presence of federal funding. In the case of the *VMC*, both aspects are definitely present. On an international level, the presence of the country name evokes the official sanction of the state. For Canadian users, it can promote a sense of pride and ownership of the information presented: “Visitors virtually possess the museum by capturing it within their computer screen and reimaging its contents within their home.”³⁴ Sponsorship by the state carries with it the idea that Canada’s multicultural diversity will be reflected in the project, as will other federal policies like bilingualism.³⁵ This is where the challenges of meeting the expectations of the Canadian citizenry arise with regards to the general concept of the *VMC*, a situation that will be discussed in the following paragraphs.

Canadian governments have always considered the development of communication networks as a priority. The railway built in the 19th century is an obvious example. The vast extent of the country has stimulated solutions to connect isolated communities. The advent of the “information highway” has provided yet one more way for Canadians to solve the challenges of distance and separation. For instance, the federal government has initiated programs like the *Community Access Program* (CAP)³⁶ to allow more of the population access to the information on the Internet and *SchoolNet*³⁷ to enhance learning by connecting all 16,000 Canadian schools to high-tech resources and encourage the integration of information technology in learning.³⁸ The design of the *VMC* satisfies many Canadian government policies. It is an initiative to boost Canadian French language content on the WWW and form a meeting point for the diverse communities in Canada: “Probing what is Canada, through the collections and the accumulated knowledge within the museums will be an important feature of the *Virtual Museum*.”³⁹

Considering all of the time and resources spent on a project like the *VMC*, it begs the question: why is the advocacy of multivocal and multicultural Canadian culture and national identity so important to Canadian corporations, institutions and the population in general? The answer becomes clear upon realizing that the real threat is total homogenization of the Canadian market by English language American production. What is really at stake with the blurring of boundaries is the issue of sovereign identity: what makes Canadian culture Canadian? This threat has propelled the Canadian government to provide enormous amounts of support to promote Canadian content on the Internet.⁴⁰ In his reply to the throne speech in January of 2001, Jean Chrétien emphasized the importance of encouraging Canadian content when he stated: “In a globalized society, in a

universe of hundreds of channels, in the age of the Internet, it is more important than ever to support Canadian culture.”⁴¹

Ironically, the globalized Internet is being expected to present officially sanctioned Canadian content, regardless of the fact that this medium of dissemination effectively blurs the boundaries of nation states.⁴² The *VMC* epitomizes this tension between a nationalistic focus and an all-encompassing representation of multiple cultures. It aspires to provide access for any Canadian to local, regional, national, and intercultural collections. Its name implies a mandate to support content within national boundaries, while the project is presented and indeed promoted by its association with the role of a portal in the global environment of the WWW. Can the *VMC* accommodate both an inward (national) and outward (global) thrust, especially considering that it is really just a portal linking institutions and does not own any object per se?

The answers to these questions depend on the ability of the *VMC* to be accessed, understood, and appreciated by Canadians. In support of the *VMC*, I would argue that it can be seen as a solution to what George F. MacDonald calls a “fundamental issue” in Canada today: “If museums are to play a useful and relevant role in a multicultural society, they must be institutions that represent the viewpoints of all of their constituents.”⁴³ The distributed structure of the *VMC*, with content developed from the viewpoints and collections of many cultural institutions, is far better equipped than other forms of mediation (including “bricks and mortar” galleries and museums) to serve all Canadians. A project like this could not have been possible before the advent of the Internet and electronic imaging capabilities. And, the initiatives of the federal government to provide the entire population with free access, even high-speed access, to the WWW is

making the goal of universal accessibility within Canada's borders attainable in the near future.⁴⁴

Digital Environments: An Analytical Framework

Thinking about the constituent parts of the name *VMC* has expanded rather than focused what is meant by its name. Language and interpretation are subject to continuous change which has parallels with Michele White's definition of the 'virtual' museum: "The 'virtual' museum, because it is temporary, amorphous, and fragmented, is continually open to such new and contradictory readings."⁴⁵ The provisional condition of the *VMC* and its exhibition programme makes evaluation difficult: there are no physical objects to hold and no printed catalogue to put on the bookcase. However, these projects can be evaluated, and should be, using criteria developed to reflect the inherent qualities of the digital environment.

The authenticity, reliability and authorship of the information presented on the *VMC* and two of its 'virtual' exhibitions will be assessed using the Web-based standards proposed by Suzette Worden in her essay "From the Expository to the Declarative: Interpreting the World Wide Web". The interactive and immersive qualities of the *VMC* projects will be evaluated using the digital-specific criteria that Janet Murray develops in *Hamlet on the Holodeck*. Although both forms of assessment were conceived as separate initiatives, they have definite similarities and points of intersection where one method overlaps with the other. The evaluations that follow will demonstrate the usefulness of Worden's and Murray's assessment tools individually and combined. Included in Appendix C are three evaluation forms that tabulate the analysis of the *VMC*, its 'virtual' exhibition *Panoramas* and the TTMAG's (*Group of Seven*) contribution.

In her essay, Worden explains that the relational quality of the WWW, which allows the user to move from site to site via multi-directional hyperlinks, is one of its strengths. She considers the Web portal, or Information Gateway, as a significant development in the organization of content by providing subject-based entry points. Worden commends the potential of this medium to expand knowledge of visual culture, but she also cautions its users of the inherent challenges associated with using Web-delivered resources. The challenges that she describes relate mostly to the user's lack of proficiency in distinguishing fraudulent and unreliable material from authentic and legitimate information on the WWW. Worden compiles the results of her research on the assessment criteria openly available on the Internet, and concludes that critical evaluation and informed choice-making by the user are vital in making sense of this information space.

Worden's approach to evaluating information on the WWW is straightforward, based on questions which require concrete answers. Her criteria for assessment are clearly described in Appendix C but a short summary describing their application is useful here. The authority of the information presented is the first standard Worden lists in gauging the legitimacy of a website. A site has authority if its sponsor/producer is made clear to the user. The assessment of accuracy is the second criterion required for making informed judgments about the site. Accuracy refers to quality control and potential inaccuracies in the data supported on the site. Objectivity is the third issue for Worden, which relates to a lack of biased opinion and promotion in the information presented. The evaluation of currency is the fourth measure for legitimacy. Worden relates currency to the relevance of the information included – is the material kept current? The fifth criterion in Worden's list

is coverage, which she associates with the breadth of resources used to compile the information on that site.

Worden also describes two rhetorical styles – expository and declarative – that are used in writing for the WWW. She explains that the modular format of the declarative type is better suited for the fast-paced interaction promoted in this digital environment. It is in this recognition, of the interactive nature of the medium, that the initial connection is made between Worden's and Murray's analyses. Although Murray takes a more theoretical approach in evaluating the properties of the WWW and other digital products (e.g. CD ROMs), the characteristics that she deems inherent in this environment are evident in the more practical evaluation criteria of Worden. The evaluation forms in Appendix C illustrate how Murray's theoretical properties can be integrated with Worden's to create an analytical framework that is suitable to assess digital projects. In order to express Murray's ideas on a more concrete level, three sections – Links, Access, and Presentation and Structure – have been added to the tables in Appendix C, with notes indicating their association with the properties Murray attributes to the digital environment.

A separate discussion of Murray's contribution is still required here to understand its distinct role in the evaluations that follow. Murray associates four distinct properties – procedural, participatory, spatial, and encyclopaedic – with the digital environment. The procedural quality of the digital realm refers to the systematic and serial method of instructing the computer. This characteristic allows the computer programmer to organize instructions and data in a coherent yet dynamic way. And, it sets up a logical system that is recognizable and easily understood by computer users: "Procedural environments are

appealing to us not just because they exhibit rule-generated behaviour but because we can induce the behaviour. They are responsive to our input.”⁴⁶

Responsiveness enables the participatory nature of digital environments. More than merely encoding information in the form of yes/no decisions, contemporary software programs, especially games, use the procedural technology of the computer to create interactive responsive narratives by increasing the repertoire of variables that users can select from and by anticipating the actions of that user.⁴⁷ These two characteristics, the procedural and participatory, are what make the digital environment interactive. The procedural quality makes digital worlds easy to interact with and their participatory nature actually makes this an enjoyable activity, a point that hearkens back to what Heidegger feared and Heim understood about the seamless nature of technology: “Computer technology is so flexible and adaptable to our thought processes that we soon consider it less an external tool and more a second skin or mental prosthesis.”⁴⁸ Users have more agency in the interactive environment of a ‘virtual’ project like the *VMC*, especially when art objects are involved. Engaging with a ‘virtual’ exhibition makes the structure and control of the software program disappear.⁴⁹ By emphasizing the authenticity of the interaction with the object, the interface is hidden even further and offers the user the illusion of autonomy and control over the new technology.⁵⁰

Digital environments have the capability to represent navigable space, unlike any book or film. This property is what Murray deems spatial: “We recognize the fruit of all of these developments in our conceptualization of the digital domain as cyberspace, an environment with its own geography in which we experience a change of documents on our screen as a visit to a distant site on a worldwide web.”⁵¹ Furthermore, the metaphors used to describe this environment – website, site map – evoke topography in our

imagination. The spatial characteristic of digital environments is created by the interactive process of navigation, completely independent of the computer's ability to display geographic maps or communicate between faraway places.

The fourth property of the digital environment Murray theorizes is its encyclopaedic capacity to store infinite amounts of information: "It is as if the modern version of the great library of Alexandria, which contained all the knowledge of the ancient world, is about to rematerialize in the infinite expanses of cyberspace."⁵² However, this sheds light on a major drawback of the encyclopaedic quality of this environment. The 'limitless'⁵³ capacity of the 'virtual' space encourages the 'dumping' of large bodies of unstructured information. Murray explains: "Most of what is delivered in hypertext format over the World Wide Web, both fiction and nonfiction, is merely linear writing with table-of-contents links in it. Even those documents designed explicitly for digital presentation, both fiction and nonfiction, often require too much superfluous clicking to reach a desirable destination or so much scrolling that readers forget where they are."⁵⁴

The combination of spatial and encyclopaedic properties contributes to the immersive character of the digital environment. The user can be totally immersed in the digital construct of cyberspace because of the way humans perceive multiple computer screens as a navigable limitless space. The entire effect of the digital environment for those who interact with it is something completely different from any previously realized interactive space. And, it is because of this singular innovation that 'virtual' exhibitions of art have to be seen as alternatives to and not simulations of 'real' art displays.

Murray's conception of the digital environment is grounds enough to convince even the most skeptical opponents of 'virtual' displays of art, because she highlights the

environment's metaphysical, not just metaphorical existence. For example, even those theorists like Stephen Greenblatt, who hold authentic contextualization of art objects at the forefront of valid art exhibiting practices, should recognize that the frame of reference for 'valuable' and 'resonant' art display in cyberspace must be different from that of the real world. In his 1991 article "Resonance and Wonder," Greenblatt defines resonance as "the power of the displayed object to reach out beyond its formal boundaries to a larger world, to evoke in the viewer the complex, dynamic cultural forces from which it has emerged."⁵⁵ He laments the fact that traditionally art historians have been overly concerned with analyzing and interpreting the historical circumstances of aesthetic objects – doing so in the absence of the artwork's original context. Greenblatt contends that what this sort of 'traditional' practice does not accomplish is what he deems most significant: to convey the resonance that the work of art possessed in its original setting, before elaborate analyses had been extrapolated by historians. He would no doubt see productions like the *VMC* as yet another medium for art historians to make superficial contextualizations of art objects in hopes of recreating resonance, but really only achieving a sense of wonder in the viewer, due simply to the novelty of the medium of display.⁵⁶

According to him the reality of online viewing would involve the same sort of loss, perhaps more so, in the experiential factors of viewing art as when it is viewed outside its original context – temporal and spatial. So what sort of implications does Greenblatt's essay have for online exhibitions like those in the *VMC*? He suggests that a good exhibition is one that showcases objects with strong aesthetic appeal that in turn lead to a deeper understanding of their historical context: "A resonant exhibition often pulls the viewer away from the celebration of isolated objects and toward a series of implied, only half-visible relationships and questions."⁵⁷ In these terms, the *VMC* would most certainly

satisfy the demands of a resonant exhibition; but the fact remains that the relationships made in such an exhibition must rely only on digital images and not the artworks themselves.⁵⁸ In this context, the *VMC* only perpetuates the problem of creating a false sense of resonance, because the essence of artworks is most definitely lost when displayed as digital images.⁵⁹ However, following my discussion in Chapter Two which established the efficacy of the digitized image, the essence of the original artwork depends entirely on the audience's own horizon of experience to move the understanding of that object from digital copy to simulacrum. Once incorporated into the digital environment, the object as simulacrum has the ability to enhance the overall experience of a 'virtual' exhibition by playing its part in the complex design of an effective multimedia project.

What the discussion above suggests, is that the producers of projects like the *VMC* and digital art displays in general, must exploit the properties of the digital environment in order to move their audiences beyond recognition of mere difference towards an understanding and appreciation of new truths about artworks and their display. Murray writes that the next step in embracing the metaphysical virtuality of digital experiences is "to judge in what ways they are continuous with older narrative traditions and in what ways they offer access to new beauty and new truths about ourselves and the world we move through."⁶⁰ Producers of 'virtual' exhibitions for the WWW must understand that their projects need not be uncanny substitutes for the material world, but instead should take advantage of the differences and unique presence of this innovative medium. For example, they should realize that the digital images themselves have the potential to act as tools to promote further exploration by the visitor – yet another indication of the power of the simulacrum. Projects which embrace the digital properties, as described by Murray, will make a smoother transition along the horizontal axis of the semiotic square –

relieving them from the responsibilities of trying to find expression in the physical world of the real quadrant, by attenuating them towards the hyperreal existence of the 'virtual' quadrant. This focus on difference rather than similitude informs the evaluations that follow.

