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**Oppression and Transcendence:
The Iconography
of
Kazuo Nakamura's Grids**

by

Brian Grison Hon. B.A., Hon. B.F.A.

A thesis submitted to the
Faculty of Graduate Studies and Research
in partial fulfilment of the requirements
for the degree of

Masters of Arts
in
Canadian Art History

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FRONTISPIECE

Kazuo Nakamura (1926-2002)
Untitled Drawing, Summer 2001
blue ballpoint pen on paper
21.6 x 27.9 cm. (8 1/2 x 11 in.)

ABSTRACT

This thesis claims and demonstrates that the conceptual and graphic key to an understanding and appreciation of the art of Kazuo Nakamura is the simple horizontal and vertical grid of equal units. Beginning with his informal study of one-point Renaissance perspective at about the age of thirteen, this study traces Nakamura's exposure to several aspects of the grid, from a tool of traditional perspective, to a tool of accuracy in rendering, to an emblem of modernism, to a graphic tool of contemporary scientific research and representation, and finally to its association with the symbolism of yearning associated with the "view through the window" theme of German Romanticism in the early nineteenth century. With references to the development of his artistic and philosophic goals being a result and reflection of his life experience beginning at age sixteen with the destruction of his Japanese-Canadian community, this thesis maintains that the trauma of Nakamura's teenage years was the springboard of his later projects in which he worked toward a synthesis of the rationalism of scientific research with a contemplative aesthetic. Nakamura's life-long research project, established during the years of enforced solitude and isolation in the forests of the British Columbia interior, was his search for a sense of place from which he could no longer be exiled. Employing the grid as the armature of his research, Nakamura reduced the momentary and superficial appearances of nature to its hidden mathematical structures. The culmination of his research was the conversion of the grid as a metaphor of oppression and confinement to one of escape and transcendence. Nakamura's path through the barrier of the grid parallels and personalises the history of science, the history of perception, the history of the symbolism of the grid from the Renaissance to Modernism and the history of Nakamura's long project to discover a personal sense of place.

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There are many friends who have supported this thesis, and my even longer 'higher education' project. I want to extend my gratitude to the Batchelors, the Bennetts, the Collier/Ogilvies, Liane Davison, the Elmslie/Kimbers, Joe Gibson, Andre Gogol, Yvonne Lammerich, the Ludwig/Ives, the Metzgers, the Verspoor/Dawns, the Sexsmiths, the Searles and Carolyn Wong. Thank you to two new friends and colleagues, Nancy Duff and Bobbee Engel, for many pleasantly distracting hours of art history discussion, cold drinks and gossip.

I want to thank the following persons for e-mail or telephone or letter or personal conversations that assisted my research. I will begin with those associated with the Central Technical High-School. Virginia Luz and Doris McCarthy, were instructors of Kazuo Nakamura; Virginia Luz taught him illustration and pen and ink drawing, and Doris McCarthy taught him landscape painting and possibly still-life painting and art history. Both instructors remembered Nakamura well and were pleased to talk about his student years at CTS. The only classmate of Nakamura that I was able to contact was Oscar Ross. Ross, now a retired graphic artist, remembered Nakamura's intense but quiet personality, his dedication to his art practice, and the surprising volume of work he produced at school, but mostly on his own time. Joy Orzy, a generation older than Nakamura, was a student of Peter Howarth at the school in the 1930s, and she discussed his teaching style, which I interpreted as Bauhausian. Corey Gould, the current director of the Art Program at the school, introduced me to Oscar Ross, and told me about Rebecca Sisler's book on the history of high-school art education in Toronto and other writings concerning the program she directs.

I want to thank particular members of the Canadian art history community whose conversations contributed to my research. Anne Davis, author of a book about the influence of mysticism on four Canadian artists, including Jock Macdonald, supported my notion that Macdonald would have had a strong influence on Nakamura, if with reference to fundamental questions in science rather than the relationship between science and spirituality. As well as supporting my contention that the Art Department at CTS was influenced by the Bauhaus, Rebecca Sisler told me about the large Peter Howarth archive at Queen's University. Ken Carpenter also

supported my association between Nakamura and the Bauhaus through both Jock Macdonald and Lazlo Mohly-Nagy. Walter Klepac, whose recent catalogue essay argues for a relationship between Nakamura's practice and Conceptual Art, supported my search for a historic and biographic origin for his art in spite of my conclusions being somewhat a counter to his own analysis. I want to thank art historian Moreen Korp for our discussions of art practice as spiritual self-expression. There is a relationship between pure science, and mathematics in particular, and a spiritual contemplation of the universe, that could be applied to Nakamura's art practice. However, I did not pursue this direction of research because I would have needed to deal with the relationship between spirituality as an aspect of ethnicity and the cultural destruction of the Japanese-Canadian community, with the impact of this on Nakamura's work. This would require another thesis. I would like to thank Roger Mesley and Mitchel Frank for discussions about German Romanticism.

I would like to thank two mathematicians associated with Carleton University, Dr. Roger Herz-Fischler and Dr. Brett Stevens. Roger Herz-Fischler lectured me about the confusion artists (but 'never' art or mathematical historians) bring to the relationship between art and mathematics. Brett Stevens assisted me in the formal/mathematical description of several works by Nakamura.

Originally, my thesis had co-supervisors, Natalie Luckyj and Dr. Roger Mesley. I wish I could thank the late Natalie Luckyj, for her insistence that I "just start writing!" I want to thank Roger Mesley for accepting the chore of being my only supervisor, for his patience with my writing skills, my tendency to want to write about everything, and my slow pace of work.

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Finally, I want to especially thank Kazuo and Lillian Nakamura for their enthusiasm for this project, and for their patience as I interviewed them and discussed Kaz's art with him.

For Kaz and Lillian,
for their family,
and for the
Japanese-Canadian
community

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PREFACE

The notion that I was 'destined' to write this thesis about the meaning of the grid in the art of Kazuo Nakamura appeals to my sense that nothing in life is coincidental. This writing therefore has more than exclusively academic interest to me.

I have admired Nakamura's art since I was a student in the Art Department of Central Technical High-School in Toronto in the 1960s. I began my own four years of study there only ten years after Nakamura graduated. This early training, with most of the same instructors Nakamura had, in my opinion placed me in a unique position to appreciate the philosophy and history that informs the grid in his work.

Other experiences 'predestined' me to this research project. During the 1980s, while living in Victoria, B.C., I was loaned a Nakamura 'reflection painting' while its owner spent a year in Europe. In 1990 Nakamura and I participated in an alumni exhibition at Central Technical High-School, and in 1992 we contributed works to a show of contemporary Canadian art in Paris.

During my research into an iconography of Nakamura's art, it became apparent that the grid was a recurrent structure in his education, his early personal life and mature studio practice. My initial research into Nakamura's use of the grid sought a biographic rather than formal explanation for the differences between his art and the work of the other members of Painters Eleven. This perspective was encouraged by the largely psychoanalytic Picasso: Art as Autobiography by Mary Mathews Gedo. This book supported my contention that any artist's work is better understood if its personal origins, whether biographic or psychological, are considered. My thesis, that Nakamura's grid has iconographic meaning that distinguished him from 1950s modernism in Canada, proved to be compatible with my original interest in the roots of his work.

It is unfortunate that I did not meet Nakamura until the last year of his life. Though he was unable to draw or paint, he was still deeply involved with his research into the relationship between art and science, and mathematics in particular. It is also unfortunate that our conversations were limited by my inability to hear his speech accurately enough to conduct in-depth interviews. Nakamura was intrigued by my thesis regarding the origins of the grid in his art. I sensed that he would have had much to say about my thesis.

**Oppression and Transcendence:
The Iconography
of
Kazuo Nakamura's Grids**

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Brian Grison

INTRODUCTION

The Presence of the Grid

To observe the large-scale structure of our planet,
Aristotle had to look through the window of
geometry.

Leonard Mlodinow¹

This thesis considers the origins, evolution and meanings implicit in the grids that structure the drawings and paintings of the Canadian artist, Kazuo Nakamura. The horizontal and vertical patterns of equal or nearly equal spacing appear in several guises in virtually all of Nakamura's art. Sometimes the grid is explicit, sometimes hidden or emerging. In earlier works, it may be disguised as perspective, or as an apparently random configuration of intersecting lines. In the later work, when it had become fully realised, it resembled ordinary graph paper.

This thesis argues that the multiple meanings that have accrued around Nakamura's grids are inter-related and that, taken together, they function as a metaphor of a singular private and primary subject, one which the artist pursued almost from the beginning of his artistic life to his death in 2002. I will further argue that this integral theme cannot be fragmented into separate parts without perpetuating the misreadings of Nakamura's art that have been largely responsible for his misplacement in Canadian art history.

The subject of all Nakamura's art was the search for the means to recover a sense of place for himself in response to his loss of community at age sixteen. Within Nakamura's search for the means to rediscover the "sweet liberties of his Vancouver youth,"² the grid became a metaphor of both aspects of the artist's subject, oppression and transcendence, through scientific knowledge of the structure of the perceived universe. Both the search and the process became the equivalent of a scientific project.

The focus of Nakamura's research was the human perception of the physical world through the symbolic landscape. This field of study took several forms, which after 1950 evolved organically in separate but related 'series'. These include Nakamura's 'block structure series', often known as his 'prairie tower series', represented by such works as *Fortress*, 1956. (ILL. 1)

The overlapping 'reflection series' dealt with the duality of perceived reality, as in such paintings as *Lake, B.C.*, 1964. (ILL. 2) These paintings are also sometimes referred to as his 'memory landscape series' because they refer to his penchant for producing imaginary semi-representational landscapes that refer directly back to his painting *Twelve Mile Lake*, 1944, (ILL. 3) produced while he was living in Tashme Internment Camp near Hope, British Columbia from October 1942 to November 1944. His largest body of works, the 'number structure series' which is the culmination of all his projects, analyses the relationship among mathematics, material structure, time and motion. These complex connections are exemplified by such works as *Number Structure 9*, 1984. (ILL. 4) These various series influenced each other, either stylistically or thematically, suggesting that Nakamura was consciously approaching the same subject from several different perspectives.³

My methodology will integrate material from the artist's life with a formal analysis of specific art works, and the contextual environment in which he developed. I will examine Nakamura's early biography, with particular emphasis on his education in applied-art, and his life-long interest in science and mathematics. I will suggest possible sources for the emergence, development and persistence of the grid in Nakamura's personal, artistic and intellectual life. I will propose that the grid for Nakamura was as much a scientific tool as it was a formal or graphic device. Although Nakamura tended to discount influences on his artistic development from the educational institutions he attended, it cannot be ignored that his high-school applied art education predisposed him to employ the grid as an ordering principle in his art and was the basis of the grid as a formal device in his works. Applied uses of the grid, which have a history as old as art itself, refer to its uses in engineering or applied art, where it supposedly carried no personal or symbolic meaning. However I argue that the grid of applied art actually had a more profound influence on Nakamura than the grid within the formal language of fine art.

This development may be said to originate with his traumatic experience in being forcibly removed from his home in Vancouver as an enemy alien during World War II, being sent to Tashme Internment Camp and then being refused permission to return to his home, but required to move east of the Rockies. It is while he was interned that I propose that his project began. In Chapter One I examine his subsequent training in the Art Department of Central Technical High-

School (hereafter CTS), and his first encounter with the group of artists that became Painters Eleven.

The changes in Nakamura's style and techniques and the evolution of his employment of grids may be traced along a continuous path. This began with the use of standard Renaissance perspective, itself based on a grid seen in depth, which the artist subsequently abandoned. He then moved to natural patterns which emerged from looking through dense bush. Ordering this chaotic nature allowed him to consider the modernist flat grid. This, however, led in turn to an analysis of mathematics and scientific uses of the grid as metaphoric structures. In short, Nakamura's grids were never the self-referential or autonomous images claimed by minimalism or conceptualism, but always carried a metaphoric meaning.

Integrated into this progress was the second source that predisposed Nakamura to the grid: the work of other artists, especially those whom he studied as a teenager, those under whom he studied, and those he was later acquainted with, either personally or professionally.

Chapter Two is divided into two sections. The first half focuses on the influence of the language of the popular magazine Scientific American on Nakamura's self-image as an artist with a scientific research project. Evidence indicates that in the early 1950's, Nakamura was constructing a sense of his own identity as a scientist/artist through exposure to Scientific American. In the second half of the chapter, Nakamura's projection of himself as both an artist and a scientist will be considered through his own published statements and quotes about his work. This claim to a double identity allowed him transcend the dualities which divided art and science at the time. He seems to have considered that such transcendence enabled him to be a leader or a guide to the rest of humanity. This romantic notion of the artist pervades all of his work from his early landscapes to his late works in which he articulates the hidden mathematical matrix of nature as represented by the landscape.

Chapter Three explores the possibility that Nakamura's use of the grid associates him more specifically with the Northern Romantic landscape tradition. The meaning and iconography of Nakamura's art may be traced back to a particular group of drawings and paintings by artists such as Caspar David Friedrich whom scholars claim might be one of the origins of the grid in Modern art. While recognising that he may not have been directly aware of Friedrich's paintings during his developing years, I will argue nonetheless that Nakamura's art parallels, for reasons that this thesis

reveals, an important aspect of this continuing tradition which has been traced from Friedrich, through the Symbolists, the Fauvists, Orphists and Cubists, to the Bauhaus and beyond.

I will claim that Nakamura used this tradition in a unique manner: that is, to explore the relationships between cosmogenesis and science as perfecting principles leading to an ideal future for Western culture. This makes it apparent that Nakamura used the grid as a research tool towards a contribution to cultural and scientific advancement. Proceeding from the discussion of the nineteenth-century tradition of paintings of views of the landscape through windows as metaphors of both confinement and escape, I will also suggest that all of Nakamura's grids are windows, and a 'windowing' of the picture plane. Given Nakamura's personal history, the meanings which emerge may be extended to the ideas of oppression (that is, forcible confinement and displacement) and transcendence (that is, a state of freedom and, paradoxically, belonging). In this sense, science functions as a higher, albeit secular, form of spirituality.