Evaluation of the *VMC* Site

As explained in the first chapter, CHIN functioned as what might be called a pseudo-portal⁶¹ from the beginning; the *VMC* is the culmination of this gateway idea. The *Flash* graphics on the opening page of the *VMC* site establish this gateway through an architectural metaphor (Figure 1). The graphics consist of eight archways, all different in colour, and each equipped with a hotlink to connect the user to the eight predominant sections of the *VMC* site: *VMC Exhibits*,⁶² *Image Gallery*, *Fun Games*, *Teacher's Centre*, *Find a Museum*, *Calendar of Events*, *My Personal Museum*, and *@Boutiques*. These eight sections are complemented by a *Search* function, a frequently updated *In The News* page, a *Sitemap*, general information in *About VMC*, a *Feedback* option; and a *Send a Postcard* feature.⁶³

The division of the *VMC* site into these eight sections prevents the visitor from viewing the entire site as one massive tourist "brochure" which would act merely to promote the programmes and collections of 'real' institutions, although that is a predominant function of several sections, specifically the *Find a Museum*, *Calendar of Events*, and *@Boutiques*. The eight sections provide access to information about member museums, images of artwork, 'virtual' exhibitions, and other reference material both inside and outside the *VMC* host site. The visitor to the *VMC* enters the site by passing through multiple archways, being tempted by thumbnail views of art objects, and reading small bits of introductory text. All of these items act to lure the viewer into a space which

promises to display authentic images accompanied by informed interpretations. Along with the images and textual supplements, the 'virtual' displays are enriched with multimedia features run through applications like *Real Player*, *Windows Media*, and *QuickTime*.⁶⁴

One of the defining features of the WWW is its web-like structure of practically limitless links. Without adequate direction this spatial and encyclopaedic limitlessness is overwhelming. The portal is meant to narrow the scope of the search to retrieve data from the Internet, by focusing on one specific subject area. The original CHIN collections management databases were designed to be encyclopaedic, but were limited to the collections held by the participating museums and galleries. Access too, was limited to CHIN's old clientele. However, the potential of the Internet changed the degree of possible access to these text-based databases documenting the collections of the participating institutions. The *VMC* is the next step in CHIN's commitment to accessibility. By taking the form of a Web portal, the *VMC* has expanded its encyclopaedic capabilities far beyond CHIN's original intention.

The participatory aspects of the *VMC* are also well conceived. The designers of the site made sure to make it responsive to users, through such options as the search engine and feedback loop, and particularly through features like *My Personal Museum*.⁶⁵ These features also increase the status of the *VMC* with reference to several of Worden's evaluation criteria. For instance, she would commend the *VMC*'s inclusion of options that promote feedback to the producers of the site, because these features contribute to the impression that the *VMC* site is a source of reliable, authoritative, and accurate information. However, the *VMC*'s complex structure and sheer size make the spatial and procedural qualities of the site confusing, generally reducing the viewer's level of

satisfaction with what Murray calls the immersive and interactive experience. The complexity of the *VMC* site is illustrated by means of a portal map (Figure 2). The main reason for the confusion that arises when interacting with the *VMC* site is the fact that CHIN set it up as both a website – hosting its own information and producing its own ‘virtual’ exhibitions – and as a Web portal – responsible for connecting users to resources off the *VMC* site and supporting the contributions of participating institutions.

In the case of the *VMC*, the portal feature actually broadens the contained spatial property of a single website to a point where the idea of delimited space becomes irrelevant. So although the *VMC* does organize enormous amounts of information, confusion still arises from the sheer spatial complexity of the *VMC* site itself, specifically when the user ventures into one of the eight sections available. The user can literally spend hours surfing through the seemingly infinite number of links. And like most websites, there is no indication of when the visitor leaves the domain of the *VMC* site. Murray would contend that the expansive spatial quality of the *VMC*, and I would argue of Web portals in general, can lead to a sense of being lost in cyberspace. According to both Murray and Worden, the responsibility of navigating this digital space would fall upon the users, who should verse themselves in the properties and indicators of this unique environment. As Worden explains, “One of the strengths of the Web, therefore, is the way the user’s movements are tracked through the colouring of links.”⁶⁶ However, inconsistencies in the manner with which each exhibition is marked on and accessed through the *VMC* site, and a general lack of directional information once directed off the *VMC* site, create a situation where even experienced users can begin to wonder where exactly in the WWW they are.

Because of this, challenges arise when navigating between the ‘virtual’ exhibitions that the *VMC* supports, regardless of whether the ‘virtual’ exhibitions are hosted on the *VMC* server or created by partnering institutions off the main site. The *VMC* does not exist as a ‘real’ building or place, but many of the exhibitions that it points to are associated with physical institutions. Furthermore, as was confirmed earlier in this chapter, the *VMC* definitely evokes an association with a physical museum by its appropriation of signifying “architectural” symbols (Figure 1). This mix of signs, the ‘real’ and the ‘virtual’, becomes quite disorientating, and the situation is complicated further by the fact that there is little or no explanation of the distinction between the *VMC* and off-site exhibitions.⁶⁷ The only way for a user to confirm his/her location is by the URL⁶⁸ displayed on their Web browser. The prefix of the URL remains the same when moving between exhibitions that are hosted on the *VMC* server, but changes completely when the outbound link takes the user to an exhibition that is hosted by a partnering institution.⁶⁹

The visitor’s experience is complicated further by the absence of standardized ways to access the different exhibitions. The majority of the links that connect the user to off-site locations provide the only way to access those projects, thereby preventing access to that particular exhibition even through the partnering institution’s website. No doubt, this condition is meant to control the entry of visitors to the *VMC Exhibits* and assure that the experience of entering is a ritualistic one.⁷⁰ Or, on a more practical level, this mode of access is a means to measure the performance of the site and justify its funding. Indeed, this strategy of preventing users from bypassing the *VMC* altogether is the primary role of the Web portal, its main purpose being to help organize by subject the masses of museum-related information that currently exists on the WWW and to introduce new material within an organized format.⁷¹

However, not every 'virtual' exhibition included on the *VMC* site has been forced to use the Web portal as its sole means of public access. The Tom Thomson Memorial Art Gallery is one example of an institution that allows entry to their 'virtual' displays through both the TT MAG's own website as well as through *VMC* links. Its 'virtual' exhibitions were in existence before the *VMC* came online, and its association with the *VMC* is for the purpose of promotion. Mixing the on- and off-site projects, as well as the physical and metaphysical experience of space in the digital environment, contributes to the user's sense of confusion when navigating within the links of the *VMC*.

In practice, by positioning the Web portal as the principal way to access 'virtual' exhibitions CHIN has developed a new paradigm for the museum: a meta-museum. The potential of the *VMC* and projects like it to replace the conventions of the art book, the exhibition catalogue, the tour guide, and even the exhibition space, develops this paradigm even further. Compared to the traditional production of actual publications, like self-guide pamphlets, based only on the temporary installation of the artworks they discuss, the *VMC* may present a practical alternative. The *VMC* counteracts the ephemeral nature inherent in all temporary conventional exhibitions because information on the website does not need to be taken down, shifted around, and put into storage. The virtually limitless character of the Internet, both spatially and encyclopaedically, allows for archives of older exhibitions, including images to be retained easily, thereby overcoming the temporal limitations of conventional temporary installations.

That being said, the visitor is made to believe, however, that the *VMC* project, with its claims to be the gateway to Canadian heritage, will give access to and information about every piece of Canadian heritage that exists. This is simply not the case at this point in time. In fact, at this stage in its development, only one year after its launch, the amount

of information about works of art that can be accessed through the *VMC* site (via its search mechanism) is still limited. It will take some time, if ever, before the realization of the *VMC*, as portal to the exhibitions and collections of every Canadian cultural institution, is complete. And until then, Internet users will be required to search for information about specific cultural objects using the conventional means of general Web browsers and standard search engines, which inefficiently, and on a limited basis, scan the entire WWW.

Regardless of the shortcomings, the value of the *VMC* initiative to make collections of heritage material available to Canadians wherever they may be via the WWW cannot be underestimated. The participatory nature of viewing art images online allows the audience to feel in control of the situation, rather than being controlled by it, a benefit that David Dean commends: "Self-paced learning has been one of the principal advantages of the museum educational environment. The computer allows even more control by the user. The possibility of providing information to the curious viewer is virtually limitless, yet the aspect of learning speed is still firmly in the user's control."⁷² Visitors can observe the image of any artwork selected at any time for as long as they wish without the constraints of actual space and the intimidating overly academic presentations imposed by some institutions. In fact, it has been determined that "people look at a work of art in the museum for a maximum 15 seconds. With the computer screen, they look longer."⁷³ Perhaps the reason for this enhanced attention to images of artworks onscreen versus onsite viewing is based on drawbacks associated with the gallery experience itself: travelling to the site; paying to enter the institution; and dealing with the inadequacies that some visitors feel in the presence of unfamiliar cultural objects.⁷⁴

Available globally, the information on the *VMC* site has the potential to be seen by many people. As it stands now, with over seventy 'virtual' exhibitions currently active and links to thousands of 'virtual' objects, the *VMC* makes a significant contribution to the collective knowledge of the museum community. Out of the seventy-four⁷⁵ 'virtual' exhibitions available, I will evaluate only two of the productions hosted on the *VMC*, both of which are found in the *Arts and Leisure* category of the *VMC Exhibits* section. The two projects that I chose for this analysis represent very different approaches to creating 'virtual' art exhibitions for the WWW. The Tom Thomson Memorial Art Gallery *Group of Seven* exhibition is a more conventional approach to using the Internet to present the collection of one art gallery, organized by artist. This type of project demonstrates how smaller institutions can use the Internet for promotional needs, which is one stated role of the *VMC* portal. CHIN's production on the other hand, entitled *Panoramas: The North American Landscape in Art*, exemplifies a project that takes advantage of many of the properties inherent in the digital environment and uses the WWW as a space to explore new relationships between very different cultures through extensive juxtapositions of digital images of fine art objects.

Evaluating the Tom Thomson Memorial Art Gallery *Group of Seven* Exhibition

The Tom Thomson Memorial Art Gallery in Owen Sound, Ontario, has established its presence on the *VMC* site by linking 'virtual' exhibitions that the gallery has located on its own website. The TT MAG's partnership with the *VMC* developed in response to CHIN's need to obtain content for the launch in March 2001. In fact, the *Group of Seven* exhibition was one of the first to appear on the *VMC* site because it was already in existence when the early calls for 'virtual' exhibitions were sent out.⁷⁶ As mentioned earlier, all of the 'virtual' exhibitions produced by the TT MAG can be accessed via the

gallery's own homepage as well as through the *VMC* portal. The *Group of Seven* project is the focus of the following evaluation using the criteria theorized by Murray – procedural, participatory, spatial, and encyclopaedic. As well, Worden's categories for assessing the authority, accuracy, objectivity, currency, and coverage of any information on the WWW are integrated into the evaluation (see Appendix C).

The procedural property of the *Group of Seven* 'virtual' exhibition on the TT MAG site is evident: the exhibition is clearly laid out, making it easy to follow. It consists of a user-directed⁷⁷ 'virtual' tour of the gallery's collection showcasing a total of seventy-five paintings by ten artists and photographs documenting their lives and careers. The arrangement of the display follows a conventional organization, consisting of the digitized images of artworks sorted by artist and accompanied by text. The only aspect of this exhibition that takes advantage of the multimedia potential of the WWW is a link to a website supporting music inspired by the Group of Seven and arranged by a musical group called the *Rheostatics*.

A closer examination of the online narrative developed by Stuart Reid, the Director/Curator, shows that it approximates what would be composed for a physical exhibition of this sort. Along with a ten-screen essay providing information about *Group of Seven* in general, each section of the exhibition is introduced by a short biographical paragraph including the curator's interpretive stance in relation to the artist and his artwork. The general tone of the writing is authoritative and didactic, rather than interrogative and interactive. The Web visitor may digest the shorter biographies provided, all approximately 200 words, but would have a harder time reading through the lengthy ten-screen interpretive essay. Worden addresses different writing styles in "From the Expository to the Declarative" when she introduces the theories of Stephen Boyd Davis

and Mimi Tessier. Worden explains that one sort of rhetoric is better suited for the Internet than the other:

Expository styles are suited to continuous reading and writing practices of traditional paper documents with a unified voice. The reader often takes a passive role. The declarative text has short named sections, which can be read in a number of orders. The semantic structure emerges from the use of paragraphs and document parts. Links, instead of words, are used to indicate association. They suggest that this modular approach to writing is more useful for the Web and may promote a more active form of reading.⁷⁸

The language used throughout *Group of Seven* is definitely of the expository style. What Worden's analysis confirms is that this style forces the visitor to take on a passive role, essentially denying them the potential of interactivity possible in the digital environment.

The text follows the conventions of academic art displays and so too does the arrangement of the whole 'virtual' exhibition, which mimics the experience a visitor would have in the physical gallery space. Associating the Web display of the digitized collection with the physical structure of the TTMAG acts in one way to increase the authority of the information presented because the visitor understands who is responsible for this website and may even visit the physical building where these artworks are displayed. In this way, the existence of a building where these objects are physically housed and displayed in the manner shown on the screen would ease Heidegger's fear about the 'real' being seamlessly replaced by technology's digital copy.

The irony, in the case of the TTMAG exhibition, of linking Web projects to the physical place is that the textual information accompanying the 'virtual' exhibition cannot be found at the physical building itself. This makes the Web exhibition a totally unique and self-standing project, regardless of its connection to the physical space of the real gallery. The problem with designing 'virtual' exhibitions following museum conventions

is that the viewer can't help but associate their 'virtual' experience with the physical space of the real gallery. "This attempt to inscribe a material reality in a system where this production is not possible causes", as Michele White observes in her analysis, "a crisis in the reality of the 'virtual' museum as well as the practices of the traditional museum."⁷⁹

The crisis arises because of the unique presence of this 'virtual' exhibition: it doesn't exist in any other form, so the viewer is forced to treat as real, not only the 'virtual' exhibition as a whole, but the objects in it as well. The integrity of this type of digital production depends on human perception of it as authentic, which would depend on the visitor experiencing the physical exhibition, if it were available, at the TTMAG. If this relationship between the physical exhibition and what is viewed online is interrupted, as is in the case of *Group of Seven*, then the digital production can only be perceived as a replica of something that should, but doesn't actually, exist in the material world. This ultimately results in a disjunction that leaves digital authenticity subverted.

In associating the Web project with the collections and building of the TTMAG, the spatial property that Murray deems so intrinsic to the digital environment is subverted too. No longer is the space a unique construct of each viewer's imagination, a condition that would augment the participatory and interactive nature of this exhibition. If the designers of *Group of Seven* had arranged the exhibition to stand on its own as a digital entity, without its authenticity hinging on the physical presence of the TTMAG, it would have had more success in achieving the status of a simulacrum. In point of fact, the exhibition is more like a self-guided tour pamphlet, providing the visitor with a window onto the collection, than an immersive and interactive experience of the lives and careers of the Group of Seven artists. The only truly participatory aspect of this project is the email feedback option, which invites the visitor to send their comments back to the

TTMAG Director/Curator, and the opportunity to choose where in the exhibition to explore next.

David Dean suggests that the best exhibitions present adequate information to engage all three levels of audience: the exit-oriented visitor, the cursory visitor, and the investigative visitor, which are similar to MacDonald's stalker, stroller and student categories.⁸⁰ *Group of Seven* seems to fall short in this regard because it narrows the information given about these artists and their art to the perspective of one person, the Director/Curator of the TTMAG. Furthermore, the visitor is not encouraged to consider a broader set of ideas about these artists, because the TTMAG has not incorporated any outgoing links to other websites that feature the artwork of the Group of Seven or other related content.

In an attempt to keep the visitor on the TTMAG website and fulfill its promotional role, the objectivity of the information presented is threatened. It moves away from objective public service towards subjective advertising of the TTMAG itself. According to Worden's criteria, not only the site's objectivity is compromised through the lack of links to outside resources, but also its coverage of the discipline. The TTMAG's decision to keep *Group of Seven* centered around the knowledge of its Director/Curator and limited to the finite number of artworks in the TTMAG collection, disregards the encyclopaedic properties of the WWW and very much limits the extent to which the Web-user can take advantage of the participatory, user-directed, nature of the medium.

Following the theorizations of both Murray and Worden, the TTMAG project does not take advantage of the properties of the digital Web environment. In Murray's view, it should break from the limitations of the older media, which maintain an object-oriented approach, and develop new conventions in order to use the advantages of the digital

environment and avoid mere replication of the physical museum exhibition. Worden would prescribe changes to the language used, connections made to related resources, and closer attention to making the information more objective. In short, this ‘virtual’ exhibition lacks the innovation required to create a successfully immersive and interactive environment and seems more like a promotional instrument for the TT MAG rather than an intellectually and affectively challenging experience that takes advantage of the opportunities of the digital environment.

Evaluating the VMC *Panoramas* Exhibition

If the TT MAG contribution to the VMC site is traditional and does not make effective use of the inherent properties of the ‘virtual’, then *Panoramas: The North American Landscape in Art* seems quite the opposite. Featuring more than three hundred images of paintings and photographs by artists representing three countries, *Panoramas* presents an enormous amount of information in a well-organized format. Every section of the exhibition has many levels of interpretive material designed to suit the needs of visitors ranging in age, education level, and art interest. Upon venturing into one of the four main thematic sections – The Evolving Landscape, The Mythic Landscape, The Social Landscape, or The Personal Landscape – the visitor is confronted by an abundance of choice and flexibility meant to encourage independent research. To help ground the visitor within the extensive material, the collection of images is displayed in its entirety and chronologically in the International Gallery, where each image is linked back to its placement within one of the four thematic sections.

It is worth noting that compiling this much data into a design that is easily navigable is not an easy task. Coordinating the large group of curators, researchers and politicians involved in the production of *Panoramas* was a challenging and time-

consuming task.⁸¹ The collaborative project is credited to five partners: The Winnipeg Art Gallery; The Canadian Museum of Civilization; Consejo Nacional para la Cultura y las Artes; Instituto Nacional de Bellas Artes; and the Museum of American Art Smithsonian Institution. And three contributors: Secretaría de Relaciones Exteriores; Department of Canadian Heritage; and the United States Department of State. Representatives of the institutions involved met only once in person in February 1999, which was a necessary step in developing enthusiasm and continuity for the project, and the rest of the communication was accomplished with conference calls and email correspondence. The broad range of contributors ensured that the research for the project had continental dimensions and may have provided access to normally inaccessible documents and art material.⁸²

The production of such a politically informed and international project, which can be treated as a test of globalization, may be seen as a model for collaborative exhibitions in the future. In the case of *Panoramas*, the cultural exchange and collaboration required to create this 'virtual' exhibition parallels the trade initiatives and political development of the three NAFTA countries involved.⁸³ This type of collaborative model is well suited to 'virtual' projects because the medium, which is independent of the physical gallery setting, eliminates many of the challenges that arise when creating an exhibition of such a wide scope within the walls of one institution. In the 'virtual' space of the WWW, there is really no limit to the size and type of exhibition that can be produced, save hardware limitations.

The potential to encourage and incorporate many interpretations of the artworks displayed is great and, as Hooper-Greenhill in *Museums and the Shaping of Knowledge* notes, reflects changing social conditions: "Exhibitions in the past tended to attract an

audience with a very similar demographic profile to that of many curators: white, middle- or upper-class, able bodied, and male. Now, the perspectives of women, different ethnic groups, and people with disabilities are actively incorporated.”⁸⁴ Well into the era of the postmodern museum, pushing beyond the limitations of traditional art history, *Panoramas*, demonstrates the benefits that can flow from the conception and development of ‘virtual’ exhibitions.

Panoramas is, on the surface, inherently ‘virtual’: but does it manifest the properties that Murray theorizes and satisfy the criteria Worden advocates? Unlike the TT MAG exhibition or the Web portal for the VMC, *Panoramas* does not rely on the metaphor of museum architecture to gain authority. Instead, the images of artwork are connected to the physical landmass of North America through interactive maps that indicate the place of production for each of the paintings and photographs hosted on the site. This connection, between artwork and geography, informs the viewer of the cultural background of each artwork, which increases the authority of the information presented throughout the exhibition. And, although the authors of the textual accompaniment in *Panoramas* are not identified in relation to specific images, the artwork’s link to its country of production strongly suggests who took the lead in writing the text.

Emphasizing the geographical (spatial) placement of these objects over the process of seeing them allows the viewer to contextualize what they are seeing by understanding their association with the geography of the continent depicted. This contextualization helps to achieve the goal that *Panoramas*’ creators hoped to achieve: “to promote greater cultural exchange between nations and celebrate North America’s rich cultural heritage.”⁸⁵ By focusing on cultural significance, the exhibition diminishes the importance of the unique art object existing as a digitized image, thereby alleviating that image of the

responsibility of bringing about an auratic experience itself. The digital image does play an important role in enhancing access to the information, but the effectiveness of *Panoramas* depends more on the exhibition design as a whole and on the integrity of the information available rather than the quality of the individual digitized image. However, in using the digital images as interactive objects in their own right, the designers of *Panoramas* have embraced them as simulacra, effectively enhancing the experience of the entire exhibition.

Connecting the navigable space of the Web with the geographic understanding of location conflates Murray's concept of the spatial properties of cyberspace with actual space. However, the connection to physical space seen in *Panoramas* contrasts greatly to its use in the TTMAG exhibition. Instead of trying to simulate material objects in one physical gallery, *Panoramas* elicits the potential of the digital format by creating a 'virtual' International Gallery that doesn't materially exist, filled with openly 'virtual' art objects. In doing this, the *VMC* project embraces, rather than resists the specific spatial properties of the WWW because the visitor is free to conceptualize the shape of the project in conjunction with the navigable space of cyberspace.⁸⁶ Taking advantage of the spatial properties of the digital domain provides visitors with the freedom to engage with a large body of material (within the limitations of the digital image as discussed in Chapter Two) without being ritually confined by the physical, or even metaphorical, structure of museum architecture.

Perhaps this connection to place is even more relevant in enhancing Greenblatt's resonant experience than the presence of textual interpretation by the curator, because the cultural context that inspired the image is readily available for further exploration, if the viewer is so inclined to do more Web-research. This point illustrates *Panoramas'*

manifestation of the encyclopaedic property Murray theorizes, because it offers many levels of interpretation of the objects within the site itself and encourages off-site investigation through resource links to other relevant websites and publications. Worden would agree that the links and references made to relevant resources included in *Panoramas* would merit high ratings in the areas of currency, objectivity, and coverage. The TTMAG did not offer any external links to resource material about its collection and therefore denied the encyclopaedic potential to achieve objective coverage of more objects in the 'virtual' space than could be contained by any one institution.

The extensive arrangement of digitized artworks in *Panoramas* reflects innovative thinking in art history, because it challenges barriers and breaks disciplinary boundaries so often present in the study of art history until recently. When viewing *Panoramas* through its four thematic sections, the exhibition does not conform to a linear organization, which makes it especially appropriate for viewing on the Web. The visitor to *Panoramas* can make decisions about which artworks to investigate without the constraints of chronology. Unlike the arrangement of the TTMAG exhibition, which has a conventional quality much like a catalogue or book, *Panoramas* denies the authoritative tone evoked by this type organization by eliminating the sense of beginning and ending. In one instance a visitor can be reading about George Catlin, an early 19th century American painter who painted *Comanche Village, women dressing robes and drying meat* in 1834, and then easily click their way to an exploration of the *Satellite Dish* by Wanda Koop painted in 1986. In comparison to an exhibition organized according to a narrative requiring a linear progression from start to finish (if any sense was to be made of it), *Panoramas* is more suitable for online viewing, where the visitor can jump from artwork to artwork with ease. In this way, the participatory quality of the exhibition is accented.

Dependent entirely on the actions of the individual visitor, the participatory quality of the *VMC* project is very dynamic, with the probability of creating the same route through the sections of the exhibition very unlikely. A curator does impose the order of the artworks in the four thematic sections of *Panoramas*, but the visitor is always invited to make independent interpretations through links between each artwork and its place in the International Gallery. Unfortunately, the complexity of the site is at times disorienting, which limits the effectiveness of *Panoramas* procedural property,⁸⁷ making interaction with the site frustrating at times.

Ideally, an interactive environment should make a seamless transition between human interaction and the technological interface. Because procedurally *Panoramas* is awkward, the interactive experience of this 'virtual' exhibition suffers. However, it is in the participatory, spatial, and encyclopaedic properties where *Panoramas* far surpasses the *Group of Seven* exhibition by the TTMAG in embracing the potential of the digital medium. Unlike *Group of Seven*, CHIN's project includes multimedia innovations like 'virtual' tours of the artworks presented through the 'voices' of several curators using audio and visual supplements, and several educational activities designed for teachers and students to "explore," "learn" and "consider" the theme of landscape.

In addition to the multimedia supplements, the textual accompaniment for *Panoramas* provides thoughtful information to accompany the images and follows a style that is suitable for a mature viewer who would engage with the 'virtual' images on an in-depth level.⁸⁸ Catering to the demands of the Internet format, adhering to the modular approach to writing that Worden claims as declarative, the text is clear and concise. The sentence structure is modified from a complex academic style to a more succinct style in order to hold the attention of the Web-visitor who is prone to skip to the next screen if the

current one is not of interest or is too demanding. Considering this aspect of informal Internet learning, perhaps the most important quality of this declarative writing style, which is present in *Panoramas*, is that the terminology and language chosen has to convey enthusiasm. In the case of *Panoramas*, the writing is full of stimulating historical facts and amusing anecdotes that engage the reader.

Panoramas crosses boundaries that traditional art history has set, integrating artworks so diverse that new ideas and interpretations by non-specialists are bound to arise.⁸⁹ Multiple perspectives subvert the singular vision of the curator and the boundaries between the disciplines are made porous. This 'virtual' exhibition is intrinsically more suited to the open format of the digital environment than the TTMAG exhibition because of its thematic and collaborative approach, as well as its integration of multimedia supplements and abundance of links to relevant resources. Through the theme of landscape, this collaborative project links many artworks together regardless of the traditional art historical categories of artist, school and period.

Decentralized and cross-cultural, *Panoramas* represents a legitimate approach for art institutions to consider in their drive to remain vital in this increasingly globalized and technologically-based society. *Panoramas* creates new paradigms in the fields of curatorship and exhibition design, heading towards an expressive mode of presentation that will take advantage of the distinctive power and form of the digital environment that theorists like Murray and Worden have only just begun to understand. Only by exploiting the distinctive properties of this environment can such projects move beyond being mere substitutes of the material world.