The Canadian Oxford Dictionary defines a grid as a network of lines, especially of two series of regularly spaced lines crossing one another at right angles.⁴ However, for the purpose of this thesis, we need to consider definitions and characteristics of the grid with more direct reference to art, in both the technical and fine-art senses.

In contemporary technical books on the materials and principles of fine art, there are virtually no definitions of the grid. The term is discussed almost exclusively in encyclopaedias, with reference to such applications as electricity, plumbing and civil design. For example, the Encyclopaedia Britannica defines the grid as "an electrode that has one or more openings for controlling electrons or ions as they pass through it,"⁵ a definition that has nothing to do with artistic matters.

On the other hand, the grid is discussed regularly in technical books for applied art, such as graphic design, typographic design, illustration, industrial design and cartography. Here, the grid is almost always treated as a non-aesthetic, practical, and technical aid for the accurate rendering of objects or textual information. For example, references to the utility of grids occur in discussions for rendering landscapes, the enlargement of small images, the layout of a page, or the repetition of a motif across a surface.

With regard to graphic design and typography in particular, but still without indicating what the device looks like, the following definition, provided by the The Thames and Hudson Encyclopaedia of Graphic Design and Designers, is closer to some of the skills Nakamura would have been expected to develop as a student at Vancouver Technical High-School (hereafter VTS) and CTS:

Grid: layout device used by graphic designers and typographers to achieve a visual order and consistency on the printed page. Pre-printed grid sheets indicating column widths, picture sizes and margins etc., provide a disciplined framework for the placing of diverse visual components. The grid is synonymous with the rational approach of Swiss Style of graphic design after the Second World War.⁶

Perhaps the clearest and most succinct technical definition of the grid as it refers to the work of Nakamura occurs in a essay by Jack Williamson to which I will refer later in the Introduction: "A proportional system of coordinates intersected by vertical and horizontal axes."⁷ Although brief, this definition will be used throughout this thesis to define the grid.

The descriptions or characterisations of the functions of the grid provided by authors concerned with this subject can be divided into two broad categories: personal and applied. Personal descriptions of the function of the grid reflect an individual artist's individual employment of it. These definitions entered the language of art theory with the advent of Modernism, in particular, with the appearance of Conceptual, Minimal and Systems art, either as the subject of the work of art, or as a formal tool in the organisation of the visual content. Since these movements emerged well after Nakamura began to first employ the grid, such definitions apply only peripherally and retrospectively to his work. The grids in Minimalism, Conceptual and Systems Art might have influenced Nakamura indirectly in his late works, but by this point he had already firmly established his own direction. Nakamura might have borrowed some design solutions from these 'movements', but he did not adopt their theories. Conversely, those more recent authors who have taken a historical viewpoint, and analysed the metaphoric meanings of the grid since the early 1800's are the more valuable for examining Nakamura's works.

Since the early 1970s, and into the 1980s, that is in the period of late modernism, minimalism and conceptualism, and post-modernism, several important essays dealing with the

grid in fine art, applied art and art history have appeared. They point towards a more expanded definition or interpretation of the grid and its metaphoric possibilities, which will be of various degrees of assistance in analysing its use by Nakamura. The subject is complex. In 1972, Lucy Lippard offered a range of definitions or characterisations of the grid in "Top to Bottom, Left to Right", in the introduction to the exhibition catalogue Grids, Grids, Grids, Grids, Grids, Grids, Grids, Grids, Grids, a show devoted to the paintings of European and American artists from the 1940s to the 1970s, all of whom employed this device. Robert Ryman claims that the grid is only

a nice thing, a nice contrast visually - the horizontal and vertical lines crossing each other. If there is paint or chalk or curved lines or angles or soft edges on top of it, that's another nice visual contrast. Some people use graph paper because of its mathematical connections, but I use it as a visual anchor.⁸

In response, Lippard offers her own characterisation of the grid, concentrating on its apparent self-contradictions:

The grid is music paper for colour, idea, state of mind. It is a standard measure. It repeats the traditional shape of the canvas itself. It implies, illogically, logic and harmony and unity, and is therefore all the more interesting to alter or destroy, no matter how slightly. It is a handy but potentially overemphasised instrument by which to control the void that is the beginning of a canvas, a way to violate the ominously blank surface. For the artist proving him-or herself against order, its perfection is temptingly despoilable. For those uninterested in form, it provides an undistracting armature for content or material. For those emphasising nuance or emotions, it provides a safety valve. It is precision and simplicity epitomised, and just the opposite....⁹

In describing more possible uses of the grid, Lippard turns to Sol LeWitt:

The grid system is a convenience; it stabilises the measurements and neutralises space by treating it equally. To work with a plan that is preset is one way of avoiding subjectivity.... This eliminates the arbitrary, the capricious, and the subjective as much as possible.... When an artist uses a multiple modular method he usually chooses a simple and readily reliable form. The form itself is of very limited importance; it becomes the grammar for the total work....¹⁰

Lippard focuses, as her title suggests, and as the period in which she was working prescribed, on the formal nature of the grid, that is one deprived of any associative meanings beyond its formal structure. She concludes that “the grid *per se* is of absolutely no importance to any of the artists in the exhibition,”¹¹ the grid being, “merely an armature for a variety of styles, means and contents.”¹² On this basis, Lippard avoids making any “ridiculous”¹³ generalisations about the grid, or “artificial connections among the artists.”¹⁴ Without explaining these criteria, she claims that “aesthetic quality and seriousness”¹⁵ are the only reasons for assembling these works of art. Lippard adds that seeking connections beyond these criteria would be an “absurd ... critical exercise.”¹⁶

Lippard resists the opportunity for an historical discussion of the grid and concentrates exclusively on the formal concerns of the artists employing it. These concerns are, for Lippard, exemplified by Sol LeWitt’s practice, with which she ends her brief essay. She states that LeWitt began to use the grid “as a means of avoiding the standard ideas of rational composition which activate and balance forms and space.”¹⁷ Lippard’s formalism, then, discounts the possibility of metaphoric meanings that I consider are integral to Nakamura’s project.

John Elderfield’s essay, “Grids,” which appeared in Artforum two months after Lippard’s catalogue appeared, must have been written in response to her writing. Elderfield takes a position that is generally the opposite of Lippard’s with regard to the complex uses of the grid in the twentieth century. Although embedded in the same formalist vocabulary as Lippard, Elderfield’s text offers an alternative definition of and commentary on the uses of the grid as employed in avant-garde Western art during the 1970s. His analysis is reasonably complex and historically oriented.

A topology of grid uses would be incomplete without consideration of how the grid is comprised. The grid is an attribute of the module, consisting of units of fixed dimensions arranged in a horizontal-vertical pattern (Whether presented upright or diagonally), and the orthogonal grid is created when the modular units are themselves rectilinear. But this “additive” definition presumes the network of vertical-horizontal lines to be *negative* elements - merely the junctions of modular units - and for most grid paintings the linear is clearly a positive component. That is, the lines are a method of dividing a preexistent surface: a subtractive, not cumulative, system.

And its use, as we have seen, has been to “display” the surfaceness of a painting or to so organise a surface as to allow the dispersion of pictorial elements within its “framework.” The nonrelational aspects of subtractive grid systems lent themselves very readily to Minimalist art (from which they passed into some recent all-over painting); but recently relevant to Minimalism is the *cumulative* grid - the most compressed and homogeneous series into which modules can be arranged.¹⁸

According to Elderfield, the grid as structure is interpreted by art critic Lawrence Alloway, who writes:

The field and the module (with its serial potential as an extendible grid) have in common a level of organisation that precludes breaking the system. This organisation does not function as the invisible servicing of the work of art, but it is the visible skin. It is not, that is to say, an underlying composition, but a factual display.¹⁹

Focusing on the history of the Modern grid, Elderfield points out that it has at least two main sources, Cubism and Impressionism. He begins by distinguishing two uses of the grid: structures and frameworks. Grids as structures reflect “the Florentine precept that aspects other than drawing are somehow accessory to the work’s substance.”²⁰ Largely through the influence of Cubism, “much twentieth-century art demands attention in more or less Florentine terms.”²¹ Cubism maximised the “skeletal aspects of traditional painting and made drawing a central [tool for those] who followed its lead.”²² This is contradicted by Impressionism which “turned painting into an affair of surfaces”²³ without linear figuration. However, the current use of the grid comes from the surface emphasis of Impressionism. The quasi-Impressionist gridded wall drawings of Sol LeWitt are an “updated ... crosshatched ... pointillism.”²⁴ Much of the current use of the grid decentralises the overall expansiveness of the picture plane,²⁵ a legacy of Jackson Pollock, as opposed to the concern for rectilinearity, as in the work of the Ad Reinhardt.²⁶

Making a reference to Greenbergian theories, Elderfield discusses how the grid relates to the “literal object on which it is drawn,”²⁷ and supports the “flatness and the delimitation of

flatness.”²⁸ However, Elderfield maintains that much of the art dependent on this use of the grid in the 1960s and more recently is “charming [but] weak.”²⁹

An exception to the concern for the minimal conditions of the grid may be found in Mondrian’s work, and specifically his regular grid and “checkerboard”³⁰ paintings of 1918-19. (ILL. 5) In these works a section of grid line is occasionally widened, or the space within a set of lines encloses a square of colour.³¹ This makes the grid in these works resemble a framework, but with the non-Cubist quality of being all over or nonrelational in effect.³² This appreciation of Mondrian allows him to divide the grid-as-framework into those grids that cohere surfaces and those that fracture it. For example, in Ellsworth Kelly’s work, we see grids that are subverted to form identifiable subgroups. On the other hand, other artists employ *fragmented* grids to reinforce the painting’s flatness. From this categorisation, Elderfield suggests a wide variety of trends and variations within the notion of the grid as framework.³³ Nonetheless, he still resists any metaphoric associations and concentrates instead on the formal possibilities of the grid in relation to flatness and the picture plane.

“Unified Drawing Through The Use of Hybrid Pictorial Elements and Grids” was published by the artist James W. Davis in 1972.³⁴ His article was divided into two parts. In the first half, Davis discussed the use of grids in his own drawings. In the second, Davis made clear, as had both Lippard and Elderfield, that the grid has a long history, dating back to ancient Egypt. From the Egyptians to beyond the Renaissance, the grid was employed as a proportioning tool in the preparation of frescoes and as a transfer mechanism.³⁵ During the High and Late Renaissance, the grid was employed as a design tool. Davis claimed that the new practice of designing a mural on a gridded sheet of paper had the effect of encouraging greater individuality in frescoes and other works of art because the artist was able to study and manipulate his work as it slowly appeared on the surface to be painted.³⁶

Davis briefly discusses mechanical gridding tools that Renaissance artists employed in their work.³⁷ He brings this discussion up to Modernism by referring to the gridding tools that artists such as Degas employed. He also discusses the importance of the grid as a formal and perceptual tool in the work of the Futurists and Cubists. He mentions that in the late 1940s, Gorky was the

first Modern artist to allow the linear units of grids to remain as an integral part of the finished painting. He ends this discussion with artists contemporary to 1972, such as Lucas Samaras, Darby Bannard, Robert Swain and Ellsworth Kelly, relating the grid to Op Art, Pop Art, Colour Field painting, Minimalism and Conceptual Art. In the second last paragraph, he mentions that in the early 1970s graph paper became a relatively common drawing surface. In this context, he briefly discusses Carl Andre, Shusaku Arakawa and Robert Morris. He writes that “in the work of Morris, the images have appeared in topological map forms and can be ‘read’ as mental ‘sites’.”³⁸ In his final paragraph, Davis relates the grid to serial imagery in the work of such artists as Donald Judd, Sol LeWitt and Robert Smithson.³⁹ Although he does not make it explicit, Davis begins to recognise the possibility that the grid may function as other than a purely formal device and that it may carry signification beyond that of the self-referentiality claimed by late-modernism.

The extended discussion of meanings that may be attached to the grid, albeit at a preliminary level, is the focus of Amy Goldin’s essay, “Patterns, Grids and Painting,” published in 1975.⁴⁰ Unlike the previous authors, she is not concerned with the mid-twentieth-century history and topology of the grid. Writing during the period of the emergence of Pattern and Decoration as painting, when there was a nascent consideration that flat gridded patterns might carry metaphoric meanings, Goldin focuses on the culture and psychology of patterns and grids in painting, albeit without historical references. She claims that “working with patterns ... still seems to imply a lack of inwardness and freedom ...,”⁴¹ an idea which seems to run counter to Davis’ statement that employing grids in the development of ideas allows for greater individuality.⁴² For Goldin, pattern implied craft and contrivance, though individual attributes of pattern, such as its affinities with number, rationality and depersonalised imagery, were only now being explored.⁴⁵ According to Goldin, the characteristics of pattern itself remain unanalysed. Compared to painting, pattern is not mysterious, “and it has been underground so long that thinking about it reveals surprising complexities.”⁴⁴ Goldin admits to not knowing where to begin her analysis because “pattern has no beginning or end, and its boundaries are vague.”⁴⁵ Nonetheless, like Davis, Goldin does indicate the possibility that the grid may carry metaphoric

possibilities, something that Lippard and Elderfield were loath to do. This seemed to set the tone for further explorations which tended to map out the extreme positions on an increasingly polarised subject.