Conclusion

The *VMC* and its 'virtual' exhibitions have set the pace for the construction of a new paradigm of the museum – a meta-museum. In its adaptation to the unique medium in which it exists, the *VMC* has successfully approached the fulfillment of its mandate to engage audiences of all ages with Canada's diverse heritage, achieved most effectively with projects that embrace the inherent properties of the medium – procedural, participatory, spatial, and encyclopaedic. The meta-museum paradigm has affinities with the closed Cabinet of the World. It inspires similar analogical thinking, yet is considerably different from the older episteme. In fact, the interconnectedness of the WWW and the ease at which users, in the privacy of their own space, can access multiple sources of information from the Internet has made possible an experience, albeit with 'virtual' objects, that may encompass qualities of all of the museum types that Hooper-Greenhill describes – Renaissance (Cabinet of the World), Classical (Royal Repository of Knowledge), Modern (Disciplinary Museum), and Postmodern (Universal Museum).

The debate about the efficacy of the reproduction or copy over the original will always be ongoing. But even now the benefits of the 'virtual' display of artworks outweigh the disadvantages, largely because the 'virtual' object as simulacrum, and not mere copy, enhances the experience of the original artwork. The new meta-museum can claim a unique place within the digital environment and become an extremely effective mode of presenting art and shaping knowledge through the medium of the 'virtual' exhibition. The 'real' institution will always have a place in the collection, preservation and display of original works of art, but with the 'opportunity' of globalization and the ubiquity of the Information Super Highway, projects like the *VMC* will no doubt gain more acceptance and authority in the museum community.

ENDNOTES

¹ CHIN, *The Virtual Museum of Canada Guidelines: Consultation Draft Version 2*. (Ottawa: CHIN, July 2000), 6.

² The *About VMC* section explains its purpose well: "The VMC harnesses the power of the Internet to bring Canada's rich and diverse heritage into our homes, schools and places of work. This revolutionary medium allows for perspectives and interpretations that are both original and revealing. [...] For years to come, the VMC will nurture the development of digital content that reflects Canadian experiences in all their splendour." VMC "About VMC." 2001. <http://www.virtualmuseum.ca/English/About/index.html> (15 May 2002).

³ The URL for this project is: <http://www.tomthomson.org/g7room.htm> (1 June 2002).

⁴ The URL for this project is: <http://www.virtualmuseum.ca/Exhibition/Landscapes/> (1 June 2002).

⁵ Janet H. Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. (New York: The Free Press, 1997).

⁶ Suzette Worden, "From the Expository to the Declarative: Interpreting the World Wide Web," in Tanya Szajber, ed. *Computing and Visual Culture: Representation and Interpretation, CHART Conference Proceedings, Volume One*. (London: CHART, 1999), 27-43.

⁷ Michael Heim, *Virtual Realism*. (New York and Oxford: Oxford University Press, 1998).

⁸ *ibid.*, 56-57.

⁹ Where the user wears a VR helmet and sensory body suit to conflate the experiences of the mind and the body and immerse the participant into a totally electronic realm.

¹⁰ Gordon Graham, *The Internet:// A Philosophical Inquiry* (London and New York: Routledge, 1999).

¹¹ *ibid.*, 159.

¹² Murray, *Hamlet on the Holodeck*, 71.

¹³ The events of 1982, described in Chapter One, which culminated in the Applebaum-Hébert Report, fueled the projects to provide greater access and therefore opened the door for CHIN's role both to establish national databases of collections and disseminate that information electronically.

¹⁴ Michelle White, "Where is the Louvre?" in Rob Shields, ed. "Virtual Spaces and Organizational Networks," a thematic issue of *Space and Culture – the Journal*. 4, no. 5 Ottawa: Carleton University, 2000, 47-70.

¹⁵ *ibid.*, 56.

¹⁶ Similar to Baudrillard's concept of the hyperreal discussed in Chapter Two, Umberto Eco theorizes about the state of hyperreality which resonates well with 'virtual' projects like the VMC. In his 1975 "Essays" from *Travels in Hyper Reality*. (San Diego: Harcourt Brace Jovanovich, 1986), he describes how participants in contemporary culture seek something that seems better than the 'real'. He claims that we are in search of the hyperreal, composed of realistic fabrications of themed environments that don't merely reproduce reality, but try to improve on it.

¹⁷ *ibid.*, 49-51.

¹⁸ The experience of socializing with other museum visitors in a cultural setting is yet another condition which distinguishes the 'real' from the 'virtual'. Marilyn G. Hood examines this phenomenon in her Ph.D. Thesis entitled, *Adult Attitudes Toward Leisure Choices in Relation to Museum Participation* (Ohio State University, 1981). One of the benefits of Web-based exhibitions is that they can be accessed from anywhere that has a connection to the Internet – even from private homes – thus promoting the practice of “solitary surfing” which is lacking in the kind of social interaction that can ensue in the physical museum space. This issue of the effect of “solitary surfing” on the experience of ‘virtual’ museums is a subject for future research, but goes beyond the scope of this thesis.

¹⁹ Selma Thomas, “Mediated Realities: A Media Perspective,” in Selma Thomas and Ann Mintz, eds. *The Virtual and the Real: Media in the Museum* (Washington, DC: American Association of Museums, 1998), 1.

²⁰ Canadian Museum Association, “About Museums,” *CMA website* 2001. <http://www.museums.ca/aboutmuseums.htm> (13 June 2001). In 2001, the CMA established a committee to rewrite its definition to take into account recent developments in the production, collection and display of digital ‘works.’ However, as of May 2002, the new definition has not been published online.

²¹ Carol Duncan, *Civilizing Rituals: Inside Public Art Museums* (London and New York: Routledge, 1995).

²² *ibid.*, 7-11.

²³ Cyberspace refers to the electronic network that exists on the Information Highway that is the World Wide Web.

²⁴ See my discussion of the simulacrum in Chapter Two.

²⁵ Duncan, *Civilizing Rituals*, 10.

²⁶ For further discussion of the impact of the Louvre as the model for the typical Western art museum, see Duncan, *Civilizing Rituals*, 21-33.

²⁷ These terms, immersive and interactive, are derived from Janet Murray’s theories about the characteristics of the digital environment and will be introduced and used extensively later in Chapter Three.

²⁸ More fundamentally, a similar argument can be made about the practice of holding collections of objects in electronic image databases. Much like the ‘virtual’ productions of the *VMC*, that resort to conventional vocabulary, the collecting of objects in cyberspace is also coloured by the dichotomy of material/‘virtual’. The databases of objects held as images that are stored in the servers of CHIN, have parallels to the materially based collecting system of old.

²⁹ Malraux, André, *Museum Without Walls*, Stuart Gilbert and Francis Price, trans. (Garden City, New York: Doubleday & Company, Inc., 1967).

³⁰ *ibid.*, 12.

³¹ Hooper-Greenhill, Eilean, *Museums and the Shaping of Knowledge*. (London: Routledge, 1992).

³² Eilean Hooper-Greenhill describes several museum types or ‘epistemes’ in her book. In the Renaissance episteme: The Medici Palace and the Cabinet of the World. In the Classical episteme: the Royal Repository of Knowledge. And in the Modern episteme: the Disciplinary Museum. In the final chapter of the book she introduces the idea of a postmodern episteme, in which the museum type would be called the Universal museum. Eilean Hooper-Greenhill, *Museums and the Shaping of Knowledge*, (London: Routledge, 1992), 205-210.

³³ *ibid.*, 191.

³⁴ White, "Where is the Louvre?" 51. This idea of possessing the art object parallels the behaviour of the gift shop, where replicas of the original challenge the authenticity of the museum's collections, yet create an intimate connection between the purchaser/user and the actual museum.

³⁵ The federal priority for cultural diversity is articulated in the official consultation report of the VMC: "Ultimately, if all Canadian museums are included then the diversity of the country should be collectively reflected. Respect for this diversity through the availability of many languages and stories told from many perspectives will make the *Virtual Museum* distinct." Hushion, *The Virtual Museum of Canada: Consultations*, 8.

³⁶ Industry Canada's Community Access Program (CAP) was established in 1995 as a key component of the federal government's Connecting Canadians initiative. Its mandate is to provide residents of rural, remote and urban communities across Canada affordable access to the Internet. Facts taken from: Industry Canada, "Canada On-line: Community Access Program," *Connecting Canadians* 7 September 2002. <http://connect.gc.ca/en/240-e.htm> (11 June 2002).

³⁷ Industry Canada, "Canada's SchoolNet," 2000. <http://www.schoolnet.ca/home/e> (12 June 2002).

³⁸ Facts taken from d'Haenens, *Images of Canadianness*, 247.

³⁹ N.L. Hushion, *The Virtual Museum of Canada: Consultations with the Canadian Museum and Heritage Communities*, CHIN (July 2000), 3.

⁴⁰ "The Canadian experience in this field is exceedingly interesting: its officially bilingual cultural market is undoubtedly one of the world's most open – and therefore one of the most vulnerable – markets to US influence..." d'Haenens, *Images of Canadianness*, 248.

⁴¹ Jean Chrétien in Reply to the speech from the throne, January 2001. Found in *Canadian Heritage Estimates 2001-2002 Part III – Report on plans and priorities*. (Ottawa: Public Works and Government Services, 2001), 12.

⁴² For an in-depth discussion of the blurring of boundaries between Nation-States, see "W(h)ither the state?" in Jerry Everard *Virtual States: The Internet and the Boundaries of the Nation-State*, Chapter One (London and New York: Routledge, 2000), 3-10. In this chapter, Everard explains that the globalizing power of the Internet is only part of the concern of states. The real issue for the dissolution of states is the power of the Internet to seem all-pervasive, making the flow of information seemingly uncontrollable. He reminds us that "globalisation is above all a social process, and it operates unevenly across society and between societies. [...] It also promotes structural inequalities." In Everard, *Virtual States*, 9.

⁴³ George F. MacDonald, "Change and Challenge: Museums in the Information Society," in Ivan Karp, Steven D. Lavine, and Christine Mullen, eds. *Museums and Communities: The Politics of Public Culture*. (Washington: Smithsonian Institution Press, 1992), 176.

⁴⁴ There are statistics that demonstrate Canada's high level of use of the Internet. See Statistics Canada, "General Social Survey: Internet Use," *The Daily: Statistics Canada*, 26 March 2001. www.statcan.ca/Daily/English/010326/d010326a.htm (22 July 2002).

⁴⁵ White, "Where is the Louvre?" 55.

⁴⁶ Murray, *Hamlet on the Holodeck*, 74.

⁴⁷ After praising the participatory nature of several interactive games, Murray draws attention to the limits of current software capabilities, and lays out a goal for future interactive endeavours: "But if the key to compelling storytelling in a participatory medium lies in scripting the interactor, the challenge for the future is to invent scripts that are formulaic enough to be easily grasped and responded to but flexible enough to

capture a wider range of human behaviour than treasure hunting and troll slaughter.” In Murray, *Hamlet on the Holodeck*, 79.

⁴⁸ Michael Heim, “The Computer as Component: Heidegger and McLuhan,” *Philosophy and Literature* 16, no. 2 (October 1992), 312.

⁴⁹ Although in reality, the user’s experience is still bound by the limitations of the software itself.

⁵⁰ This idea about the need to gain autonomy over technology was taken from a talk that N. Katherine Hayles presented at a Symposium in the fall of 2000 at the Ottawa Art Gallery. In taking control of the outcome of the user’s (reader’s) own experience, interaction within the digital environment demonstrates what was intended in the theories of reader-response criticism, where the reader is a producer rather than a consumer of meanings. This also relates to George Landow’s ideas about the blurring of boundaries induced by hypertext systems: “The speed with which one can move between passages and points in sets of texts changes both the way we read and the way we write. [...] the discreteness of texts, which print culture creates, has radically changed and possibly disappeared. [...] Hypertext linking, which tends to change the roles of author and reader, also changes the limits of the individual text.” George P. Landow, *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*. (Baltimore and London: The Johns Hopkins University Press, 1997), 82-83.

⁵¹ Murray, *Hamlet on the Holodeck*, 80.

⁵² *ibid.*, 84.

⁵³ Servers that contain data are limited in capacity, but can be upgraded and multiplied.

⁵⁴ Murray, *Hamlet on the Holodeck*, 87.

⁵⁵ Stephen Greenblatt, “Resonance and Wonder,” in Ivan Karp and Steven D. Lavine, eds. *Exhibiting Cultures: The Poetics and Politics of Museum Display*. (Washington: Smithsonian Institution Press, 1991), 42.

⁵⁶ Wonder being defined as “the power of the displayed object to stop the viewer in his or her tracks, to convey an arresting sense of uniqueness, to evoke an exalted attention.” In Greenblatt, “Resonance and Wonder,” 42. Greenblatt’s thinking about resonant objects echoes Benjamin’s concept about the “aura” of the art object.

⁵⁷ *ibid.*, 45.

⁵⁸ Creating a situation akin to that described in André Malraux’s *Museum Without Walls*, 1967.

⁵⁹ However, it mustn’t be forgotten that visitors visit the VMC not necessarily to appreciate art, but to be informed about the objects.

⁶⁰ Murray, *Hamlet on the Holodeck*, 94.

⁶¹ Accessibility to the information held in its text-based databases was at the fore of its mandate, even though in reality access to that information was limited to a strict number of users.

⁶² The VMC Exhibits section is further divided into the sub-categories of Arts and Leisure, Science and Nature, History and Society, and Transportation and Industry. In June of 2002, the VMC hosted 74 ‘virtual’ exhibits in all. The use of the term ‘exhibits’ reflects a non-academic tone for the VMC at the outset. Once entering a particular ‘virtual’ exhibit the language and level of the information varies from youth-friendly to scholarly-directed material.

⁶³ The user can switch to the French language at any time.

⁶⁴ Some examples of these multimedia applications are: The Virtual Museum of Canada video clip, first screened in March 2002; The *Find a Museum* roll-over map which is activated when the mouse rolls over a province of interest; and the *Fun and Games* section with its interactive learning tools for teachers and students.

⁶⁵ By allowing the user to select images and generate their own 'virtual' exhibition, the *My Personal Museum* section facilitates a more open and interactive environment. Interactive art exhibitions provide an easy way for the individual to emerge from the dominant views of public self and into a self-created space, better suited for the individual's understanding. The *My Personal Museum* creates a pseudo-private space where online visitors can appreciate the art images in their own created environment. This is an innovation in the realm of 'virtual' exhibitions that would be interesting to explore further and one that is criticized by more traditional museum professionals like Philippe de Montebello. In an interview for *The Art Newspaper* (July 7, 2000) de Montebello emphasizes the role of the curator, who brings expertise and connoisseurship to the production of art exhibitions. He contends that the primary responsibility of his art museum, The Metropolitan Museum of Art in New York, is to augment the public's appreciation of art and not merely to reaffirm popular taste.

⁶⁶ Worden, "From the Expository to the Declarative," 31.

⁶⁷ The only way to find out what is meant by the presence or absence of the *VMC* logo on the site is by reading the lengthy *VMC* Guidelines that are available through the CHIN homepage. Not many visitors would think to do this, let alone actually take the time to learn the differences. Simply put, one is hosted on the *VMC* server and the others are not.

⁶⁸ Definition of URL: URL stands for Uniform Resource Locator. A URL is the address of a website on the World Wide Web.

⁶⁹ A later addition to exhibitions supported by the *VMC* server directly is an animated *VMC* graphic that appears in the upper right hand corner of the 'virtual' project's opening screen.

⁷⁰ For a more in-depth account of the way that a 'virtual' museum can replicate the ritualistic properties of visiting a 'real' museum, see Michele White, "Where is the Louvre?" 58-59.

⁷¹ One downfall of this portal arrangement is the problem of ineffective links found within the *VMC* site. Exhibitions become impossible to access if/when the links to the off-site projects malfunction and may go unnoticed for months.

⁷² David Dean, *Museum Exhibition: Theory and Practice*. (London and New York, 1994), 135.

⁷³ Lela Hersh, quoted in Barbara Pollack, "Millennium: Who's Afraid of the Big Bad Mouse?" *Artnews*. (Oct. 1999), 163-164.

⁷⁴ Art museums are especially prone to intimidating lay visitors, and Kenneth Hudson explores this issue throughout his book, *Museums of Influence*. (Cambridge: University of Cambridge Press, 1987).

The amount of time that different audience members of art exhibitions spend observing the artwork and other information presented is dealt with by George F. MacDonald in his essay "Change and Challenge: Museums in the Information Society" (1992). In this essay Macdonald describes three main categories of museum visitor: streakers (those who spend little time and do not read labels), strollers (those who more closely approximate the traditional museum visitor and spend more time reading and observing), and students (those with strong interests in particular areas who will seek out in-depth information beyond the scope of the exhibition). Although his discussion refers mostly to the physical exhibitions of the Canadian

Museum of Civilization in Hull Québec, his ideas are useful in supporting my argument for the benefits of 'virtual' museums, where even the streakers are likely to spend more time with the information presented.

⁷⁵ The amount of 'virtual' exhibitions on the VMC site is constantly increasing. In June 2002, there were a total of seventy-four exhibitions available.

⁷⁶ During the developmental stages of the VMC, CHIN invited museums and galleries with existing 'virtual' exhibitions to participate.

⁷⁷ User-directed meaning that the user has to manually click through the images, and no audio-visual software is employed to guide the visitor through the display.

⁷⁸ Worden, "From the Expository to the Declarative," 29.

⁷⁹ White, "Where is the Louvre?" 49.

⁸⁰ Dean, *Museum Exhibition*, 26.

⁸¹ In the Canadian credits alone there are a total of 87 people involved, from 6 different organizations.

⁸² All of this information is available at CHIN in files documenting the *Panoramas* project. It is not an archives per se, but a collection of professional records that can be accessed by the public via Danielle Boily at CHIN.

⁸³ See Chapter One endnote number 46 for the reference to this policy priority: Statement by Hon. Pierre S. Pettigrew (Minister for International Trade) to the Ottawa Diplomatic Association and the Diplomatic Press Attachés Network at the National Press Club, Ottawa February 16, 2000. http://198.103.104.118/minpub/publication.asp?FileSpec=/Min_Pub_Docs/103030.htm, (15 May 2001). Sanctioned by the political powers at the upper levels of the government in each country, *Panoramas* is referred to as a project in cultural diplomacy. Its sequel, *Perspectives*, which focuses on the art of Women artists from Canada, the US, and Mexico will have a similar political dimension.

⁸⁴ Hooper-Greenhill, *Museums and the Shaping of Knowledge*, 210–211.

⁸⁵ CHIN, "Panoramas: The North American Landscape in Art," *The Virtual Museum of Canada*. 2001 <http://www.virtualmuseum.ca/Exhibition/Landscapes/> (15 May 2001).

⁸⁶ Rob Shields elaborates on Murray's idea of space in the digital domain in his 2000 article entitled "Virtual Spaces?" where he explains that: "Understanding the 'virtual' demands new notions of locatedness. Changing relations between places, between inside and outside – and specifically the disappearance of the outside – are part of overarching spatialisations and iconographies of the social." Rob Shields, ed. "Virtual Spaces and Organizational Networks," a thematic issue of *Space and Culture – the Journal*. 4, no. 5 Ottawa: Carleton University, 2000, 6.

⁸⁷ It took a substantial amount of exploring before I became confident navigating through the vast amounts of information in *Panoramas*.

⁸⁸ The tone of the language used in the teacher and student-focused programs on the site is also appropriate for this audience.

⁸⁹ As Hooper-Greenhill, supports: "In the past, the curator, as object-expert, played the most important role in the production of exhibitions." Hooper-Greenhill, *Museums and the Shaping of Knowledge*, 208.

CONCLUSION

The display of art in museums has recently stimulated a discourse of critical analysis resulting in new approaches to the presentation of visual art in the museum. The abundance of relevant literature that exists is indicative of the multitude of directions that theorists and practitioners have taken. From audience surveys and innovative installation practices to phenomenological curatorial strategies and extensive contextualizations, there is no shortage of opportunities for critical explorations of exhibitions practices. Now, with the advent of the World Wide Web and digital imaging techniques, thinkers about art exhibitions are faced with a new question: should the display of art in the digital environment be considered as a legitimate form of presentation? In this thesis, I contend that the digitized image of a work of visual art presented in the digital environment of the WWW is a simulacrum. The digital format is indeed a distinctive and valid means to display and disseminate visual art in 'virtual' exhibitions that embrace the potential of the digital medium.

The complexity of this contention is due, in part, to the relationship of things 'virtual' and 'real'. Strictly speaking, the nature of things 'virtual' would be best understood through a theoretical lens, yet once connected to something 'real' like material art objects, the practical implications of the 'virtual' must be dealt with. This thesis, in part, documents the challenges I faced in coming to grips with the character of both 'virtual' and 'real' presences. The framework that I use to explore the possibilities offered by the digital medium for the display of art is based upon the phenomenological experience of 'real' spaces and 'real' artworks. However, my understanding of theories

that are specific to the digital environment proved critical to my interrogation of the status of the digital image of the work of art.

CHIN's innovative initiative to create the *Virtual Museum of Canada* was an ideal focal point for this thesis; the *VMC* merged the 'virtual' and 'real' in scope and scale that no other Canadian institution could entertain. CHIN staff members had been developing ways to integrate electronic data with material collections for over three decades before the launch of the *VMC* in 2001. And, CHIN's position as a Government of Canada programme with a pre-established national mandate that saw access to information about Canadian collections as a priority gave it significant advantages. Driven by technological developments of networking and then the ubiquity of the affordable personal computer (PC), CHIN was able to provide wider degrees of access to its databases, access that was enhanced by the replacement of a closed "hub" based network with a distributed form of network connected to the Internet and the WWW. The adoption of the Web portal concept, on which the design of the *VMC* is based, is a significant breakthrough in realizing CHIN's commitment to connect Canadians to information about Canada's collections and collecting institutions. The Web portal idea itself provokes many questions about the accessibility, efficacy, and authenticity of the information being disseminated to its users. My preliminary interest in the topic for this thesis developed out of these questions, and I saw the *VMC* project as the means to find answers to them.

For many collecting institutions, there are definite merits in associating with an external organization like CHIN, with expertise in the digital environment, to manage the presentation and representation of their physical collections in the digital space of the WWW. CHIN's vision allowed the *VMC* to have a focus that gave priority to the 'virtual' and encouraged an enthusiasm for the digital medium that is not always possessed by

museum professionals who have the opportunity to work with original art objects.

Curators of collections in most ‘real’ museums treat the digital presence of their exhibitions on the WWW as an afterthought and generally lack both the will and the skills to achieve the full potential of the digital medium.

I describe the properties that ‘virtual’ exhibitions must possess in order for viewers to achieve affective and cognitive experiences on the WWW. These properties, following Murray's and Worden's formulations, are procedural, participatory, spatial, encyclopaedic, authenticity, reliability, and authority. Through a comparison of two ‘virtual’ exhibitions hosted by the VMC, which are treated as case studies, I demonstrate that the success of ‘virtual’ exhibitions depends on the designer's awareness and application of the properties inherent in the digital medium. The comparative analytical framework used to evaluate these case studies examines the potential for each ‘virtual’ exhibition to exist as an affective and cognitive entity, distinct from the physical world. CHIN's production, *Panoramas: The North American Landscape in Art*, far surpasses that of the TT MAG submission, *Group of Seven*, in its realization of that potential, and should be seen as a significant contribution to the field of ‘virtual’ art exhibition design.

Like conventional physical exhibitions, ‘virtual’ ones are grounded in the artworks they display. Understanding the role that the digitized art object plays in the experience of ‘virtual’ exhibitions as a whole, required separate analysis of this unique form of reproduction – paying close attention to its specific technical properties which inform both its presence in ‘virtual’ exhibitions and its reception. By applying the theories of Martin Heidegger, Jean Baudrillard, and Hans Robert Jauss (with additional engagement with the ideas of Walter Benjamin, Michael Heim, Fredric Jameson, Peter Lunenfeld, and William J. Mitchell) to the study of the reception of the digital reproduction it becomes obvious

that this form of reproduction possesses rich experiential potential. And, by focusing on the digital image itself, I was able to further my understanding of the relationship between the 'virtual' and the 'real'.

The digital image within a 'virtual' exhibition is an instrument possessing capacities beyond those of an analogue reproduction, to inspire interactive and immersive experiences, and to shape knowledge. This conclusion is informed by the analysis that demonstrates changes in meaning generated by the movement of the digital reproduction between the quadrants of a semiotic square (Greimas and Jameson). As the visitor to a 'virtual' exhibition begins to associate the digital reproduction of an art object displayed on the computer monitor with their re-collections, that is their 'horizon of experience', and to interact with the website, the experience of that image shifts from mere copy toward the more powerful simulacrum. What the digital image, as simulacrum, adds to an exhibition is the foundation for an experience that is 'realer-than-real' or *hyperreal*. The effective 'virtual' exhibition, therefore, gains its authority and authenticity through its difference from, rather than its similarity to, or appropriation, of the 'real'.

The challenge now is that most museum professionals present 'virtual' exhibitions as supplementary promotional tools to echo 'real' exhibitions that exist in physical gallery spaces. When 'virtual' exhibitions are designed for these ends, they are mere representations of conventional exhibitions (*Group of Seven*, TTMAG). To experience 'virtual' exhibitions exclusively in terms of their constituent parts denies their full affective and knowledge-shaping potential. What I have argued is that if 'virtual' exhibitions embrace the properties inherent in the digital environment, as *Panoramas* does, the visitor will not stumble over the distinct parts but be immersed in the interactive multimedia space that is created.

The *VMC* is establishing a new paradigm for the museum, the meta-museum that moves beyond Hooper-Greenhill's postmodern episteme in its capacity to disseminate and make accessible information about art. Initiatives like the *VMC* will never replace the physical spaces of museums and galleries. The fear that databases of digital images will permanently substitute for the physical collections is ill founded. However, when the interactive and immersive potential of the digital medium is realized, this new meta-museum type can become a very valid and effective way of shaping knowledge of visual art. 'Virtual' museums can fulfill a unique role in the community of cultural institutions and should be considered on a level ground with "bricks and mortar" institutions.

The issues that I have explored in this thesis are not the only ones that could be investigated in relation to the topic of the 'virtual' museum. In fact, much of my research opened many alternate directions of inquiry that I refer to but do not examine in depth. These other directions warrant further exploration, but are beyond the scope (and scale) of this thesis. A more detailed analysis of the impact of blurring boundaries between nation states on the World Wide Web and the preservation/presentation of distinctive cultural heritages is one avenue of interest that could form the basis of an entire thesis. The debate over the use of cultural property and copyright within the digital environment of the Internet is another obvious area of study, especially the advocacy of organizations such as the Canadian Artists' Representation (CARfac) for the visual artist in Canada. Another area worth examination addresses the implications of true virtual reality and "solitary surfing" for the experience of art exhibitions.

This thesis forms part of a growing body of literature about the impact of technology on the display of art. As theorists, curators, and artists continue to think about and to experiment with the digital, new interpretations and alternate uses will provoke and

influence how the ‘virtual’ can enrich the lives of those who interact with it. My hope is that this thesis will stimulate new ways of thinking by museum professionals about the potential of ‘virtual’ art exhibitions.