In 1978, Rosalind Krauss wrote an introductory essay, "Grids, You Say," for the exhibition catalogue, Grids: Format and Image in 20th Century Art.⁴⁶ The essay begins by tracing the history of the use and meanings of the grid in Modern art. Krauss confronts the grid in twentieth-century art from two perspectives. Each of these builds on the grid as a metaphor for the conflicts between spirituality and materialism. She also explores the relationships between the use of the grid as an emblem of modernism and its appearance in structuralism's analysis of so-called "primitive" myths. As well, she discusses the relationships between the grid and the science of physiological optics. This last discussion separates into two parts, the analysis of the perception of light, and its physical properties. The essay ends with a discussion of the role of the grid in Symbolism, with reference to the Romantic 'view through the window' as one of the origins of the grid in Modern art. While Krauss does not explain why she makes this particular association between Romanticism and Modern art, her claim was the inspiration for my research into a possible connection between the iconography of the Northern Romantic tradition in landscape painting and Nakamura's art.

Krauss associates the grid with those works from Northern Romantic painting of the early nineteenth century which offer a view through a window. This particular image appeared repeatedly in the works of artists such as Caspar David Friedrich. Constructing the rudiments of a continuing tradition, Krauss claims that, later, "in the hands of the Symbolist painters and poets, [this theme] turned in an explicitly modernist direction. This is because the window is experienced as simultaneously transparent and opaque."⁴⁷ Krauss cites her source for this idea as the important article, "The Open Window and the Storm-Tossed Boat" published by Lorenz Eitner in 1955.⁴⁸

In 1985, Rosalind Krauss published an essay, "The Originality of the Avant-Garde," in a book of essays, The Originality of the Avant-Garde and Other Modernist Myths.⁴⁹ The essay addresses four subjects as evidence of her thesis regarding the false perception of originality: a discussion of the meaning of the multiple with reference to the bronze casts of Rodin's sculpture

produced many years after the artist's death; the notion of the grid, as an emblem of modernism, as an original motif; the picturesque as modularity; and the meaning of the dichotomy between the original and the copy in the practice of contemporary photography. According to Krauss, the "notion of the avant-garde ... as a function of the discourse of"⁵⁰ 'originality' is a "working assumption that itself emerges from a ground of repetition and recurrence,"⁵¹ of which the grid provides an ideal example. Avant-garde artists, from Malevich to Ryman, employed the grid because of its assumed "originary purity"⁵² as a modernist emblem of an "absolute beginning,"⁵³ as a metaphor of the art object's "sheer disinterestness"⁵⁴ and "absolute purposelessness."⁵⁵ At the same time the 'originality' of the grid is contradicted by the "waves of abstract artists [who] 'discover' and appropriate it for their aesthetic and formal purposes."⁵⁶ As Krauss writes

... it is because of the sense of a beginning, a fresh start, a ground zero, that artist after artist has taken up the grid as a medium within which to work, always taking it up as though he were just beginning it, as though the origin he has found by peeling back layer after layer of representation to come at last to this schematised reduction, this graph-paper ground, were *his* origin⁵⁷

If there is an element of originality in Nakamura's art, it is not because of his employment of the grid. In their formal usage, his grids are tools of the science of perception coupled with the science of measurement. In themselves they have no aesthetic meaning for Nakamura. Nakamura's use of grids results from their ubiquitous presence in historic and contemporary scientific research and demonstrations, and therefore have no 'originary' meaning for the artist. At the same time, and somewhat parallel to Krauss' observation, Nakamura employed grids for their ability to reduce the optical experience of visual information to a scientific "schematised reduction."⁵⁸

For Krauss, this claim is substantiated by the number of artists who have employed the grid as the medium for some of the greatest modern works in the twentieth century. This generation of artists, especially the 1970s Conceptualists, correctly does not include Nakamura, whose employment of the grid is more obviously associated with the grid in the science of optics, particularly that of the mechanics of perception, especially as practiced during the nineteenth century. In that century, for "the artist who wished to enlarge his understanding of vision in the

direction of science, the grid was”⁵⁹ a convenient and necessary tool for the study of the observed world. The abstract quality of the grid allowed the artist to separate the “perceptual screen from that of the ‘real’ world.”⁶⁰ Krauss suggests that this quality of the grid, “as an emblem of the infrastructure of vision,”⁶¹ became a feature of Neo-Impressionist painting. I believe that this path of the evolution of the grid in Modernism does not mark the exclusive genesis of Nakamura’s employment of it. Krauss suggests artists pursued one path or the other, either the science of vision, or Symbolism.⁶² I would suggest that Nakamura’s art partakes of both science *and* Symbolism. However, it is to this latter group that we must turn to discover the Romantic origins of Nakamura’s grid. In contradistinction to Krauss,⁶³ I will suggest that it is possible to associate science with a Symbolist grid, and to associate a Romantic art with scientifically considered “reality.”⁶⁴ Krauss states that “Symbolism’s object was a metaphysical understanding ... rather than imitations of the real.”⁶⁵ However, as Krauss dismantles her own argument, it is within metaphysics that we find “an incipient version of grids.”⁶⁶ Krauss associates the grid painting of the 1970s with the Minimalist or Conceptual articulation of the canvas surface.

The article, “The Grid: History, Use and Meaning,” by Jack Williamson, from 1986, is an overview of the role of the grid in graphic art and book design since the late-Mediaeval Christian world. Working within a postmodern context, Williamson is adamant that the grid is a carrier of symbolic meaning. The grid, “with few apparent alterations to the basic form itself,”⁶⁷ has modified its symbolic meaning three times in the past several hundred years. The earliest grid represented the threshold between the physical and superphysical world. Williamson claims that during the early Renaissance, the grid became a graphic tool to represent the “surface of the physical world and the rational cognition”⁶⁸ of the observer. Within Modernism, the grid then became a tool of the scientific study of natural phenomena, with an accompanying “descent of consciousness into and ‘beneath’ matter.”⁶⁹ Finally, with postmodernism, the grid has become a “threshold to the submaterial world and irrationality,”⁷⁰ a condition of contemporary culture which may, in fact, provide a new interpretation of Nakamura’s art. “Because modern science [and modern art] had rejected the concept of a nonmaterial, superphysical dimension, it was inevitable

that the probe of rational consciousness must confine itself to material reality and to the nonmaterial, subsensible reality beneath it.”⁷¹ Williamson’s historical analysis of the symbolism of the grid confirms a conflation of graphic-art practice and fine-art practice.

Williamson’s detailed consideration of history of the symbolism of the grid in Western art begins with the Medieval notion of the crossing points of the pattern as representative of “thresholds between the qualitatively distinct levels of spiritual and physical reality.”⁷² In this context, the coordinates of the grid-points lead from the spiritual to the physical, or, conversely, from the physical to the spiritual.⁷³ This analysis reflects the Medieval interpretation of the Holy Cross, in which each grid intersection, like the figure of Christ himself, represents the “conjunction of Heaven and Earth respectively.”⁷⁴

During the Renaissance, the meaning of the grid assumed a more “secular world conception.”⁷⁵ The symbolism of the grid shifted from metaphysical or moral “value-loaded coordinates and intersections to one conceived of as a *field* comprised of points and axes possessing either neutral or numerical (quantitative) value.”⁷⁶ Such field-based grids emphasised the “expansive potential of the repeated module”⁷⁷ which, in turn, came to define a set of *horizontal reflections* on a physical plane.⁷⁸ This shift in the meaning of the grid paralleled the era’s unprecedented expansion of geographic exploration in Western Europe. Through the Flemish mathematician and cartographer Gerardus Mercator (1512-93), the squares as well as the axes of the grid came to represent mathematically determined coordinates to pinpoint physical places and distances on a map or globe.⁷⁹ This infatuation with the world of nature and sense experience that characterised this age of physical discovery was perhaps best expressed in the rise of the science and practice of mathematical pictorial perspective in the fifteenth century. Leon Battista Alberti, (1404-72) an architect and an early propagator of the technique of perspective construction, wrote that “the intended effect was similar to the experience of looking through a window.”⁸⁰ Like Alberti and the Italian humanists, Albrecht Dürer did research in the new science of perspective. According to Williamson

The instructional woodcut by the sixteenth-century graphic artist Albrecht Dürer demonstrates the use of the grid for a similar recording of visual reality. In this instance, the grid visually breaks down the three-dimensional image into a set of modules for the purpose of transferring and reconstructing it on another surface with a corresponding grid. Also in this example, three paradigmatic themes of this period, each of which finds expression in the grid, may be observed. First, there is the intense fascination with the surface appearance and its description. This is coupled, in leading individuals, with the quite different interest in the invisible laws and structural principles that underlie external appearances. And third, there is the increased status of the rational mind itself, seeking to discover structure through critical observation.⁸¹

In the seventeenth century the search for underlying structures and rationality experienced rapid development. With René Descartes (1596-1650), knowledge was gained through reason, not divine revelation. In his book *Geometry*, written in 1637, the grid's identification with non-spiritual material reality deepened. In the same text, Descartes began research into an analytical geometry which defined the position of coordinates and axes on a plane in space.⁸² With this new emphasis on abstraction, "the grid's association with the world of outer appearances loosened."⁸³ Appearance became suspect, and required mental reduction to its smallest units, anticipating Cézanne's reduction of the landscape to certain basic forms articulated by a pattern of individual and distinct strokes of colour. Within this skeptical attitude toward reality, the grid came to represent "not only the structural laws and principles behind physical appearances, but the *process* of rational thought itself."⁸⁴

In the eighteenth century, the Cartesian grid as a symbol of rational thinking became an aspect of a theory called deism that replaced the basis of knowledge in formal religion and supernatural revelation with the logic of nature as evidence of the existence of God. This determinist construct of the universe as a clock-like system designed by God but self-running engendered a grid of "rational, impersonal and inevitable natural law."⁸⁵ According to Williamson,

This mechanistic determinism informed the use of the grid by the French neoclassical painter Jacques-Louis David in his painting *The Death of Socrates* of 1787. {ILL. 6} In the charcoal study of this painting, David used the grid not merely as an illusionistic tool for

transferring the drawn figure of Socrates from paper to the canvas; rather, the rigid network of horizontals and verticals, evident in the wall behind Socrates, is represented in the finished painting as well. The grid, which invades and integrates itself into the figure's very gestures, signifies the rational, impersonal, and inevitable character of natural law, which deterministically controls the structure of material law, which deterministically controls the structure of the material world and of events within that world. Indeed, the main theme of David's painting is the syllogistic inevitability of Socrates' death by his own hand as a consequence of his rigid adherence to the laws of rational thought and logically determined behaviour.⁸⁶

Only in the second decade of the twentieth century was Alberti's and Dürer's window into the world of appearances entirely replaced by the Cartesian grid. The Renaissance and the Enlightenment symbolism of the grid of structure and appearances gave way to an near-exclusive focus on structure without references to external appearances. Paul Cézanne's art was a transitional point in the shift from the Renaissance grid to the modern grid through his "abstraction and geometricization of nature and his emphasis of the flatness of the picture plane."⁸⁷ This transition led to the radically flat and abstract paintings of Piet Mondrian. In the 1920s, Mondrian's grid is entirely "Cartesian in its presentation of an unchanging regular isotropic universal field, ruled by logic and by the mathematical law that underlies the world of external appearances."⁸⁸ Gerrit Rietveld expressed this concept in three-dimensions with his *Red and Blue Chair*, 1917. (ILL. 7) According to Williamson, Mondrian and Rietveld, and other associates of the Dutch De Stijl movement visualised the modern grid not so much in physical terms but rather as reflective of mathematical laws that rule matter, space and time.⁸⁹ In Mondrian's case, one might object that his art reflects metaphysical Theosophical convictions rather than scientific or mathematical meaning. However, Nakamura always denied any association between his concerns and those of Mondrian. In spite of some similarity between the meaning they applied to their grids, Nakamura was never interested in "the mystical and transcendental current in American thought that was highly influenced by Mondrian's thinking based in Theosophy."⁹⁰

The concept of an axially-defined space-time construct of infinite duration brought the symbolism of the Cartesian grid to its highest point of development within modernism when it was associated it with the theory of a universal continuum drawn from contemporary science. In his

1905 essay "Special Theory of Relativity," Albert Einstein defined the infinite "as merely the finite in extension."⁹¹ The Medieval concept of a qualitatively differentiated, two-tiered universe consisting of physical and superphysical dimensions was thus collapsed into a nonhierarchical universe conceived of as being in continuous extension.⁹²

More recently, Sabina Rewald has used similar ideas to expand on the connection between the Romantic 'window view' and the grid in Modernism initially suggested by Krauss. "Caspar David Friedrich's "*Window with a View*': a Mystery Solved," published in Burlington Magazine 1992,⁹³ took as its subject the author's search for the location of the view depicted by Friedrich in a pen and sepia wash drawing, *Window with a View of a Park*, 1806-1811. (ILL. 8) Rewald establishes a direct link between Friedrich's drawings and paintings of windows and Modernism. Discussing artists who have depicted views through windows since Friedrich, such as Odilon Redon, Rene Magritte and Robert Delaunay, Rewald writes that after 1912 "it was but a short step from the window - crossed by bars - to the abstract grid."⁹⁴ It is this connection with the Northern Romantic tradition that I would like to propose may also be extended to the works of Kazuo Nakamura.

Writings about the grid in Western artistic theory and practice, especially in Modern art, are rare in comparison to the actual presence of grids employed by artists. It is also apparent that although there is a perceivable direction in the more recent literature towards an increased recognition of the grid's metaphoric potential, existing research has not cohered into a solid area of study. Indeed, the few articles that do exist make little, if any, reference to each other. It is obvious that there is substantial room for exploration within the field.

But if the grid has received scant attention, it can be said that this is even more the case with Nakamura's grids, which have been written about only rarely. Nakamura's art has been reviewed in newspapers and art magazines since 1952. There was a cluster of reviews and essays in the 1950s and 1960s. This was followed by a fallow period of about thirty years of almost complete silence in which his work was rarely seen and still less talked about. Since the mid 1980's, however, he has been written about more often and in a more scholarly manner, particularly in the recent catalogues for the solo exhibitions which have occurred in the last three years. Still, in

reviewing the literature on Nakamura, some focus is necessary. I will only consider here all articles and essays that mention his employment of pattern or grids.