APPENDIX A

CHRONOLOGY

1962	In the wake of the Cuban Missile Crisis, Paul Baran wrote a paper entitled "On Distributed Communications Networks" under RAND Corp which lay the foundations for the architecture of what was to become the Internet.
1968	Founding of the National Museums Corporation (NMC).
1969	The Internet started as the ARPANET ¹ , which was funded by the US government to link supercomputer sites and educational and research institutions worldwide. First email program written by Larry Roberts (MIT).
1972	First public demonstration of ARPNET – Used Telnet and FTP. ² The National Museum Policy and its Five Major Programmes: Canadian Conservation Institute (CCI); International Programme; Mobile Exhibits Programme; Museum Assistance Programme (MAP); and the National Inventory Programme (NIP).
1975	First commercial version of ARPANET.
1979	First opening of the ARPANET at universities.
1980-84	Conservation Information Network (CIN) initiated collaborative working methods and worldwide access to data on the NIP mainframe.
1982	Canadian Heritage Information Network (CHIN) replaced NIP. Louis Applebaum and Jacques Hébert. <i>Report of the Federal Cultural Policy Review Committee</i> . Ottawa: Department of Communications, Minister of Supply and Services, 1982. (Commissioned by Francis Fox, Minister of Communications from 1980 to 1984).
1983	Canada's University Network (NetNorth) came online.
1984	Marcel Masse succeeded Francis Fox as the Minister of Communications.
1986	Flora MacDonald succeeded Marcel Masse as the Minister of Communications. Withrow-Richard Task Force appointed by Masse, to evaluate the federal government's contribution to Canada's museums, including the role of the NMC, reports to MacDonald.

	MacDonald accepts Withrow-Richard Task Force recommendation to dissolve the NMC.
1988	Development of Trillium – A joint project of CHIN and the Ontario Museums Association (OMA) to provide participating institutions with electronic mail and access to national and reference databases. Part of the Regional Networks Initiative.
1990	New National Museum Policy. Mobile Exhibits Programme phased out.
1991	Saskatchewan Heritage Information Network (SHIN), Info-Muse, and Trillium Regional Networks working together to link member institutions directly with the National Databases through the CHIN mainframe. Creation of the Technology Assessment Centre (TAC).
1992	The World Wide Web (WWW) was launched – enabled by the development of hypertext markup language (HTML).
1993	Appointment of Lyn Elliot Sherwood as the new Director of CHIN.
1994	Commercial users outnumbered academics on the Internet for the first time. Acknowledgment that mainframe technology would be surpassed by LAN and microcomputers.
1995	Development of a new mission statement for CHIN: “to broker effective access to Canadian and international heritage information for public education and enjoyment and for the collective benefit of Canadian museums.” Shift from mainframe to LAN and microcomputers. Official Launch of CHIN’s Internet accessible databases in October. First ‘virtual’ exhibition, <i>Christmas Traditions in France and Canada</i> , goes live on December 18.
1996	CHIN produced its own ‘virtual’ display of objects from the Canadian Collections.
1997	National Inventories made publicly available through the Internet on February 17. The Government of Canada announces “Connectedness” initiative: “We will make the information and knowledge infrastructure accessible to all Canadians by

	<p>the year 2000, thereby making Canada the most connected nation in the world.”³</p> <p>Initiation of the Francophonie Virtual Museum in October.</p> <p>Joint publication (CHIN and the French Ministry of Culture) “Evaluation and Observation of an Internet Site”.</p>
1998	<p>Final Shutdown of CHIN’s mainframe system on March 31.</p> <p>Upgrade to Internet-based servers and connections.</p> <p>Unveiling of the new version of the National Inventories – <i>Artefacts Canada</i>.</p>
2000	<p>Opening of the <i>Virtual Museum of the Americas</i> on May 18.</p> <p>Launch of the <i>Great Canadian Guide</i> as the successor to the <i>Guide to Canadian Museums and Galleries</i> on June 21.</p> <p>Mission statement for the <i>Virtual Museum of Canada</i> published in July.</p> <p>First call for proposals for <i>VMC</i> content posted on the CHIN website in November.</p>
2001	<p>Launch of the <i>Virtual Museum of Canada</i> on March 22.</p>

¹ ARPANET – The US Defense Advanced Research Projects Agency.

² The protocol for remote terminal access (Telnet) and the file transfer protocol (FTP) are still in use today and form the basis for the interactive and immersive qualities of the Internet.

³ Jean Chrétien, “Speech from the Throne, September 23, 1997,” *Message from Industry Canada Minister* <http://connect.gc.ca/en/ar/1017-e.htm>, April 2000.

APPENDIX B

EXPERIENCE OF THE REPRODUCTION

APPENDIX C

– Evaluation of the *Virtual Museum of Canada* –

Criteria	Questions	Yes / No / Other notes
Authority	<ol style="list-style-type: none"> 1. Is it clear who is the sponsoring page? (Essential) 2. Is there a link to a page describing the purpose of the sponsoring organization? 3. Is there a way of verifying the legitimacy of the page's sponsor? Phone Number? Mailing address? (Essential) 4. Is it clear who wrote the material and are the author's qualifications for writing on this topic clearly stated? 5. If the material is protected by copyright, is the name of the copyright holder given? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes 4. Yes – VMC 5. Yes
Accuracy	<ol style="list-style-type: none"> 1. Are the sources for any factual information clearly listed so they can be verified in another source? 2. Is the information free of grammatical, spelling, and other typographical errors? (This is an issue of both quality control and potential inaccuracies in the information.) 3. Is it clear who has the ultimate responsibility for the accuracy of the content of the material? 4. If there are charts and/or graphs containing statistical data, are the charts and/or graphs clearly labelled and easy to read? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes – VMC 4. Yes
Objectivity	<ol style="list-style-type: none"> 1. Is the information provided as a public service? 2. Is the information free of advertising? 3. If there is advertising on the page, is it clearly differentiated from the information content? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes
Currency	<ol style="list-style-type: none"> 1. Are there dates on the page to indicate: a) When the page was written? b) When the page was first placed on the WWW? c) When the page was last revised? 2. Are there any other indications that the material is kept current? 3. If the material contains graphs and/or charts, is it clearly stated when the data was gathered? 4. If the information is published in different editions, is it clearly labelled what edition the page is from? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. N/A 4. N/A

Criteria	Questions	Yes / No / Other notes
Coverage [Criterion #4 adds to the encyclopaedic property that Murray associates with the digital environment.]	<ol style="list-style-type: none"> 1. Is there an indication that the page has been completed, and is still not under construction? 2. If there is a print equivalent to the Web page, is there a clear indication of whether the entire work is available on the Web or only parts of it? 3. If the material is from a work that is out of copyright (as is often the case with a dictionary or thesaurus) has there been an effort to update the material to make it more current?) 4. Is the site "comprehensive" in its coverage of discipline-based resources? 5. Are the results of research presented and referenced in a manner consistent with the conventions of the discipline? 	<ol style="list-style-type: none"> 1. Yes – N/A 2. Yes 3. N/A 4. Yes 5. Yes
Links [The criteria in this section add to the spatial, encyclopaedic, and procedural properties of the digital environment.]	<ol style="list-style-type: none"> 1. Are the criteria for the inclusion of links stated? 2. Are the links up-to-date? 3. Are the links relevant and appropriate for the page? 4. Is the selection of links comprehensive? 5. Is there any evaluation, e.g. annotations, of the links and their content, usefulness, etc.? 6. Are the links reliable? Are there "blind" or broken links to references that are no longer there? 	<ol style="list-style-type: none"> 1. No 2. Yes 3. Yes 4. Yes 5. Yes 6. Mostly Yes (VMC Friends broken)
Access [The criteria in this section add to the participatory property of the digital environment.]	<ol style="list-style-type: none"> 1. Is the download time reasonable? Fast? Slow? 2. Is the access to all the information on the site free? If not, is there a fee? Must you register to gain access? 3. If you must register, is there evidence of secure transfer of information? 4. Can the information on the site be viewed as text only, non-frames, non-tables, etc.? 5. Is there a "print-friendly" icon that lets the user print the information without all the page graphics? 	<ol style="list-style-type: none"> 1. Yes – Fast 2. Yes – Free 3. N/A 4. Yes 5. Yes
Presentation and Structure [The criteria in this section add to the spatial property of the digital environment.]	<ol style="list-style-type: none"> 1. Are good graphic design principles used? 2. Do the graphics and art enhance access? 3. Can you reach the information you want in a maximum of three or four mouse clicks? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes

(The higher the number of 'Yes' answers the more likely the source is of high quality)

APPENDIX C

– Evaluation of *Group of Seven* (TTMAG) –

Criteria	Questions	Yes / No / Other notes
Authority	1. Is it clear who is the sponsoring page? (Essential) 2. Is there a link to a page describing the purpose of the sponsoring organization? 3. Is there a way of verifying the legitimacy of the page's sponsor? Phone Number? Mailing address? (Essential) 4. Is it clear who wrote the material and are the author's qualifications for writing on this topic clearly stated? 5. If the material is protected by copyright, is the name of the copyright holder given?	1. Yes 2. Yes 3. Yes 4. Yes 5. No
Accuracy	1. Are the sources for any factual information clearly listed so they can be verified in another source? 2. Is the information free of grammatical, spelling, and other typographical errors? (This is an issue of both quality control and potential inaccuracies in the information.) 3. Is it clear who has the ultimate responsibility for the accuracy of the content of the material? 4. If there are charts and/or graphs containing statistical data, are the charts and/or graphs clearly labelled and easy to read?	1. No 2. Yes 3. Yes (Director) 4. N/A
Objectivity	1. Is the information provided as a public service? 2. Is the information free of advertising? 3. If there is advertising on the page, is it clearly differentiated from the information content?	1. Yes (Clearly promotional) 2. Yes 3. N/A
Currency	1. Are there dates on the page to indicate: a) When the page was written? b) When the page was first placed on the WWW? c) When the page was last revised? 2. Are there any other indications that the material is kept current? 3. If the material contains graphs and/or charts, is it clearly stated when the data was gathered? 4. If the information is published in different editions, is it clearly labelled what edition the page is from?	1. No 2. No 3. N/A 4. No

Criteria	Questions	Yes / No / Other notes
Coverage [Criterion #4 adds to the encyclopaedic property that Murray associates with the digital environment.]	<ol style="list-style-type: none"> 1. Is there an indication that the page has been completed, and is still not under construction? 2. If there is a print equivalent to the Web page, is there a clear indication of whether the entire work is available on the Web or only parts of it? 3. If the material is from a work that is out of copyright (as is often the case with a dictionary or thesaurus) has there been an effort to update the material to make it more current?) 4. Is the site "comprehensive" in its coverage of discipline-based resources? 5. Are the results of research presented and referenced in a manner consistent with the conventions of the discipline? 	<ol style="list-style-type: none"> 1. No 2. No 3. N/A 4. No 5. Yes
Links [The criteria in this section add to the spatial, encyclopaedic, and procedural properties of the digital environment.]	<ol style="list-style-type: none"> 1. Are the criteria for the inclusion of links stated? 2. Are the links up-to-date? 3. Are the links relevant and appropriate for the page? 4. Is the selection of links comprehensive? 5. Is there any evaluation, e.g. annotations, of the links and their content, usefulness, etc.? 6. Are the links reliable? Are there "blind" or broken links to references that are no longer there? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes 4. No 5. No 6. Yes
Access [The criteria in this section add to the participatory property of the digital environment.]	<ol style="list-style-type: none"> 1. Is the download time reasonable? Fast? Slow? 2. Is the access to all the information on the site free? If not, is there a fee? Must you register to gain access? 3. If you must register, is there evidence of secure transfer of information? 4. Can the information on the site be viewed as text only, non-frames, non-tables, etc.? 5. Is there a "print-friendly" icon that lets the user print the information without all the page graphics? 	<ol style="list-style-type: none"> 1. Yes – Fast 2. Yes – Free 3. N/A 4. No 5. No
Presentation and Structure [The criteria in this section add to the spatial property of the digital environment.]	<ol style="list-style-type: none"> 1. Are good graphic design principles used? 2. Do the graphics and art enhance access? 3. Can you reach the information you want in a maximum of three or four mouse clicks? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes

(The higher the number of 'Yes' answers the more likely the source is of high quality)

APPENDIX C

– Evaluation of *Panoramas: The North American Landscape in Art* (CHIN) –

Criteria	Questions	Yes / No / Other notes
Authority	<ol style="list-style-type: none"> 1. Is it clear who is the sponsoring page? (Essential) 2. Is there a link to a page describing the purpose of the sponsoring organization? 3. Is there a way of verifying the legitimacy of the page's sponsor? Phone Number? Mailing address? (Essential) 4. Is it clear who wrote the material and are the author's qualifications for writing on this topic clearly stated? 5. If the material is protected by copyright, is the name of the copyright holder given? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes 4. Understood 5. Yes
Accuracy	<ol style="list-style-type: none"> 1. Are the sources for any factual information clearly listed so they can be verified in another source? 2. Is the information free of grammatical, spelling, and other typographical errors? (This is an issue of both quality control and potential inaccuracies in the information.) 3. Is it clear who has the ultimate responsibility for the accuracy of the content of the material? 4. If there are charts and/or graphs containing statistical data, are the charts and/or graphs clearly labelled and easy to read? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. No (Understood to be individual curators) 4. N/A
Objectivity	<ol style="list-style-type: none"> 1. Is the information provided as a public service? 2. Is the information free of advertising? 3. If there is advertising on the page, is it clearly differentiated from the information content? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. N/A
Currency	<ol style="list-style-type: none"> 1. Are there dates on the page to indicate: a) When the page was written? b) When the page was first placed on the WWW? c) When the page was last revised? 2. Are there any other indications that the material is kept current? 3. If the material contains graphs and/or charts, is it clearly stated when the data was gathered? 4. If the information is published in different editions, is it clearly labelled what edition the page is from? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. N/A 4. N/A