Writers on Nakamura's work recognised the presence of the grid in his drawings and paintings as early as 1968. At this time, critics and art historians focused primarily on its purely formal nature, and rarely considered its iconographic possibilities except for occasionally relating it to his interest in science, perspective and mathematics. This continues down to the present. The first use of the word 'grid' by Nakamura's reviewers was in a very short anonymous review of a solo exhibition at the Jerrold Morris Gallery in Toronto in 1968 that appeared in The Globe and Mail. With reference to an unnamed painting from Nakamura's 'geometric suspension series', the reviewer writes:

Nakamura poses a classical white grid over a plummy ground in which his precise angles, rectangles and circles float freely.... Like a latter-day Euclid, he discovers the pure poetry in geometry.⁹⁵

Although this is the first instance of the use of the word, the idea of the grid had earlier appeared under other guises. This reflects the fact that the term 'grid' had not yet entered the critical vocabulary of contemporary art criticism until this moment. 'Pattern', however, appeared regularly, beginning more than ten years before the first use of the word 'grid', as did terms such as 'cube' and 'mesh'. The meanings of these terms in the earlier writings are diverse. It is possible that, through the 1950s, before Nakamura became seriously interested in the mathematics of the structures he was learning to visualise, "pattern" was actually more appropriate to his artistic practice than the word 'grid'. Nakamura did not employ pure geometric or mathematical grids in the 1950s. His semi-realistic landscapes contained patterns that only hinted at an underlying grid. As Nakamura's landscape painting slowly evolved from the semi-abstract toward his "real abstraction,"⁹⁶ his focus on nature-as-pattern also evolved toward pure grids-as-landscape. Acknowledging that his practice tended to oscillate between semi-abstract and pure abstraction through much of his career, Nakamura commented that, "It takes energy to do abstractions. Every once in a while, I do landscapes, to do what's on top...."⁹⁷ I believe that Nakamura's 'on top' paintings, such as his 'reflection series' did not have any less a significant role in his long-term

research project. They were simply another approach to his goal, one that reminded him - and his viewer - of the natural roots of the “fundamental universal pattern”⁹⁸ as landscape, that he was seeking, and eventually found in his ‘number structure’ landscapes.

In perhaps the first insightful analysis of Nakamura’s art, an article written by Robert Fulford in 1956, the word “pattern” appears four times. Fulford begins his article by quoting Nakamura’s observation of the similarity between a scientific photograph of the nerve plexus of the human intestine and a painting by the fourteenth-century Italian painter Duccio: “They have the same basic pattern....Rhythms are the same.”⁹⁹ Nakamura then equates pattern in art with a “fundamental universal pattern in all art and nature.” Fulford then writes:

“Pattern” is a word that crops up often in Nakamura’s clipped vocabulary, and it is a word that can’t be avoided in discussing his work. Many of his pictures seem to be intelligent attempts to convey the essence of a pattern in its most precise, stripped form. But these can’t be called representative of Nakamura’s style He seems to alternate between constructions of tensely two-dimensional lines and imaginative spatial essays that show an unorthodox vision of perspective.¹⁰⁰

Fulford declares that Nakamura “is an important part of a world-wide search for what he [Nakamura] defines as ‘a new kind of creative act.’”¹⁰¹ He qualifies this statement with a further quote from Nakamura: “Painters are learning a lot from the physical sciences now. In a sense, scientists and artists are doing the same thing. This is the world of pattern we are discovering together.”¹⁰²

Early writings about Nakamura’s works related their fundamental structures to the craft of art making, the act of drawing, and the artist’s response to images from science, such as microscopic matter and macrocosmic galactic structures and principles. For example, in 1958, Hugh McPherson referred to Nakamura’s evocation of “the viewless [sic] stress of a bridge by dipping the edge of a card in ink and painting a delicate mesh of lines,”¹⁰³ as in the drawing *Bridges*, 1958. (ILL. 9) In 1960, an anonymous writer for the Montreal Star described one painting as “being like samples of tweed,” and “green tree patterns as weaving.”¹⁰⁴ This

equation between Nakamura's consciousness of design, pattern, texture, craft and the aesthetic of weaving is an indirect appreciation of the gridding nature in his art.

In 1961, Bennett Metcalfe wrote a review of group show entitled "Toronto '61", shown in Vancouver, which included the cream of Toronto painters. He referred to Nakamura as "the only honestly progressive painter" in the group. Metcalfe claimed that Nakamura had "stretched the non-objective theory so far as to take his painting literally to the vanishing point."¹⁰⁵ Although perhaps meant somewhat ironically, his statement is not without value for interpreting Nakamura's project.

The relationship between the grid and Western traditions of perspective since the Renaissance is an important aspect of Nakamura's art. As part of his exploration of what he saw as the nature of the universe, Nakamura analysed the evolution of perspective. He claimed that there were parallel and inseparable developments in the scientific and artistic representation of the world. In his artistic and scientific theories, there is a direct link between his early explorations of one-point perspective and his later employment of the grid. In fact, I propose that all Nakamura's grids are a symbol of the fundamental nature of perception in the sense that the idea of perspective is a culturally or psychologically bound tool of description.

Acknowledging this depends on a double reading of the term grid. The grid regularly appears in illustrations and diagrams found in books on perspective which show an idealised, flat horizontal space, such as the floor of a building interior (ILL. 10) or an open plaza. (ILL. 11) This illusionistic space is divided by two kinds of horizontal lines. One group, the transversals, lie parallel to the bottom edge of the illustration but become closer as they "recede" into distance. The second group, the orthogonals, extend from the base of the drawing and converge towards a single point at the back of, or beyond the building interior or plaza. Often, however, within the same illustration, the perspective view of the plaza will be tipped up ninety degrees, clearly demonstrating that the perspective drawing is, in fact, a simple flat grid seen at an angle. (ILL. 12) Insofar as Nakamura's gridded works can be said to reach a "vanishing point," as per Metcalfe, they may be read as a metaphor of Nakamura's research project for transcending western scientific dualities, in this case that of a flat and an illusionistic space. This requires both perceptually and metaphorically acknowledging the presence of the grid as an infinite three-

dimensional space and simultaneously as a flat surface. Variations and explorations on this complex and seemingly paradoxical idea can be found in virtually all his works.

Despite the potential seen in his work, after this period writing on Nakamura more or less ceased. This is not to say he fell into complete obscurity. In fact, a second retrospective exhibition of fifty-eight of his works was held at the Robert McLaughlin Gallery in 1974.¹⁰⁶ (The first was in 1970 at Hart House, University of Toronto.) Although the show travelled extensively, the catalogue offered no extended analysis of his work, although it did contain the longest and most important of his statements on his art. Nor was there anything substantial in the way of a critical response. His work would not begin to generate extensive discussion again until the late 1980s.

In 1984, following a survey exhibition of “thirty-two paintings and drawings done between 1954 and 1984 - the artist’s first show in a decade” held at the Moore Gallery in Hamilton, John Bentley Mays wrote in The Globe and Mail: “A straight stylistic line runs from the elegant small abstract grids of the late 1950s through the ‘number structure paintings’ of the 1980s which feature lists of numerals and equations arrayed on flat, squared-off fields, like graph paper.”¹⁰⁷ This is the first use of the term ‘graph paper’. Mays does not indicate that Nakamura drew these 1/4 inch grid lines himself. However, in spite of the existence of large sheets of high-quality pre-gridded drawing paper, Nakamura persisted in painstakingly gridding the paper manually with the graphic-art tools of his technical high-school training. This indicates Nakamura’s retention of his technical training gained as early as Vancouver, and his continued integration of it into his art practice. Nakamura employed pre-printed graph paper only for his initial research.

More recently, two solo exhibitions with extensive catalogues have been written about Nakamura’s art. Tashme²: Early Work of Kazuo Nakamura,¹⁰⁸ with essays by Bryce Kanbara and Gary Michael Dault was published by the Japanese-Canadian Cultural Centre in April 2001. Kazuo Nakamura: The Method of Nature,¹⁰⁹ edited by Ihor Holubizky, and with essays by Holubizky, Walter Klepac and Nakamura’s dealer, Christopher Cutts, was published by the Robert McLaughlin Art Gallery in November 2001.

Because the former show was restricted to the early Tashme paintings which had never been publicly displayed, neither Bryce Kanbara nor Gary Michael Dault, writing in Tashme²: Early Works of Kazuo Nakamura, discuss Nakamura’s later use of grids, nor his employment of linear

pattern, or number structures. Although Kanbara briefly traces the beginnings of Nakamura's study of linear perspective, his main focus is biographic, concentrating on the artist's years in the internment camp. Gary Michael Dault discusses the appearance of grids as an ordering system of representation only indirectly. He writes that Nakamura's "'reflection series' from the early 1950s often portrayed shorelines of staunchly vertical trees" ¹¹⁰ reflected or doubled in the surface of a lake. While being true to nature, this doubling of the trees on the shore was an early indication that Nakamura's search may be read as part of his research toward the larger structural patterns behind the visible surface of the landscape, whether a view of tall trees across a lake, or celestial spheres floating in undefined space above the horizon. "The 'reflection paintings' were thus more about gridding and mapping, than they were about bucolic expression." ¹¹¹

A recent review of Nakamura's exhibition of drawings produced at Tashme associates the grid with perspective and comes closer to an appreciation of its metaphoric meaning. Richard William Hill, writing in Fuse in December 2001, likens the "limits of linear perspective" ¹¹² that Nakamura began to suspect even as a teenage living at Tashme with the irony of the barracks as "little rational grids plunked down against the sublime scale of the mountains." ¹¹³

In the catalogue for the exhibition Kazuo Nakamura: The Methods of Nature, Ihor Holubizky uses the phrase, "a loose grid ... of a non-radial pattern" in his discussion of a spider web as a possible reference point for a reading of the 'inner structure paintings'. ¹¹⁴ When discussing the "heavily patterned" ¹¹⁵ quality of many of Nakamura's abstracted landscapes, Holubizky is anxious that the viewer not associate these 'patterns' with the word's pejorative connotation of decoration. Instead, as Nakamura himself employed the term, he refers to

structural form ... that atomic and cosmic structures had something in common, an order beyond the grid that mankind imposed in the search for classical order, and certainly not the Euclidian geometry of harmony that had for centuries been the compositional order. ¹¹⁶

Holubizky associates Nakamura's conjoined pursuit of scientific "reality" and "cosmic insight" with the "calligraphic, abbreviated brushstroke without an illusory perspective" ¹¹⁷ that

can be found in the work of such abstract artists as Joan Mitchell, Bradley Walker Tomlin, Franz Kline, or its French equivalents, Georges Mathieu, Henri Michaux and Hans Hartung. However, unlike these artists, Nakamura's research is not related to Abstract Expressionism. Rather, Holubizky maintains that Nakamura pursued a way of painting that "allows us to imagine the unseeable, or unknowable"¹¹⁸ within the structure of nature. Holubizky sees this as akin to humanity's spiritual relationship with nature. According to Holubizky, Ralph Waldo Emerson described this relationship as the "form of the deformed."¹¹⁹

Walter Klepac's essay in the same catalogue focuses on the theme of mathematical structures in Nakamura's work which emerged in the 1970s. Klepac does not directly discuss the persistent presence of the grid in Nakamura's art. However he acknowledges that "the bulk of the work during this period consists of working drawings, drawn in pencil on large sheets of graph paper."¹²⁰ As well, he describes Nakamura as a systems artist "with a vengeance,"¹²¹ employing a style of art-making that often centres on grids. The purpose of Klepac's essay is to pinpoint the connections between Nakamura's art in the 1970s with "ideas and concerns that were 'in the air'"¹²² at the time, ideas which were being considered by Conceptual artists with an interest in series and seriality. In this context, Klepac discusses the work of Roman Opalka, Hanne Darboven and Sol LeWitt, a group of artists who explored the grid either indirectly or directly. With regard to these artists, and Nakamura, Klepac writes:

Throughout the body of work by each of these artists one finds that the organising structures belong to a single system of one kind or another. The grid, singly or in aggregate, predominates. The standardised format chosen by each of these artists encapsulates and in effect reproduces that system in work after work.¹²³

Klepac associates Nakamura's use of grids as an epistemological conceptual tool with two aspects of Conceptual Art. The first is the notion that the nature of the everyday world is knowable ¹²⁴ and the second is that Conceptual Art is concerned with identifying "invisible theoretical constructs and conceptual infrastructures that underlie and sometimes vastly exceed immediate experience, perception and common sense."¹²⁵ With reference to this tendency in Conceptual Art, Klepac mentions the work of Robert Barry, Mel Bochner and Mario Merz, though he acknowledges that

these artists worked metaphorically.¹²⁶ Klepac sees a closer relationship between Nakamura's research and the work of the French artist Bernard Venet - though here too, he claims that Nakamura's work begins where Venet's ends.¹²⁷ However, rather than emulating the "profoundly opaque and ultimately inaccessible"¹²⁸ nature of Venet's work, Nakamura works with higher mathematics, a particular language of science that he considered to be available to lay persons in their pursuit of a personal understanding of "certain phenomena, events and forces in nature."¹²⁹

Klepac introduces the reader to the relationships within Nakamura's exploration between the grid of mathematics as a scientific language and the research of certain Conceptual Artists during the 1970s. Christopher Cutts' essay takes up and expands upon this theme by focusing directly on Nakamura's utilisation of mathematics. Claiming that "the basic premise of [Nakamura's] works is to connect number structure with form and dimension,"¹³⁰ Cutts outlines the history of research into mathematics since the time of the fourth-century B.C. Greek philosopher Pythagoras, pinpointing particular mathematical or number structures, such as Pascal's Triangle, Fibonacci numbers and the Golden Section, Catalan numbers and fractals that Nakamura explores or meditates on in most of his later drawings and paintings. Cutts does not directly discuss the presence of the grid in all these drawings. However he uses such phrases as "number structure tables," "sequences of numbers" and "fractal patterns",¹³¹ each of which cannot be visualised without the underlying matrix of the grid. For example, with regard to Catalan number systems as the origin of pattern Cutts writes:

The Catalan number sequence can ... illustrate the number of possible ways to track a line from one opposing corner of a grid to another. For example, starting at the lower left-hand corner and plotting toward the upper right-hand corner, a grid composed of three squares on each side with a total of nine within itself can be tracked in two ways; a grid composed of four squares on each side with a total of sixteen squares in five ways; and a grid which is composed of five squares [on each side] with a total of twenty-five squares composing the total square in fourteen ways.¹³²

In 2001, in an overview of Nakamura's work gained from these exhibitions, Sarah Milroy acknowledged the history of the evolution of pattern toward pure grid in Nakamura's work. Writing for the Globe and Mail she states that "... the looser lattice-works and cross-weaves settle into rigorous grids, as the artist sets down in two-dimensions the abstract formulas," which result, as in *Number Structure and Fractals*, 1983, (ILL. 13) "in ziggurat forms," or "number monuments."¹³³

Hence many writers, albeit mostly briefly and indirectly, have acknowledged the grid as the formal underpinning of Nakamura's art. What is left out of their analysis and critiques is the basic metaphoric meaning which would give the grids an iconographic significance. However, before such an explanation can begin, we must establish the fact of the ubiquitous nature of the grid within virtually the entire oeuvre of Nakamura's mature work. This will entail a brief formal description of the content of a selection of Nakamura's works.

One of the earliest examples of Nakamura's use of an implicit grid system occurs in the drawing, *Strawberry Farm*, c.1941, (ILL. 14) which depicts the lower mainland of British Columbia, somewhere south or east of Vancouver. The picture describes a large strawberry field with the furrows receding toward a vanishing point almost in the center of the drawing. To the lower left of the immediate foreground, three boys sit on the stump of a huge tree. With their backs to us, they gaze contemplatively into the distance. The horizon, which is positioned at the opposite edge of the plowed field, is slightly above the middle of the drawing. Open flat bush country beyond the field is suggested by the scattered Douglas fir trees that recede from the middle distance to the faint background. In the extreme background, low mountains suggest the Coastal Range that surrounds the Fraser Valley. Above this landscape, the sky is half blue, half red, with a sunset on the left visible through a thin layer of clouds.

The careful rendering of the orthogonals in *Strawberry Farm*, which give this landscape its sense of order and structure, is an example of the early use of the perspectival grid based on Western perspective in Nakamura's art. I will argue in the remainder of the thesis that this leads to his discovery of the importance of the grid to his artistic practice.

The transformation of the perspectival illusionist grid into one which has its coordinates on the surface of the canvas can be seen in *Blue and Green*, 1953, (ILL. 15) which was produced the year following the formation of Painters Eleven. This is essentially an abstract

painting, but it has clear references to a forested landscape and can thus be related to the background of *Strawberry Farm*. The Masonite surface is gridded, but it is neither the precise geometric or mathematical grid of an artificial barrier, nor the natural and irregular pattern of the impenetrable underbrush and trees of the forest, but rather somewhere between the two. In this work, the loosely vertical and horizontal grid-like lines in black oil paint are applied with the edge of a razor blade or a piece of thin stiff card, metal or wood. The paint is thick, causing the lines to stand out in relief against the rigid Masonite surface, which Nakamura has first tinted with washes of soft grey-brown. Nakamura is not so much drawing or painting the grid in this work as he is constructing it. Within the resulting intricacies of the maze of black lines that Nakamura has applied in an apparently random arrangement, he painted a wide range of soft blues, greens and browns. However the colours clearly follow the colour placement of the traditional depiction of a landscape. Cool blues and greens occupy the top. Pale greens and browns suggest the distant and middle-ground forest. Richer warm greens and browns suggest the immediate foreground. With this arrangement of the colours, the painting is an abstraction of the grid that hovers between the formal design and representation of the forest.

Suspension, 1956, (ILL. 16) is the first painting discussed here that is clearly part of one of Nakamura's series, the 'block structures', a group of oil paintings from the mid 1950s to the early 1960s, including such other works as *Block Structure*, 1956, (ILL. 17) and *Structures*, 1956. (ILL. 18) In each of these paintings, tall geometric structures comprised of stacked blocks, rendered in a subverted single-point mathematical perspective, stand isolated on a vast empty plane below a blank sky. In *Suspension*, each individual block appears to float above the ones below. The painting's distant horizon line passes between and beyond the top two blocks.

In *Suspension* the grid occurs in three manifestations. First, it is present as a distorted demonstration of Renaissance perspective. Secondly, the grid is present in the implied vast flat plane where the two visible structures stand. The lines extending from the nearer corner of the tower of blocks to the horizon-line are based on traditional Renaissance perspective. This perspective system establishes a relationship of apparently measurable distance between the structure in the foreground and the one closer to the distant horizon. The two tower structures could be positioned at two corners of a huge ground-based square. Thirdly, the grid is present in the subtle modernist shift of the painting from a naturalistic window view into three-dimensional

space to a composition of flat shapes and colours. The contour lines that establish the three-dimensionality of the foreground tower do not converge on a single vanishing point at the horizon. As in all the 'block structure' paintings, Nakamura undermines the system of Renaissance perspective that he had learned at the age of fourteen. When we combine this deliberately inaccurate display of perspective with the optical effect of seeing the complete horizon between the top two blocks, we are almost unable to determine whether the subject of the painting is two- or three-dimensional. The painting's sense of space is contradictory, one in which the image shifts back and forth between a view of pictorial space to one of flat shapes of colour on a picture-plane. As in *Blue and Green*, the painting is both a depiction of a grid in space and a flat gridded surface.

Spring, 1957, (ILL. 19) is from a particular group of paintings known by two names, the 'memory landscapes' or the 'reflection series', a path of study that Nakamura pursued for many years. These versions of his continuing landscape themes are important for the development of several of Nakamura's concerns, including the idea that the grid is the matrix of the structure or pattern that orders nature. In *Spring* there is no evidence of linear perspective, except for a slight reference to a picturesque manner of moving through the painting by means of an open space that enters the trees in the middle-ground from the foreground at the base of the painting. Instead, in this work, the grid emerges almost exclusively as a result of his method of applying paint to the white canvas. In this painting, the grid is on the surface of the canvas itself, much as it is in *Blue and Green*, with one major difference. In *Blue and Green*, a painting that stylistically shifts from realism to abstraction, the grid is the constructed matrix against which the colour is then applied. In *Spring*, and many similar paintings that comprise the 'memory' or 'reflection theme', a theme that moves from abstraction to realism through memory, the emerging grid is the negative white space of the canvas between the individual strokes of a small stiff chisel brush used to apply the paint, a technique Nakamura could have learned from a study of Paul Cézanne. The remaining vertical and horizontal lines of white become the trunks and branches of the trees that occupy most of the picture plane in the painting. The small but distinct brush-strokes of colour become the foliage of the dense surrounding forest. In *Blue and Green*, the content is becoming abstract. In *Spring*, the content has reverted to a synthetic realism wherein the grid represents the memory of both confinement and release. *Spring* is an early example of the kind of painting Nakamura would produce when he needed to "do what was on top."

Cycle, 1957, (ILL. 20) is from one of Nakamura's most abstract series, the 'string paintings' in which Nakamura glued rows of string to the rigid ground (usually Masonite but sometimes canvas). He would then apply white oil paint over the string. Once dry, this surface would then be tinted with thinned-out earth colours and then wiped almost clean, with the tinting colour settling into the narrow spaces around the string and other surface texture. In *Cycle*, Nakamura divides the canvas into two zones, with the horizon line positioned about one-third of the distance from the top to the bottom. The bottom two-thirds are activated by a loose configuration of vertical lines of string. The top third of the painting is covered with horizontal lines of string. In this work, the theme of the almost empty landscape seen in one-point perspective, established as early as *Strawberry Farm*, has been extended to the essentials of the empty land and blank sky, accounting for the reason that Nakamura was considered to have been a minimalist artist before Minimalism.¹³⁴ As in most of the 'string paintings', the lines of string glued on the surface of the picture plane act as both landscape and screen through which the landscape can be observed, as if the landscape is being viewed through an impenetrable but transparent barrier. This last effect is a continuation of the theme of the group of paintings around *Blue and Green*, in which the trees become an impenetrable but transparent barrier to the viewer.¹³⁵

Topological Series I, 1968, (ILL. 21) is from a group of works in which Nakamura explores the nature of perspective from positions ranging from ground-level to outer space. In this painting, he demonstrates what happens to the straight line of the horizon as the viewer's line of sight moves away from the ground plane. As we see in this drawing, and as any astronaut knows, the arc of the horizon as seen at ground level lengthens and curves into a complete circle as one travels away from the sphere of the Earth. Eventually the horizon line curves right around to meet itself. The grid in this work is the result of a technique similar to *Spring*. After applying masking tape to the graphite lines of the grid and diagram, Nakamura has applied deep blue-black oil paint over the whole canvas surface. Once the paint was dry the tape was removed, revealing the grid and diagram as the white ground of the primed canvas. Within Nakamura's program of analysing the history of perspective and perception, one could suggest that in this painting, like several produced at this time, he created a schematic of the history of perspective from the Renaissance to

the age of space travel. I will argue in Chapter Two that the history of perspective, as studied and represented schematically through paintings like *Topological Series I*, was itself a metaphor of the transition from oppression to transcendence.

Polygonal Forms, 1980, (ILL. 22) in graphite on paper, is one of numerous drawings in which Nakamura researches the structure of curved space. In this work, the grid of *Topological Series I*, borrowed from the two-dimensional flat surface of modernist painting, has been allowed to float freely in a three-dimensional space viewed through the window of the paper surface, while at the same time resembling a simple textbook diagram. The five drawings on this sheet of paper demonstrate what happens to a gridded surface when it is seen at an angle, or folded, or extended into the third dimension. As well, Nakamura has applied a number to each of the points at which the grid-lines intersect across each drawing, an unusual example of the combination of number structure and three-dimensional grid.

Number Structure and Fractals is one of many paintings in which the artist's use of the grid as an ordering principle in landscape has evolved into a representation of ordered nature as a series of mathematical patterns that can be represented as visual pattern. On the left side of this canvas, Nakamura has loosely drawn, almost as a doodle or meditation, number sequences that mathematicians have discovered within fractals.^{137a} On the right side of the canvas, he painted a patterned representation of the number structure, as a segment of fractal triangles from the microcosmic to the macrocosmic. The ordering of the numbers of the fractals on the left, and the visual pattern on the right, are dependent upon this structure. However, Nakamura has carefully delineated every grid unit across the canvas surface, most of which are not actually necessary to carry the mathematical content of the work. As in *Spring* and *Topological Series I*, the grid is the result of the negative space left between the passages of colour. It assumes a significance that transcends its role as a carrier of mathematical information. This could be a rare example of Nakamura's appreciation of the grid as a purely formal icon employed to activate the picture plane for its own sake. However, Nakamura is clearly demonstrating that the structure of nature is identical, whether described through pattern, grid or number.

The final work I will describe was produced on a sheet of ordinary 8 1/2 x 11 inch graph paper. It is untitled and undated. Reproduced nearly full-size in the catalogue Kazuo Nakamura: The Methods of Nature and provided with the catalogue's provisional title of *Drawing 2*, (ILL. 23)

the image is close in composition and theme to Nakamura's oil painting *Number Structure 9*, produced in 1984. As evidence of the ambiguous position of this drawing between art and science, literally the only indication that it was produced by an artist rather than a scientist is Nakamura's signature. *Untitled Drawing 2* was produced late in Nakamura's career, during the years when he was focusing on his 'number structure' drawings rather than paintings.

In *Untitled Drawing 2* the grid appears in three guises. First there is the grid itself, pre-printed at 1/4 inch intervals, on the paper. Secondly, a grid results from the rows and columns of numbers that range from zero to the number 7,029 in the lower-right corner, each block of numbers separated by a border of blank grid units. These numbers are hand-written, carefully arranged as separate grids resulting from the groupings of 110 grid-units. There are twelve of these complete blocks of numbers. Several more are cut off by the edges of the paper along the right and bottom. Within each block of 110 grids, the lowest number appears in the upper-left corner and the highest number appears in the bottom-right corner. The complete block with the lowest range of numbers, from 1 to 9, is in the upper-left corner of the page and the complete block with the highest range of numbers, from 1 to 11,638, appears in the bottom-right corner. Except for the first one in the upper-left corner, each of the complete blocks plus the incomplete ones along the right edge of the drawing has a diagonal line through it, from the lower-left corner to the upper-right corner.

A result of this patterned arrangement of numbers that is both logical and natural is the subtle toning within each block of numbers. The upper-left corner of each block is the lightest, being occupied by the number 1, while the lower-right corner is darkest, being occupied by a much higher number. While this phenomenon is not the intention of this drawing, it is a plausible example of Nakamura's theory of the relationship between number and form to either the mechanics or the structure of light.

Untitled Drawing 2 is an assemblage of number-structure grids arrived at through the writing out of the first in a series of endless linear summations. Nakamura must have been aware that the nineteen tables, of which twelve are complete, are the first in a chart that continues forever, as implied by the incomplete blocks of numbers along the right and bottom edges. Christopher Cutts claims that the nineteen tables in this drawing represent sequences of numbers corresponding to different forms and dimensions. Cutts does not define the concepts of form or dimension, but

he claims that Nakamura believed that “we live in a multi-dimensional universe.”¹³⁶ Except for the block of numbers in the upper-left corner,¹³⁷ this drawing is a mathematical demonstration of six dimensions.¹³⁸ Perhaps this drawing represents the six dimensions that human beings can intellectually perceive: point, line, shape, volume, motion and time.¹³⁹

In this Introduction I have sought to accomplish a number of goals. I have suggested the pervasiveness of the grid (whether hidden, disguised as pattern, or in its pure form) throughout Nakamura’s oeuvre to justify the subject of this thesis. I have offered a definition of the grid, several characterisations of its use by artists, and comments on the relationship between the grid and perspective. I have summarised the rather small body of literature that addresses the grid in the history of Western art and applied art, noting that although the grid has been employed by artists and craftsmen since at least 1460 BC, scholarly studies about its role in art theory and practice have begun only since the middle of the twentieth-century. Finally, I have noted the several, but brief references by writers to the use of grids, or at least patterns, by Nakamura in his drawings and paintings.