Criteria	Questions	Yes / No / Other notes
Coverage [Criterion #4 adds to the encyclopaedic property that Murray associates with the digital environment.]	<ol style="list-style-type: none"> 1. Is there an indication that the page has been completed, and is still not under construction? 2. If there is a print equivalent to the Web page, is there a clear indication of whether the entire work is available on the Web or only parts of it? 3. If the material is from a work that is out of copyright (as is often the case with a dictionary or thesaurus) has there been an effort to update the material to make it more current?) 4. Is the site "comprehensive" in its coverage of discipline-based resources? 5. Are the results of research presented and referenced in a manner consistent with the conventions of the discipline? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. N/A 4. Yes 5. Yes
Links [The criteria in this section add to the spatial, encyclopaedic, and procedural properties of the digital environment.]	<ol style="list-style-type: none"> 1. Are the criteria for the inclusion of links stated? 2. Are the links up-to-date? 3. Are the links relevant and appropriate for the page? 4. Is the selection of links comprehensive? 5. Is there any evaluation, e.g. annotations, of the links and their content, usefulness, etc.? 6. Are the links reliable? Are there "blind" or broken links to references that are no longer there? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes 4. Mostly Yes 5. No 6. Yes
Access [The criteria in this section add to the participatory property of the digital environment.]	<ol style="list-style-type: none"> 1. Is the download time reasonable? Fast? Slow? 2. Is the access to all the information on the site free? If not, is there a fee? Must you register to gain access? 3. If you must register, is there evidence of secure transfer of information? 4. Can the information on the site be viewed as text only, non-frames, non-tables, etc.? 5. Is there a "print-friendly" icon that lets the user print the information without all the page graphics? 	<ol style="list-style-type: none"> 1. Yes – Fast 2. Yes – Free 3. N/A 4. Yes 5. Yes
Presentation and Structure [The criteria in this section add to the spatial property of the digital environment.]	<ol style="list-style-type: none"> 1. Are good graphic design principles used? 2. Do the graphics and art enhance access? 3. Can you reach the information you want in a maximum of three or four mouse clicks? 	<ol style="list-style-type: none"> 1. Yes 2. Yes 3. Yes

(The higher the number of 'Yes' answers the more likely the source is of high quality)

Figure 1 VMC Splash Page (Screen Capture, July 2002)

Design by Herrera Berman Communications Inc.

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The purpose of this diagram is to illustrate the general information available through the site, and not the graphic design or final wording of the sections. Once approved, further revisions will be considered 'Author's Alterations.'

Client ID: CHIN 8732

Figure 2 *VMC Portal Structure (March 2001)*

BIBLIOGRAPHY

Barash, Jeffrey Andrew. *Martin Heidegger and the Problem of Historical Meaning*. Dordrecht, Boston, Lancaster: Martinus Nijhoff Publishers, 1988.

Barrett, Neil. *The State of the Cybernation: Cultural, Political and Economic Implications of the Internet*. London: Kogan Page, 1996.

Barthes, Roland. "The Photographic Message," in *Image, Music, Text*. Stephen Heath, trans. New York: The Noonday Press, 1977, 15-31.

Barwell, Graham and Kate Bowles. "Border Crossings: The Internet and the Dislocation of Citizenship," in David Bell and Barbara M. Kennedy, eds. *The Cybercultures Reader*. London and New York: Routledge, 2000, 702-711.

Baudrillard, Jean. *Simulations*. Paul Foss, Paul Patton and Philip Beitchman, trans. New York: Semiotext(e), 1983.

Bell, David and Barbara M. Kennedy, eds. *The Cybercultures Reader*. London and New York: Routledge, 2000.

Benjamin, Walter. "The Work of Art in the Age of Mechanical Reproductions," in Hannah Arendt, ed. *Illuminations*. Harry Zohn, trans. New York: Harcourt Brace Jovanovich, 1968, 217-251.

Berger, John. *Ways of Seeing*. London: British Broadcasting Corporation and Penguin Books, 1972.

Bernstein, J.M. *The Fate of Art: Aesthetic Alienation from Kant to Derrida and Adorno*. Cambridge: Polity Press, 1992.

Boswell, David and Jessica Evans, eds. *Representing the Nation: A Reader. Histories, heritage and museums*. London and New York: Routledge, 1999.

Bourdieu, Pierre and Alain Darbel. *The Love of Art: European Art Museums and their Public*. Caroline Beattie and Nick Merriman, trans. Stanford: Stanford University Press, 1990.

Camille, Michael. "Simulacrum," in Robert Nelson and Richard Shiff, eds. *Critical Terms for Art History*. Chicago: University of Chicago Press, 1996, 31 ff.

Clifford, James. *The Predicament of Culture: Twentieth-Century Ethnography, Literature, and Art*. Cambridge, Massachusetts, and London: Harvard University Press, 1988.

Dean, David. *Museum Exhibition: Theory and Practice*. London: Routledge, 1994.

De Kerckhove, Derrick. *Connected Intelligence: The Arrival of the Web Society*. Toronto: Somerville House, 1997.

———. *The Skin of Culture: Investigating the New Electronic Reality*. Toronto: Somerville House, 1995.

Deken, Joseph. *Computer Images: State of the Art*. Hildegard Kron and Edward Rosenfeld, eds. New York: Stewart, Tabori and Chang Publishers, Inc., 1983.

Deleuze, Gilles. "Plato and the Simulacrum," Rosalind Krauss, trans. *October*, no.27 (Winter 1983).

D'Haenens, Leen. "Beyond Infrastructure. Europe, the United States and Canada on the Information Highway: Where business and culture collide." in *Images of Canadianness: Visions on Canada's Politics, Culture, Economics*. Ottawa: University of Ottawa Press, 1998, 237-254.

Dreyfus, Hubert L. *What Computers Can't Do: A Critique of Artificial Reason*. New York, Evanston, San Francisco, London: Harper and Row Publishers, 1972.

Drucker, Johanna. "Digital Reflections: The Dialogue of Art and Technology," *Art Journal* 56, no. 3 (1997), 2.

Druckrey, Timothy, ed. *Electronic Culture: Technology and Visual Representation*. New York: Aperture Foundation, Inc., 1996.

———. *Ars Electronica: Facing the Future*. Cambridge, Mass.: The MIT Press, 1999.

———. *Iterations: The New Image*. Cambridge, Massachusetts and London: The MIT Press, 1993.

Duncan, Carol. *The Aesthetics of Power: Essays in Critical Art History*. Cambridge: Cambridge University Press, 1993.

———. *Civilizing Rituals: Inside Public Art Museums*. London and New York: Routledge, 1995.

Eco, Umberto. *Travels in Hyper Reality: Essays*. William Weaver, trans. San Diego: Harcourt Brace Jovanovich, 1986.

Elkins, James. "What are we seeing exactly?" *The Art Bulletin*, LXXIX, no. 2 (June 1997), 191-198.

———. *The Object Stares Back: On the Nature of Seeing*. New York: Simon and Schuster, 1996.

Ester, Michael. "Issues in the Use of Electronic Images for Scholarship in the Arts and Humanities," in Stephanie Kenna and Seamus Ross, eds. *Networking in the Humanities*, London: Bowker, 1995, 111-126.

Everard, Jerry. *Virtual States: The Internet and the Boundaries of the Nation-State*. London and New York: Routledge, 2000.

Foster, Hal. *The Return of the Real: The Avant-Garde at the End of the Century*. Cambridge, Mass. and London, Eng.: The MIT Press, 1996.

Gerrard, Richard. "Evolution, Revolution and the Laundry List," *Ontario Museum Association Annual*, 3 (October 1994), 40-45.

Graham, Gordon. *The Internet: A Philosophical Inquiry*. New York and London: Routledge, 1999.

Grant, Laurence. *Canada's Federal Museum Policy: Delectation, Democratization, Deliberation, and Denouement*. Ottawa: Carleton University, The Centre for Research on Culture and Society, 1991.

Greenblatt, Stephen. "Resonance and Wonder," in Ivan Karp and Steven D. Lavine, eds. *Exhibiting Cultures: The Poetics and Politics of Museum Display*. Washington: Smithsonian Institution Press, 1991, 42 ff.

Greimas, Algirdas Julien. "The Interaction of Semiotic Constraints," *On Meaning: Selected Writings in Semiotic Theory*. Paul J. Perron and Frank H. Collins, trans. Minneapolis: University of Minnesota Press, 1987, 48-62.

Hawisher, Gail E. and Cynthia L. Selfe. *Global Literacies and the World-Wide Web*. London and New York: Routledge, 2000.

Hayles, Katherine N.. "Embodied Virtuality: Or How to Put Bodies Back into the Picture," in Mary Anne Moser and Douglas MacLeod, eds. *Immersed in Technology: Art and Virtual Environments*. Cambridge, Mass. and London, Eng.: The MIT Press, 1996, 1-28.

Heidegger, Martin. "The Age of the World Picture," in Timothy Druckrey, ed. *Electronic Culture: Technology and Visual Representation*. New York: Aperture Foundation, Inc., 1996, 47-61.

———. "The Origin of the Work of Art," in *Poetry, Language, Thought*. Albert Hofstadter, trans. New York: Harper & Row, 1971, 15-88.

———. "The Question Concerning Technology," in *The Question Concerning Technology and Other Essays*. William Lovitt, trans. (New York: Harper & Row, 1977), 3-35.

Heim, Michael. "The Computer as Component: Heidegger and McLuhan," *Philosophy and Literature* 16, no. 2 (October 1992), 304-319.

———. *The Metaphysics of Virtual Reality*. New York and Oxford: Oxford University Press, 1993.

———. *Virtual Realism*. New York and Oxford: Oxford University Press, 1998.

Herman, Andrew and Thomas Swiss, eds. *The World Wide Web and Contemporary Cultural Theory*. New York and London: Routledge, 2000.

Holub, Robert C. *Reception Theory: A Critical Introduction*. New York: Methuen, 1984.

Hood, Marilyn G. *Adult Attitudes Toward Leisure Choices in Relation to Museum Participation*. Ph.D. thesis. Ohio: Ohio State University, 1981.

Hooper-Greenhill, Eilean. *Museums and the Shaping of Knowledge*. London: Routledge, 1992.

Hudson, Kenneth. *Museums of Influence*. Cambridge: University of Cambridge Press, 1987).

Iser, Wolfgang. *Prospecting: From Reader Response to Literary Anthropology*. Baltimore: Johns Hopkins University Press, 1989.

Jameson, Fredric. "Foreword," in A.J. Greimas, *On Meaning: Selected Writings in Semiotic Theory*. Paul J. Perron and Frank H., trans. Collins. Minneapolis: University of Minnesota Press, 1987, vi-xxii.

Jauss, Hans Robert. *Toward an Aesthetic of Reception*. T. Bahti, trans. Minneapolis: University of Minnesota Press, 1982.

Jones-Garmel, Katherine, ed. *The Wired Museum: Emerging Technology and Changing Paradigms*. Washington: American Museums Association, 1997.

Kavanagh, Gaynor, ed. *Museum Language: Objects and Texts*. Leicester: Leicester University Press, 1991.

Kaelin, Eugene F. *Art and Existence: A Phenomenological Aesthetics*. Lewisburg: Bucknell University Press, 1970.

Kelly, Michael, ed. *Critique and Power: Recasting the Foucault/Habermas Debate*. Cambridge, Mass.: The MIT Press, 1994.

Kockelmans, Joseph J. *Heidegger on Art and Art Works*. Dordrecht, Boston, Lancaster: Martinus Nijhoff Publishers, 1985.

- Koltun, Lilly. "The Promise and Threat of Digital Options in an Archival Age," *Archivaria* 47, 114ff.
- Kristeller, Paul Oskar. *Renaissance Thought II: Papers on Humanism and the Arts*. New York, Evanston, and London: Harper Torchbooks, 1965.
- Landow, George P. *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*. Baltimore and London: The Johns Hopkins University Press, 1997.
- Leeson, Lynn Herschman, ed. *Clicking In: Hot Links to a Digital Culture*. Seattle: Bay Press, 1996.
- Leiss, William. *Under Technology's Thumb*. Montreal and Kingston: McGill-Queen's University Press, 1990.
- Lopes, Dominic. *Understanding Pictures*. Oxford: Clarendon Press, 1996.
- Lovejoy, Margot. *Postmodern Currents: Art and Artists in the Age of Electronic Media*. 2nd edition. New Jersey: Prentice Hall, 1997.
- Lunenfeld, Peter. *Snap to Grid: A User's Guide to Digital Arts, Media, and Cultures*. Cambridge, Massachusetts, London: The MIT Press, 2000.
- MacDonald, George F., "Change and Challenge: Museums in the Information Society," in Ivan Karp, Steven D. Lavine, and Christine Mullen, eds. *Museums and Communities: The Politics of Public Culture*. Washington: Smithsonian Institution Press, 1992, 158-181.
- Magee, Bryan. *The Great Philosophers*. Oxford: Oxford University Press, 1987.
- Malraux, André. *Museum Without Walls*. Stuart Gilbert and Francis Price, trans. Garden City, New York: Doubleday & Company, Inc., 1967.
- Margolis, Joseph. *What, After All, Is a Work of Art? Lectures in the Philosophy of Art*. Pennsylvania: The Pennsylvania State University Press, 1999.
- McLuhan, Marshall. *The Gutenberg Galaxy: The Making of Typographic Man*. Toronto: University of Toronto Press, 1962.
- . *Understanding Media: The Extensions of Man*. New York, Toronto and London: McGraw-Hill Book Company, 1964.
- Merleau-Ponty, Maurice. *The Primacy of Perception: And Other Essays on Phenomenological Psychology the Philosophy of Art, History and Politics*. James M. Edie, ed. Northwestern University Press, 1964.
- Mitchell, William J. *The Reconfigured Eye: Visual Truth in the Post-Photographic Era*. Cambridge, Mass. and London, Eng.: The MIT Press, 1992.