In the three chapters that follow, the surveyed literature will be seen to have limited application to my thesis concerning the iconography of Nakamura’s grids. Nakamura’s employment of the grid might be unique in modern Canadian art. Unlike those artists considered by most writers on the grid in modern art, Nakamura’s employment of the grid is not formalist. I will suggest that it is almost always metaphoric and that, as metaphor, Nakamura’s grids have meaning at both a personal and cosmic level that reflect the unique relationship between this artist and his world.

CHAPTER ONE

Some Possible Origins of Nakamura's Grids; a study of his education

At its simplest, linear perspective is a system for recording the configuration of light rays as they proceed from an object to the eye in a pyramidal pattern.... Understanding the procedures is not difficult, but does require a little care and patience. They can best be mastered by working through the basic moves with a pencil, paper and ruler.

Martin Kemp.¹

The Introduction to this thesis demonstrated the presence of the grid as a constant substructure in the drawings and paintings of Kazuo Nakamura, including those works, both representational and abstract, in which the grid is virtually hidden. The topological and metaphoric evolution of Nakamura's grid and his lifelong employment of it as a carrier of several meanings can be traced to particular events and circumstances of his youth, from the age of about fourteen to about the age of thirty-four.

The formal and conceptual influences that predisposed Nakamura to employ the grid in his work during his formative years, c.1939 to the middle 1950s, can be divided into four categories. The first of these was in his family, when he was introduced to Renaissance perspective by his younger brother, Yukio. The second source was his fine- and applied-art education, which occurred in two schools and blocks of time. From about 1939 to October 1942, Nakamura attended Vancouver Technical High-School, and from 1947 to 1951 he studied in the Special Art Program at Central Technical High-School in Toronto. This formal education was interrupted by the third event which occurred during the two years from October 1942 to October 1944, when Nakamura was incarcerated at Tashme Internment Camp. During these two years, two traumatic experiences - the loss of his community, and his forced solitude in the wilderness of the British Columbia interior - planted the seeds of his later formal, scientific and metaphoric employment of the grid. Finally, following the completion of his formal education and his graduation from CTS, the fourth influence on Nakamura's grid was his contacts in the broader art community, mostly through his association with Painters Eleven, and perhaps Jock Macdonald in particular.

Nakamura's parental grandparents Iwaichi and Yuku Nakamura² came to Canada from Hiroshima in the early twentieth century in the last wave of Japanese immigrants before restrictions were imposed limiting the number who could enter this country. Toichi Nakamura, Kazuo's father, having been left behind with relatives while his parents established their home and business, arrived in Vancouver in 1920, during the height of what at the time was a public panic over the 'yellow peril', or the perceived military threat from Asian people, especially the Chinese.³ But the term applied particularly, and perhaps uniquely, in British Columbia to Japanese-Canadians in response to the increasing power of Japan during the early twentieth century. Before World War II broke out, Kazuo's paternal grandparents returned to Japan to retire.⁴ They, and other relatives, perished in the atomic bombing of Hiroshima.

Kazuo Nakamura, a *nesei*, or second generation Japanese-Canadian, was born in Vancouver, on October 13, 1926. When Nakamura was a child, his father owned a western-style restaurant near the family home in the original Japanese-Canadian community on the edge of downtown Vancouver, in what is now part of the first Chinese-Canadian neighbourhood. During the Depression, the restaurant went bankrupt. The family moved to a working-class neighbourhood close to the intersection of Main Street and 23rd Avenue, at that time the southern perimeter of the city, where they lived until October 1942. Nakamura's mother began a home-based dressmaking business, while his father cleaned and pressed clothing.⁵

After completing grade-school in 1939 at age thirteen, Nakamura enrolled in VTS, "a move which marks [one of] the first discernible steps on the long, single-minded and determined path that would lead him to a career as a prominent Canadian artist."⁶ As well as the basic mandatory academic classes, he attended several applied art courses in grades nine and ten, including drafting, design, sheet-metal working and mechanical drawing. Here, he was exposed to a precise analysis of the physical world through the graphic and mechanical rendering of industrial objects. In addition, at this time, according to Nakamura, his younger brother Yukio provided him with his first practical knowledge of the grid in art. Yukio was studying the basics of Renaissance one-point perspective in the art classes at John Oliver High-School.⁷ He, in turn, taught these lessons to Nakamura.

Nakamura's vocational training was supplemented by a one-hour design class taught once a week by the Scottish-Canadian artist Jock Macdonald,⁸ one of Canada's most important art teachers, theorists and mentors in the middle third of the twentieth century.⁹ Macdonald had been employed by VTS in 1939, at a time when he was experimenting with the abstraction of natural forms, known as his 'modalities'.¹⁰ Although not shown collectively until 1941, one of these, *Untitled Modality*, c.1938, (ILL. 24) contains a one-point perspective grid contrasted with flat curving abstract forms.¹¹ The painting was exhibited in a solo exhibition of forty works¹² at the Vancouver Art Gallery, an exhibition Nakamura may have seen, less than a year before he joined Macdonald's class. This is not to say that there was a direct connection between Nakamura's later interest in similar problems and Macdonald's work. Indeed, he later dismissed the notion that his first adolescent contact with Macdonald influenced his later art with the off-hand comment: "we were just kids."¹³ However, although there is no documentary evidence that Nakamura was aware of Macdonald's art, it is probable that Nakamura was, in fact, influenced at this impressionable stage of his development by the older artist's strong personality, sense of duty to students and a teaching style that was highly coloured by his personal philosophy. Henri van Bentum, one of Macdonald's students at the Ontario College of Art in the late 1940 or 1950s, recalls that Macdonald referred to himself as the same kind of mentor to his students that Theo van Gogh had been to his brother Vincent, in the sense that it was Theo who introduced Vincent to the avant-garde. MacDonald's persona as a guide to young artists was a well-established aspect of his self-image, and well-known by his students and younger colleagues throughout his career.¹⁴

In fact, Ken Carpenter claims that Nakamura was influenced by Moholy-Nagy of the Bauhaus through Macdonald.¹⁵ This speculation is worth considering. It is possible that Macdonald's teaching philosophy and methods at VTS incorporated his enthusiasm for the Bauhaus teaching philosophy and content, an attitude that he could easily have passed on to the young Nakamura. It can therefore be suggested, with some plausibility, that Macdonald *did* have an early influence on Nakamura's appreciation of the grid as an ordering tool in his art. Further, as I will suggest later in this chapter, it is probable that Macdonald and Nakamura *did* engage in some exchange of ideas once they were introduced to each other again, as members of Painters Eleven.

During his years as a high-school student in Vancouver, and independently of his high-school assignments, Nakamura was already drawing and painting scenes of Vancouver and its environs. He produced many precise urban scenes in sharp hard pencil with watercolour wash that reflected the lessons he was learning in his high-school drafting classes, as well as from Yukio, and possibly even from Macdonald.¹⁶

First Frost, Vancouver, 1941, (ILL. 25) is a view of the houses and shops along East Hastings Avenue, obviously executed by someone who is still grappling with perspectival conventions as applied to the urban grid. His strict attention to the details of three-dimensional construction and graphic information is apparent. The entrance to the house at the lower left, with its sloping roof over the door, the railing and spindles, and the steps set at right angles to the facade of the house, all set in attempted three-point perspective, are about as accurate as one could expect in a drawing of this subject by a fifteen-year-old. Perhaps more significant for the self-determination that Nakamura displayed throughout his career is his insistence that no element of the subject be left to chance. Given his lack of art-school training and his vocational instruction, rapid, impressionistic sketching was not at this point an important practice for Nakamura, and never became so. Further evidence of his insistence on a complete and accurate depiction of what he saw before him is apparent in the veracity with which he renders the large letters seen in the advertising text on the clapboard side of the store on the right side of the drawing. Nakamura carefully duplicated the typographic style of the original signage which is clearly legible:

ARMY
AND
NAVY
DEPT. STORE
25-27 HASTINGS EAST
WE SELL FOR LESS

On the other hand, as a contrast to Nakamura's later penchant for precise rendering of geometrical structures related to the grid and perspective, one could point to the schematic and arbitrary technique with which he indicates the bushes in the lower-right quadrant of the drawing, and the trees among the houses in the left background. It is obvious that these elements of nature

were not of primary importance to him. He is less concerned with what might be termed organic structures than with the architectural details, the billboard, the number and placement of windows, and the structure of porches and lampposts. While the drawing is not remarkable in the accuracy of its perspective, it is a good example of Nakamura's early precocious attention to detail, which Bryce Kanbara refers to as his "particular aptitude for observation."¹⁷ But the significance of the drawing goes beyond its testimony to the attempts of a young artist to master perspectival conventions. In choosing this specific site, Nakamura established a pattern that he would return to again and again. Here, rather than working in his own neighbourhood, or the area around his school, he returned either physically or mentally to the neighbourhood in which he lived during his childhood. Nakamura's practice of working from memory was clearly established while he was living at Tashme, where he produced a number of paintings of downtown Vancouver.

Strawberry Farm, c.1942, already discussed in the Introduction in terms of the presence of the grid in the rendering of landscape, also comes from this period just before Nakamura's internment. It too contains something of a leitmotif that will recur throughout his work. The high horizon, the orthogonal lines of perspective and the scattered border of trees resurface in many later works, known as his 'memory landscapes'. However, a dramatic and traumatic event would separate these early works from anything that came after.

Nakamura was fifteen years old when the Japanese navy attacked the American naval base at Pearl Harbour, Hawaii on December 7, 1941. The United States immediately declared war on Japan, and imposed acts of restriction, confiscation, forced removal and internment on all Japanese-American citizens. Canada imposed similar laws on its population of about 40,000 Japanese-Canadians, nearly all of whom lived in or near Vancouver.¹⁸ beginning with the immobilisation of the Japanese-Canadian fishing fleet based in Vancouver and the fingerprinting of all Canadians with Japanese ancestry. On February 26, 1942 all Japanese-Canadians were ordered to move inland. The following month the British Columbia Security Commission, chaired by Austin Taylor, was organised, and the evacuation of Japanese-Canadians was begun. All those from smaller coastal communities were rounded up and assembled in a clearing centre quickly set up for the evacuation in the Hastings Park Armoury in downtown Vancouver, only a few blocks from the first home of the Nakamura family. All their personal and business property was

confiscated and sold at auction by the Security Commission to offset the cost of the internment. In October 1942, approximately 22,000 Japanese-Canadians were transported by truck to the interior of British Columbia, arriving just as winter was setting in. The major internment camps were quickly arranged in or near the towns or ranches of Kaslo, New Denver, Roseberry, Slocan City, Lemon Creek, Sandon, Greenwood and Tashme, the last named for the members of the Security Commission, Taylor, Shirras and Mead.¹⁹ Many were sent to work as farm labourers on the prairie.

From October 14, 1942 to October 15, 1944, Nakamura and his family lived at the Tashme Internment Camp, a camp quickly constructed of rudimentary wood buildings regimented in a strict grid on the site of an abandoned ranch, in the Sunshine Valley, 22.5 kilometres southeast of the town of Hope²⁰ and about eighty kilometres east of Vancouver. Like other internees, they arrived in the camp with only whatever personal property they could carry in their arms. It is important to note that Nakamura chose to take his sketchbook and watercolours, and a portfolio of paintings.²¹

During the day, Nakamura worked alongside other adult male internees, clearing the underbrush, chopping trees and stacking wood for heating and cooking, the typical enforced labour of Second World War Italian and German prisoners-of-war in Canada. In the evenings, he completed the last two years of his high-school education. Nakamura's two-year incarceration at Tashme Internment Camp was another, less benevolent, kind of art education, one in which the grid became an important formal and conceptual tool. It was at Tashme that Nakamura began to employ the grid metaphorically, albeit probably unconsciously - a subtle shift in emphasis that would have profound significance in work as a mature artist.

Nakamura's landscape drawing practice, which he continued at Tashme, was now employed, according to Kanbara, "as a way to ameliorate a cheerless situation."²² His watercolour painting helped to overcome or escape the boredom of life in the internment camp. He continued to learn to draw and paint. The study of an idealised Renaissance perspective applied to the ordered and artificial landscape of the internment camp was his primary pursuit. To say that the camp's strictly gridded layout lent itself to this treatment would be an understatement. His drawings of the camp clearly convey his recognition that the fenced-off and segregated community,

with its military-like rows and columns of living quarters, was itself a horizontally gridded place, set down amidst the apparent chaos of the British Columbia rain forest. (ILL. 26a, b, c)²³ For example, in the drawing *July 1944*, 1944. (ILL. 27) Nakamura chose a view from the side of a hill bordering the valley in which the interment camp was constructed. The details of the camp itself are vague, undoubtedly because his paintbrush, loaded with watercolour, was not able to capture the nuances of his still-visible fine pencil rendering. We are, nonetheless, able to discern the precision of the camp-as-grid through the veil of watercolour.

The incomplete state of *July 1944* suggests that it is a study for the more complete work, *Tashme at Dusk*, 1944, (ILL. 28) painted in oil on board. The transparency of the drawing indicates it was done during daylight. However, *Tashme at Dusk*, produced within the next month, shows the same view painted in the evening. This shift in time allowed Nakamura to express his preference for the warm domestic light radiating from the precise windows of the houses over the fading, but somehow threatening, light of the distant sunset behind the dark looming mountains surrounding the camp.

The contrast between the precise rendering of the community-as-grid and the surrounding landscape as threatening is central to his art at this time. It occurs in other works. In *March 18/44* 1944, (ILL. 29) Nakamura balances the military-like precision of architectural line with a clearly Romantic expression of the solemn moon-lit mountain landscape.²⁴ These paintings were not architectural studies as much as they were depictions of anonymous but controlled urban spaces in which community had been lost and re-enforced through confinement and exclusion, placed in contrast with a hostile wilderness.

In *July 1944*, the perspectival and illusionistic watercolour drawing of the gridded community seen from above and set in deep space is further gridded with an overlay of ruled horizontal and vertical lines placed at some distance from each other on the flat picture plane. This second grid appears, at first, strictly functional. It could have been for compositional purposes as much as for the later enlargement and transference to the oil on board, which is almost precisely double its dimensions. Yet, in terms of subsequent developments, the interplay of the two grids, one set horizontally and one perpendicularly to the viewer, is crucial. This is an important conjunction that will recur throughout his work. It is hard to believe this is coincidence, but on the

other hand it is difficult to imagine that at this stage of his development Nakamura knew how to flatten a landscape view by arranging it to fit a grid on the picture plane.

While Nakamura was making perspectival studies of Tashme, he was, at the same time, learning to confront the comparatively disorganised natural world around the camp with a different ordering system. It is probable that he quickly realised that conventional one-point perspective could not be applied to the forest, as it had been to fields and cityscapes, i.e. to areas of controlled nature. The rapid sketchiness of the pen-and-ink line in *Twelve Mile Lake*, 1944, a view of a wilderness setting near the camp, suggests his frustration with his subject and technique, and his search for an appropriate solution. However, in this drawing we can see that he was developing another agenda. The drawing has very little sky, and the trees dominate the composition both in their presence and their reflections in the lake. There is no atmospheric perspective. The lines in the background tend to have the same weight as those in the foreground. Despite the fact that the trees diminish in scale as they recede into the distance, this is compensated for by the mountains which occupy the same space on the picture plane as the foreground trees. Hence, the balancing of foreground and background in equal parts tends to flatten the image.

This compression of space may be said to predict the artist's metaphoric use of the modernist grid ten years later, as in *Forest*, 1953. (ILL. 30) In fact, this composition and subject form the basis of all the mature landscapes of his 'reflection series', or 'memory landscapes' from the mid-1950s, precisely because they are based on sketches such as *Twelve Mile Lake*. *Twelve Mile Lake*, then, suggests that Nakamura was already beginning to discover a modernist solution to the problems of traditional systems of Western perspective. It also indicates that the problems that were posed at Tashme, both pictorial and otherwise, remained with the artist for the duration of his career, and that he would continually and perhaps even obsessively return to them again and again.

In the drawings and paintings of the internment camp, the tedious geometry of the 'town' is, somewhat ironically, also a haven of order. It is both confinement and community, a penal colony and a place of security. His drawings of the site, as studies in tight linear perspective, contrasted with those of the surrounding forest, suggest that Nakamura was aware of the duality presented by the gridded, fenced-in, built-environment, and the chaos of the wilderness. This dilemma was balanced by the fact that Nakamura's need to escape his confinement left him

confronting the only available alternative, that is, the apparent disorder of the forest. This confrontation would require that traditional perspective be replaced by a new system that could impose order on the forest. *Twelve Mile Lake* suggests that he drew this order out of the details of the forest itself.

Learning to draw the natural world around Tashme would represent the only possible imaginative escape for Nakamura from the camp, yet at the same time this would mean giving up the identity of his Japanese-Canadian community. The need to escape from the confinement of the camp through an analysis of the non-linear perspective necessary to depict the forest led to the means by which Nakamura's art was able to shift from pre-modern representation to a modernist visualisation. This could also signify a nascent reconciliation with the very forces and culture that had excluded him and made of him an outsider, an enemy alien. While the forest was impenetrable to Nakamura at the age of eighteen, by the mid-1950s he was able to reduce it to a controllable grid system. Chapter Two will outline how the confused spaces of the forest eventually became the rational mathematical spaces of his final projects concerned with the relationship among natural forms, patterns and number structures. By the late 1950s Nakamura had recognised that the more he could learn about the deepest structures of nature, the more he could escape the apparent irrationality of its surface.

Nakamura recognised that seeing and revealing the order in nature could only be a result of direct observation and analysis. At Tashme, he learned to see the landscape as simultaneously threatening and idealised. The camp, which Nakamura probably recognised as a symbol of racism and oppression, was idealised through conventional perspective; its structure was analysed, and its order identified. However, his interest in perspective as idealised landscape led him to the grid that he employed in his later abstract landscape paintings. If the natural forested landscape around Tashme was oppressive, ten years later Nakamura was able to employ the forest-as-grid to peer through its confused spaces to discover the larger, mathematically-ordered structures of the universe. Hence there is a direct line between Nakamura's art from Tashme Internment Camp to his final projects.

While living in the internment camp, Nakamura bought an art history book by mail-order that further contributed to his art education. World Famous Paintings, a subjective choice of paintings with commentary, was written by Rockwell Kent and published in 1939.²⁵ Artists by

whom Nakamura told me that he had been influenced are Paul Cézanne and Grant Wood, both of whom are represented in this book. This may be surprising, since neither Wood's nor Cézanne's paintings depict wilderness. Rather both depicted a controlled nature, a further hint to Nakamura that his metaphoric escape from the camp would be through a modernist grid.

At the same time, Cézanne and Wood held opposing positions in regard to the philosophy of modern art. Cézanne was closely associated with the exploration of the careful balancing of the flatness of the picture-plane and pictorial depth. It was his experiments that would, of course, lead to the abstractions of Cubism and its further flattening of space and the rejection of illusion. On the other hand, as an American regionalist of the 1930s, Wood consciously rejected the ambitions of international modernism in favour of an indigenous American style based on a nostalgic vision of the rural mid-west. This entailed a return to traditional Renaissance means of rendering illusionistic space and volume. Nevertheless both these artists held important formal and conceptual lessons for Nakamura. Indeed, he seems to have been fascinated by the dilemma they posed. Cézanne's technique, reductivist composition and architectonic paint handling, and Wood's rationalisation and idealisation of the prairie landscape influenced Nakamura's goals and artistic practice. A close study of the paintings by these artists reproduced in this book indicates that Nakamura was guided toward an employment of the vertical grid by Cézanne, and the horizontal grid by Wood.

The Cézanne painting illustrated in World Famous Paintings is *Chestnut Trees at Jas de Bouffan*, 1885-87, (ILL. 31) a landscape of his family estate in the south of France at Aix-en-Provence. The ground of the parkland is carefully divided into small, precise and distinct brush strokes, almost every one a slightly different colour. This modernist technique is highlighted by Rockwell Kent's polemic writing in the accompanying short essay. About Cézanne's technique, Kent wrote:

He broke up the surface of his pictures into separate independent areas of colour which, in total effect, built up to an appearance of solidity. You will see this clearly if you examine the foreground of this landscape.²⁶

The foreground paint strokes are staggered diagonally. As a result, their angle suggests linear perspective, which is confirmed by the direction of the shadows cast by the trees. As a result, the gridding created by the brushstrokes can be read as lying on a horizontal plane receding in depth. However, the overall pattern of the brushstrokes, which produces a continuous gridded surface, tends to play against any reading of the foreground as an illusion of space. It is acknowledged that Cézanne's technique of applying colour in distinct brushstrokes was a major step toward the modern grid.

It would take Nakamura time to work out the full consequences of this encounter. It is unimaginable that Kent's essay would not have been the source of Nakamura's attention to Cézanne's technique, given that a decade later he was able to develop it to such a degree in his 'reflection series'. There is, for example, a striking similarity between Cézanne's brushwork and that found throughout Nakamura's painting *Lake B.C.*. Nakamura's painting is, in fact, an extension of Cézanne's technique. In Nakamura's painting the same brushstrokes are carefully stacked vertically or laid down in horizontal rows, creating a flat gridded surface with no sense of linear perspective. Indeed, close study of virtually any of Nakamura's 'reflection paintings' shows how he learned to move the viewer's eye across the canvas by applying similar strokes of nearly identical colour in clear grid-like horizontal and vertical sequence. Yet while Nakamura's technique reflects Cézanne's style, he pushed the grid towards greater formal autonomy. Like Cézanne, Nakamura employed the grid as a formal tool to break up the picture plane into smaller units that compromised or denied the traditional depiction of space as seen through a window.

As well, Nakamura learned another lesson from Cézanne, one of which he was not aware until the mid 1950s. Through his interest in science, Nakamura was able to extend Cézanne's reduction of the perceived world to simple three-dimensional forms to an analysis of the structure of the invisible world. According to Nakamura "he [Cézanne] broke down nature into cones, spheres. But we are living in an age where we can see a structure, a structure based on atomic structure and motion."²⁷ However, more relevant to Nakamura's life-long goals, he learned to employ the grid as both the container and metaphor of the mathematical basis of the hidden structure of nature.

If Nakamura discovered a formal way of activating the picture-plane by the use of a technique of gridding the landscape with carefully-controlled mosaic-like brushstrokes from

Cézanne, he received a different lesson about the grid from Wood. In many of Wood's landscape paintings, depth of field is suggested by an idealised, and anti-modernist, perspective. In his *Fall Plowing*, 1931, (ILL. 32) the idealised rolling American prairie landscape conveys the austere morality of a natural but controlled fertility, within which a sense of the security of the rural community is nurtured. A plough, symbolic of a benevolent, if phallic, relationship between the land, cast as feminine, and its inhabitants, rests in the immediate foreground at the base of the painting. The plough stands on the crest of a hill that is furrowed across the bottom of the painting. Behind the plough another hill, sloping downward and away from the viewer, is furrowed in accurate receding lines of rolling orthogonals. Beyond this, a recently harvested field is more explicitly gridded with perfect cone-shaped stacks of grain, inadvertently recalling Cézanne's dictum of reducing nature to geometric form. Other manicured fields, beyond the homestead set among trees just below the high horizon, recede, without atmospheric perspective, toward the vanishing point at the mid-point of the high horizon.

Again it would take some time for Nakamura to synthesise all of the implications found here, and when he did it would be in a radical manner that would also incorporate lessons learned from Cézanne. In fact, the connection with Wood would not be as evident as with Cézanne. Nonetheless, it is there, especially in the presence of the grid. I would like to compare Wood's painting with *Cycle* from the 'string painting series'. At first this may seem an unlikely comparison. The latter bears none of Wood's realistic rendering. It is, rather, an extremely simplified composition of horizontal and vertical lines. Its relationship to Wood's painting, however, lies in both its structural and compositional elements. The high horizon is shared by both, as are the vertical lines which occupy the bottom two-thirds of each. The difference in their visual elements lies, of course, in the fact that while one is representational, the other is almost completely abstract. But, more to the point, the converging and undulating orthogonals of the fields are here transposed as strict parallel lines moving straight up the canvas, meeting equally flat horizontal lines running from side to side. Both then, represent an idealisation of nature and landscape, using similar devices but in different way, and with different intentions.

In terms of their respective approaches to landscape, *Fall Plowing* is romantic, utopian, and nostalgic, while the landscape depicted in *Cycle* is distant, empty, vast, hidden and silent. As well as representing the infinite space of the land and sky, the strings in *Cycle* are also a barrier

between the artist and the land which, consequently, remains unavailable and foreign to him. The “crisp geometries and repeating patterns”²⁸ of Wood’s positive landscape of the American prairie is reinterpreted as an essentially negative experience by Nakamura. In fact, I would claim that all Nakamura’s ‘string paintings’ from the 1950s are gridded surfaces as endless ‘places’ derived from lessons about the nature of the grid he learned from Wood’s idealised landscapes. In all these paintings, the layering of the string is simultaneously geometric and organic. While the layer of strings suggests a grid through which the distant landscape is observed, its somewhat loose application to the board or canvas suggests the contours of the landscape itself. This might be equatable to the simultaneously engineered control and natural fertility of the depicted place of Wood’s landscapes. Yet neither Nakamura’s ‘string paintings’ nor his ‘block structures’ radiate the positive relationship with nature that characterises Wood’s interpretation of the rolling mid-western landscape.

Grant Wood’s landscape scene in *Fall Plowing* might have been similar to the farmed landscape visible from the top of Little Mountain in Vancouver. Its careful perspectives would have reminded Nakamura of his own *Strawberry Farm* which, in hindsight, could have seemed as rich with pleasure and yearned-for promise as Wood’s ordered prairie landscape. Nakamura might have been attracted to Wood’s romanticised and gridded world for two reasons. As well as appealing to Nakamura’s sense of precise rendering, *Fall Plowing* might have represented a nature that welcomed and supported the human resident, the opposite of both the inhospitable mountain landscape surrounding Tashme and the Canadian prairie landscape in winter. While Wood’s bucolic landscape suggested an ideal future, Nakamura had to discover a similar world through his childhood memories, of which *Fall Plowing* could have reminded him.

Throughout the two years of internment, the Japanese-Canadian community believed that they would be allowed to return to their west-coast homes at the end of the war. Wood’s painting of the American prairie might have reminded the young man of the security of his first home. However when the Canadian government closed the camp in 1944, an ultimatum was issued: the Japanese-Canadian internees could give up their Canadian citizenship and return to war-torn Japan, or move to anywhere in Canada east of the Rocky Mountains. At this time, *Fall Plowing* would have taken on new meaning for Nakamura. The gridded but bucolic nature of Wood’s idealised and domesticated American landscape became Nakamura’s visualisation of his memory of the

negative meaning of the Canadian landscape. In these paintings, the strings, whether or not in grid format, represent both the landscape and the artist's exile from it. Nakamura's experience of the Canadian landscape, in October 1944, was as an outcast. This experience was more alienating than that of a foreigner or an immigrant.