Moser, Mary Anne and Douglas MacLeod, eds. *Immersed in Technology: Art and Virtual Environments*. Cambridge, Mass. and London, Eng.: The MIT Press, 1996.

Murray, Janet H. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. New York: The Free Press, 1997.

Negroponte, Nicholas. *Being Digital*. New York: Alfred A. Knopf Inc., 1995.

Ong, Walter J.. *Orality and Literacy: The Technologizing of the Word*. London and New York: Routledge, 1982.

Pearce, Susan M. *Interpreting Objects and Collections*. London: Routledge, 1994.

Pearce, Susan M. *Museums, Objects, and Collections: A Cultural Study*. Washington: Smithsonian Institution Press, 1992.

Phillips, David. *Exhibiting Authenticity*. Manchester and New York: Manchester University Press, 1997.

Preziosi, Donald, ed. *The Art of Art History: A Critical Anthology*. New York and Oxford: Oxford University Press, 1998.

Re, Jonathon. *The Great Philosophers: Heidegger, "History and Truth" in Being and Time*. Ray Monk and Frederic Raphael, eds. London: Phoenix, 1998.

Selvin, James. *The Internet and Society*. Cambridge: Polity Press, 2000.

Shields, Rob, ed. *Cultures of Internet: Virtual Spaces, Real Histories, Living Bodies*. London: Sage Publications, 1996.

———. "Virtual Spaces and Organizational Networks," a thematic issue of *Space and Culture – the Journal*. 4, no. 5 Ottawa: Carleton University, 2000.

Stafford, Barbara Maria. *Good Looking: Essays on the Virtue of Images*. Cambridge and London: The MIT Press, 1996.

———. *Visual Analogy: Consciousness as the Art of Connecting*. Cambridge and London: The MIT Press, 1999.

Staniszewski, Mary Anne. *Believing is Seeing: Creating the Culture of Art*. London: Penguin Books, 1995.

Stratton, Jon. "Cyberspace and the Globalization of Culture," in David Bell and Barbara M. Kennedy, eds. *The Cybercultures Reader*. London and New York: Routledge, 2000, 721-731.

Szajber, Tanya, ed. *Computing and Visual Culture: Representation and Interpretation, CHArt Conference Proceedings, Volume One*. London: CHArt, 1999.

Thomas, Selma and Ann Mintz, eds. *The Virtual and the Real: Media in the Museum*. Washington, DC: American Association of Museums, 1998.

Tillman, Frank A. and Steven M. Cahn. *Philosophy of Art and Aesthetics: From Plato to Wittgenstein*. New York, Evanston, London: Harper and Row Publishers, 1969.

Tuer, Dot. "On Questions of Museum Practices and New Technologies," *Muse* XVIII, no. 2, (2000), 20-24.

Vaughan, William. "Computer Applications for Art History," in Mark Cheetham, et al eds. *The Subjects of Art History: Historical Objects in Contemporary Perspectives*. Cambridge: Cambridge University Press, 1998, 308-328.

Vergo, Peter, ed. *The New Museology*. London: Reaktion Books, 1989.

White, Michelle. "Where is the Louvre?" in Rob Shields, ed. "Virtual Spaces and Organizational Networks," a thematic issue of *Space and Culture – the Journal*. 4, no. 5 Ottawa: Carleton University, 2000, 47-70.

White, Peter et al. *Naming a Practice: Curatorial Strategies for the Future*. Banff: Walter Philips Editions, 1996.

Wollheim, Richard. *Art and its Objects: An Introduction to Aesthetics*. New York, Evanston and London: Harper and Row Publishers, 1968.

Worden, Suzette. "From the Expository to the Declarative: Interpreting the World Wide Web," in Tanya Szajber, ed. *Computing and Visual Culture: Representation and Interpretation, CHArt Conference Proceedings, Volume One*. London: CHArt, 1999, 27-43.

Zimmerman, Michael E. *Heidegger's Confrontation with Modernity: Technology, Politics, and Art*. Bloomington and Indianapolis: Indiana University Press, 1990.

GOVERNMENT DOCUMENTS

Applebaum, Louis and Jacques Hébert. *Report of the Federal Cultural Policy Review Committee*. Ottawa: Department of Communications, Ministry of Supply and Services, 1982.

The Canada Council. *The Canada Council in the 1980s: The Applebaum-Hébert Report and Beyond*. Ottawa: The Canada Council, 1983.

Communications Canada. *Canadian Museum Policy: Temples of the Human Spirit*. Ottawa: Communications Canada, 1990.

Communications Canada. *The Canadian Heritage Information Network Communication*. Ottawa: Communications Canada, 1994.

Heritage Canada. *Building on the Foundation: A Framework for Future Action*. Ottawa: Heritage Canada Foundation, 1996.

National Museums of Canada. *National Museums of Canada: After Applebaum-Hébert*. Ottawa: National Museums of Canada, 1984.

———. *The National Inventory Programme*. Ottawa: National Museums of Canada, 1977.

N.L. Hushion and Associates. *Canadian Heritage Information Network: Partnerships Study Final Report*. Ottawa: CHIN, January 1995.

The Canadian Heritage Information Network. *Reference Database Creation Policy*. Ottawa: Department of Communications, June 1993.

———. *Reference Database Creation Guidelines*. Ottawa: Department of Communications, June 1993.

———. *The Virtual Museum of Canada Guidelines: Consultation Draft Version 2*. Ottawa: CHIN, July 2000.

———. *The Virtual Museum of Canada: Consultations with the Canadian Museum and Heritage Communities*. Ottawa: CHIN, July 2000.

———. *Network News Inaugural Issue*. Ottawa: Communications Canada, Spring 1991.

———. *Network News No. 2*. Ottawa: Communications Canada, Winter 1991.

———. *Network News No. 4*. Ottawa: Canadian Heritage Information Network, Winter 1993.

———. *Network News No. 5*. Ottawa: Canadian Heritage Information Network, Winter 1994.

———. *Network News No. 6*. Ottawa: Canadian Heritage Information Network, Spring 1995.

The National Museums of Canada. *After Applebaum-Hébert*. Ottawa: National Museums of Canada, 1984.

The National Museums of Canada. *The National Museum Policy: A Programme for Canadian Museums*. Ottawa: The National Museums of Canada, 1973.

The National Museums of Canada. *To Safeguard and Share the National Heritage: A Brief to the Task Force to Review the Role of the National Museums of Canada*. Ottawa: National Museums of Canada, May 1986.

The National Museums of Canada. *Towards a National Museum Policy for Canada: Draft working documents for discussion purposes*. Ottawa: National Museums of Canada, January 1986.

Public Works and Government Services. *Canadian Heritage Estimates 2001-2002 Part III: Report on Plans and Priorities*. Ottawa: Public Works and Government Services, 2001. (also available electronically http://www.pch.gc.ca/pubs/rpp2001/devl-culturel_eng.htm#depenses. 2001.

Withrow, William and Clément Richard. *Report and Recommendations of the Task Force Charged with Examining Federal Policy Concerning Museums*. Ottawa: National Museums Task Force, 1986.

ELECTRONIC RESOURCES

Art Museum Network. *Art Museum Image Consortium (AMICO)* 2002. <http://www.amico.org> (20 May 2002).

The Business Technology Network. "TechEncyclopedia: More than 20, 000 IT terms." *TechWeb*. 2002. <http://content.techweb.com/encyclopedia> (15 May 2002).

Canadian Museums Association. "About the Museums of Canada." *CMA*. 2001. <http://www.museums.ca/aboutmuseums.htm> (13 June 2001).

The Canadian Heritage Information Network. "Network News No.7." *CHIN*. Summer 1995. http://www.chin.gc.ca/About_Chin/Network_News/e_news7.html (7 November 2000).

———. "Network News No.8." *CHIN*. Fall-Winter 1995. http://www.chin.gc.ca/About_Chin/Network_News/e_news8.html (7 November 2000).

———. "Network News No.9." *CHIN*. Summer 1996. http://www.chin.gc.ca/About_Chin/Network_News/e_news9.html (7 November 2000).

———. "Network News No.10." *CHIN*. Spring 1997. http://www.chin.gc.ca/About_Chin/Network_News/e_news10.html (7 November 2000).

- . "Network News No.11." *CHIN*. Winter 1997-98. http://www.chin.gc.ca/About_Chin/Network_News/e_news11.html (7 November 2000).
- . "Network News No.12." *CHIN*. Autumn/Winter 1998-99. http://www.chin.gc.ca/About_Chin/Network_News/e_news12.html (7 November 2000).
- . "Network News No.13." *CHIN*. Spring 2000. http://www.chin.gc.ca/About_Chin/Network_News/e_news13.html (7 November 2000).
- . "Network News No.14." *CHIN*. Winter 2000. http://www.chin.gc.ca/About_Chin/Network_News/e_news14.html (7 November 2000).
- . "Homepage." *The Virtual Museum of Canada* 2001. <http://www.virtualmuseum.ca> (15 May 2001).
- . "Panoramas: The North American Landscape in Art." *The Virtual Museum of Canada* 2001. <http://www.virtualmuseum.ca/Exhibition/Landscapes/> (1 June 2002).
- . "The Virtual Museum of Canada: Update." *CHIN*. November 2000. http://www.chin.gc.ca/Vmc/e_update.html (15 May 2001).
- . "The Virtual Museum of Canada: Proposal Form." *CHIN*. November 2000. http://www.chin.gc.ca/Vmc/Documents/e_form.pdf (15 May 2001).
- . "The Virtual Museum of Canada: Sample Introduction." *CHIN*. November 2000. http://www.chin.gc.ca/Vmc/e_sample.html (15 May 2001).
- . "The Virtual Museum of Canada: Sample Contract A." *CHIN*. November 2000. http://www.chin.gc.ca/Vmc/Documents/e_non_host_sample.pdf (15 May 2001).
- . "The Virtual Museum of Canada: Sample Contract B." *CHIN*. November 2000. http://www.chin.gc.ca/Vmc/Documents/e_host_sample.pdf (15 May 2001).
- Cocks, Anna Somers. "Philippe de Montebello: last of the Mohicans?" *The Art Newspaper*. July 7, 2000. <http://www.theartnewspaper.com/news/article.asp?idart=2511> (18 June 2002).
- Department of Canadian Heritage. "Canadian Culture Online Funding Programs." Canadian Heritage. 2002. http://www.pch.gc.ca/cdcci-iccn/main_e.cfm (19 June 2002).
- Department of Foreign Affairs and International Trade. "Other Trade Policy Issues," *Trade Negotiations and Agreements*. 2001 <http://www.dfait-maeci.gc.ca/tna-nac/canculture-e.asp> (15 May 2001).

Government of Canada. "Message from Canada's Minister of Industry." *Connecting Canadians Initiative*. April 2000. <http://connect.gc.ca/en/ar/1017-e.htm> (1 December 2001).

Government of Canada. "Message from the Prime Minister of Canada." *Connecting Canadians Initiative*. April 2000. <http://connect.gc.ca/en/ar/1016-e.htm> (1 December 2001).

Gowan, Michael. "How It Works: CRT Monitors." *PCWorld.com*. 2001. <http://www.pcworld.com/hereshow/article/0,aid,15765,pg,2,00.asp> (18 June 2002).

Industry Canada. "Canada On-Line: Community Access Program." *Connecting Canadians*. September 2002. <http://connect.gc.ca/en/240-e.htm> (11 June 2002).

———. "Canada's SchoolNet," 2000. <http://www.schoolnet.ca/home/e> (12 June 2002).

———. "Canada's Digital Collections," <http://collections.ic.gc.ca> (1 December 2001).

Massumi, Brian. "Realer than Real: The Simulacrum According to Deleuze and Guattari." http://www.anu.edu.au/HRC/first_and_last/works/realer.html, July 2001. [Originally published in *Copyright* no. 1 (1987)] (15 May 2001).

Microsoft. "Frequently Asked Questions about JPEG." *Microsoft Support Website*. 2001. <http://www.faqs.org/faqs/jpeg-faq/part1/> (15 May 2001).

———. "Glossary of Common Terms." *Microsoft Support Website*. 2001. <http://support.microsoft.com/support/kb/articles/Q108/8/03.asp> (15 May 2001).

National Library of Australia. *PictureAustralia*. May 2002. <http://pictureaustralia.org> (20 May 2002).

Pettigrew, Hon. Pierre S. "Statement by Hon. Pierre S. Pettigrew (Minister for International Trade) to the Ottawa Diplomatic Association and the Diplomatic Press Attachés Network at the National Press Club," Ottawa: February 16, 2000. http://198.103.104.118/minpub/publication.asp?FileSpec=/Min_Pub_Docs/103030.htm (15 May 2001).

Sherwood, Lyn Elliot. "The Canadian Heritage Information Network." (This paper is based on a talk delivered at the *Museum Collections and the Information Superhighway* conference) 10 May 1995. <http://www.nmsi.ac.uk/infosh/sherwood.htm> (16 October 2000).

Statistics Canada. "General Social Survey: Internet Use." *The Daily: Statistics Canada*. 26 March 2001. www.statcan.ca/Daily/English/010326/d010326a.htm (22 July 2002).

The Tom Thomson Memorial Art Gallery. "Group of Seven." *The Tom Thomson Memorial Art Gallery Website*. 2001. <http://www.tomthomson.org/g7room.htm> (1 June 2002).