The Nakamura family wanted to move to Toronto, where their eldest son was already located. However, Toronto was one of the Canadian cities that maintained a quota of Japanese-Canadian residents during the Second World War. Nakamura and his parents and three younger siblings compromised by moving to Hamilton in November 1944. Nakamura found employment during the day as a semi-skilled worker in a box factory. In the evening he attended a painting course at Hamilton Technical High-School. We do not know what Nakamura accomplished at this school. This course probably had little to do with the slowly emerging grid in his work. On the other hand, his studies in Hamilton might have had something to do with graphic art, because it was while he was attending these night-classes that he decided to study commercial art.²⁹ However, at the same time that he was considering a career in graphic art as an alternative to working in a factory, he continued his outdoor drawing practice, as indicated by such drawings as *Cotton Mill, Hamilton*, 1945, *Bay Street North, Hamilton*, no date, and, *Hamilton Train Station*, 1945.³⁰

In August 1947, Nakamura and his family were finally able to move to Toronto. The following month, Nakamura began full-time studies in the Special Art Program at CTS. This program was developed for mature students, or students who had recently completed their academic high-school education at another school. At twenty-two years of age, Nakamura was both.

Nakamura's next step towards a greater involvement with the grid is apparent in the work he produced at CTS. Here, he was exposed to the philosophy and teaching practice of the Bauhaus, possibly for the second time. Since the middle 1930s, CTS had developed one of the most sophisticated high-school programs that combined fine art and graphic art in Canada. Between 1939 and 1954, the director of the Art Department was Peter Howarth (1889-1986), "the only master that Nakamura acknowledged."³¹ According to Paul Duval, Howarth "made a rich contribution to the development of artists in the Toronto area ... [including] Nakamura"³²

There is no direct evidence of how Howarth's teaching practice influenced Nakamura either as a student, or young artist. However, we may extrapolate from the fact that we do know that he brought the teaching philosophy and practices and "spirit"³³ of the Bauhaus to CTS.

The Bauhaus was a unique art school in the 1920s in that it "was a magnet for some of [the] most illustrious artists, architects and craftsmen."³⁴ The Bauhaus philosophy was both diverse and democratic. Based on the pursuit of excellent design, the school conducted workshops in metalwork, weaving, pottery, furniture, typography, and mural art. It set out to break down the historic separation between 'fine art' and 'craft', while establishing strong links with advanced technology and industry, a philosophy that CTS adopted under Howarth's direction.

As a teaching tool, as well as a formal design or painting principle, the Bauhaus's advocacy of the grid became a fundamental component of twentieth-century international modern art, graphic art, industrial design and architecture. According to Carl Goldstein,³⁵ Johannes Itten, Bauhaus instructor and artist, introduced the theory that students' exercises, such as *Colour Sphere from "Utopia"*, 1921, (ILL. 33) as well as works of art by professional artists, such as his own *Horizontal-Vertical-Diagonal*, 1955, (ILL. 34) could be based on the grid or checkerboard. In this manner, the grid, as a final "emblem"³⁶ of the modernist tendencies derived from Cubism, was broadly disseminated through Bauhausian art theory and teaching practice. Already intensely explored by Kazimir Malevich and Piet Mondrian, the grid was employed by Bauhaus instructors Wassily Kandinsky, Paul Klee and Itten, and their students, particularly Josef Albers. For these artists and students, the grid was an indispensable formal tool for the exploration of colour, form and the texture of different materials. The Bauhaus teaching philosophy and methodology influenced other art-teaching institutions in Europe and it became "equally pervasive in [art-teaching] programs established in the United States."³⁷

Josef Albers, one of the most important artists to emerge from Bauhaus training, and certainly one of the Bauhaus artists most committed to the grid, is largely responsible for the introduction of the Bauhaus teaching program to North America. Originally a student of Johannes Itten's teaching methodology, Albers inherited Itten's position as instructor of the Preliminary Course after the former was expelled. In the 1940s, Albers moved to the United States where he continued to teach his Preliminary Course at Black Mountain College and Yale University. His

teaching philosophy and methodology had a profound influence on art schools throughout North America in the 1940s and 1950s,³⁸ CTS included. Founded in 1915, CTS was soon,

pronounced one of the finest schools of its kind in the world. Stemming from [an earlier] philosophy that had ... seen linear drawing as the key to practical education, a major art department was built into the concept of the [high-school]. This [arrangement] had a contemporary [model] in the European educational movement that led to the formation of the Bauhaus in 1919.... At the Bauhaus, artists would teach art students, who were then expected to apply their craft and design skills to improving the level of design of all manufacturing products, from the simplest utilitarian kitchen tools to great engineering projects. This program was somewhat modified in Toronto; the new department would extend advanced art training to serious art students, and as well teach technically oriented art skills to general course students....

Peter Howarth, assuming the position of director of art [was, along with his wife Bobs Cogill Howarth,] very much a part of the vital activity of the Toronto art scene between the two world wars. [Under his direction] the Art department was to be totally professional, both in outlook and practice, [with a teaching staff] that would be practising artists.³⁹

Howarth's curriculum at CTS was not intended to develop fine artists exclusively, but to provide young, creative workers for Canada's rapidly growing post-war applied-art industries through its multi-disciplinary program. This was a reflection of the intention of the Bauhaus to erase the distinction between artists and artisans. As at the Bauhaus, Howarth's philosophy and practice linked aesthetics, craftsmanship and technology, through courses in both fine art and applied art. Within this program the grid became an important teaching device, as well as art-making tool, an emblem, as Krauss noted, of modernism. The program at CTS included such subjects as typography, package design, illustration, and graphic design, subjects in which the grid was both a necessary graphic system and a formal design motif.

Alongside these applied-art subjects, the program included fine-art subjects, such as sculpture, still-life and figure drawing and painting, ceramics and printmaking.⁴⁰ As at the Bauhaus, most of the instructors at CTS, such as Howarth himself, Doris McCarthy, Charles Goldhamer and Virginia Luz, functioned with equal authority in both broad areas of creativity.⁴¹

While Nakamura was a student at CTS, he continued the weekend sketching practice that he had established years earlier in Vancouver and the British Columbia interior. He produced urban views of office buildings, parks and boats on beaches, as well as detailed structural drawings of flowers. In these pencil or pen-and-ink studies, the grid is clearly evident as a tool of composition, and as a structuring tool for analysing the individual objects depicted. As well, even before graduation, Nakamura began to exhibit more formal drawings and paintings that were a continuation of the landscape drawing and painting practice that he had established at Tashme. I would suggest that in recognising or discovering his identity as a full-time artist, Nakamura was 'only' continuing the practice in which he had engaged since about the age of fourteen. Up to this time, he had shown his work to few people. It is perhaps in this relatively secret but well-established practice that we might find a reason for Nakamura's insistence that he was self-taught.⁴² It is possible to suggest that before he was a student at CTS, Nakamura's personal goals were already well established - if unrecognised by him until about 1952, when he decided to be a fine artist rather than a graphic artist. Nakamura had committed himself to landscape painting.

Nakamura was influenced by the styles and techniques employed by his instructors at CTS. He acknowledged that Howarth influenced him. He regularly showed his private extra-curricular work to McCarthy, his landscape-painting instructor.⁴³ Further, there are similarities between particular works by Nakamura and paintings by Howarth and Luz. With its strong sense of the land, and its simultaneous depiction of perspective and the texture of plowed earth with either masking material or white chalk, Howarth's *Farmlands*, no date, (ILL. 35) might have reminded Nakamura of *Fall Plowing* by Wood and his own *Strawberry Field*. However, unlike the sense of a benign nature supporting a successful farming community, Howarth's painting captures a sense of bleak isolation, and this interpretation of landscape might have later influenced Nakamura's "block structure paintings" and the "string paintings".

Certain paintings by Luz, who most likely was Nakamura's illustration instructor, could have influenced the young artist as well. Her ink line and watercolour wash painting *Sun on the Harbour, Barachois de mal Baie*, 1957, (ILL. 36) is typical of her oeuvre in the 1950s. Luz was interested in crisp clear colour, tipped-up perspective, precise interplay of verticals and horizontals in an essentially flat, near-Cubist grid-like composition. The strong graphic quality was balanced

by fine pen or brush and ink contours and a transparency of the forms of the houses and boat houses on the shore that are reminiscent of Klee's *Autumn Place*, 1921. (ILL. 37) Nakamura was to explore similar drawing techniques in many works, such as his *Buildings*, 1954, (ILL. 38) and *Bridges*.

The constructed and graphic quality of many of the landscape paintings of Luz, McCarthy and Howarth reflect Bauhaus influences. In turn, the artists teaching at CTS could have influenced Nakamura through their numerous paintings of landscapes viewed across the reflective surface of calm water. Such watercolour paintings as Howarth's *Lake Fringe*, no date, (ILL. 39) and McCarthy's *Loon Lake, Haliburton*, 1952, (ILL. 40) are examples of subjects similar to the 'reflection landscapes' that Nakamura was to focus on from the late 1950s to the mid 1960s. The crisp rationalised geometric quality of these paintings might have reminded Nakamura of his struggle for a similar solution in his drawing *Twelve Mile Lake*, and perhaps accounts for his return to this subject through the 1960s.

When Nakamura graduated in the spring of 1951 at age twenty-five, he was intrigued enough by graphic art that he tried to support himself as a free-lance commercial artist for about a year. This proved to be an unsuccessful experiment, and he subsequently decided to devote himself full-time to his studio practice with no support outside of his family. Nakamura may have been encouraged in this endeavour by the considerable positive support his work received from the press in the early 1950s, and his sale of works to the National Gallery of Canada and the Art Gallery of Ontario in 1951, just as he was graduating from CTS. In 1955, a drawing he submitted to the Fourth International Exhibition of Drawings and Engravings the Museum of Modern Art in Lugano, Switzerland won first prize and was purchased by the museum. In 1952, through Tom Hodgson, a friend and fellow student at CTS, Nakamura met several abstract painters who, the following year, would form Painters Eleven, the group that would promote Abstract Expressionism in Toronto through the 1950s. It was while Nakamura was associated with Painters Eleven that he received his final lessons in the use of the grid.

American Abstract Expressionism was characterised by ideals that emulated the self-image of the United States during the Second World War: virility, boldness, spontaneity, large scale,⁴⁴ with the big brush stroke and the canvas surface as the site of creative action. These criteria did not reflect the Canadian artist's self-image and ambitions, though American-style painting was

promoted here to align Canada's culture and politics with those of the United States. The most public result of this program was Painters Eleven, a hybrid affair, one in which the lack of a program was admitted in their few published statements; their reason for being was to have group exhibitions and sell their art. Sometime in the early 1950s, perhaps even while he was a student at CTS, Nakamura began a brief period of experimentation with Abstract Expressionism. He might have been encouraged in this endeavour by Hodgson. However, unlike the other members of Painters Eleven, Nakamura's involvement with Abstract Expressionism was not to be a lasting commitment. By the middle 1950s he had replaced the essential brush stroke and graphic gesture of Abstract Expressionism with a greater commitment to landscape as seen through the formal and analytic grid. A brief study of Nakamura's involvement with Abstract Expressionism and Painters Eleven reveals the outlines of the path that led him to a commitment to the modernist grid as a tool to explore the world through both art and science.

There are few published examples of Nakamura's Abstract Expressionist experiments. However two excellent examples are *Landscape*, 1952, (ILL. 41) and *Molecular Drop*, 1955. (ILL. 42) Other examples, most of which are graphite or pen and ink drawings on paper, or watercolours, are in the collections of the Robert McLaughlin Gallery, the Art Gallery of Ontario and the National Gallery of Canada. *Landscape* is close in its formal structure to Jackson Pollock's *Autumn Rhythm: Number 30*, 1950, 1950. (ILL. 43) However the apparent turbulence of *Landscape* suggests the macrocosmic energy of light as seen in nature, rather than the energy of the artist's gesture. And, while *Molecular Drops* includes elements of apparent randomness, it is closer to the tentative Abstract Expressionist style employed by several members of Painters Eleven in the early 1950s, particularly Macdonald and Hodgson. However, rather than being an emulation of Painters Eleven's brand of Abstract Expressionism, *Molecular Drop* is actually a critique of American-style (and Toronto-style) painting. As a pun, the title of this painting reveals Nakamura's changing attitude toward Abstract Expressionism in the middle 1950s. This pun can be interpreted two ways. On the one hand *Molecular Drop* represents a visualisation of individual units of atomic energy, rather than the energy of the Abstract Expressionist gesture. As well, this title is a tongue-in-cheek comment on the Abstract Expressionist technique Nakamura employed to make the images of the molecules. The title refers to the act of dropping paint from above the paper to create individual spots. In fact, these spots of paint resemble Pollock's splatters only

slightly. While the painting was laid flat while he dripped the paint, the drops are individual and unique, not like the long skein of drips that Pollock employed. The same ironic twist of Abstract Expressionist style occurs elsewhere in this painting. The horizontally or vertically smeared drops of paint are actually carefully applied to evoke a vague grid. This is the same mechanism of control that Nakamura was learning to apply to a metaphorically similar chaos within the forest of British Columbia. To proceed as an avant-garde artist, Nakamura had to work through Abstract Expressionism in the same way that he had to penetrate the chaos of the wilderness. In *Molecular Drop*, Nakamura deconstructed a particular technique of Abstract Expressionism for his own purpose, in much the way that in 1965 American Pop Artist Roy Lichtenstein reconfigured de Kooning's brushstrokes as impersonal and mechanistic Ben-Day dots as a critique of the romantic individualism of Abstract Expressionism.

If Painters Eleven temporarily drew Nakamura into the circle of the Abstract Expressionist avant-garde in Toronto, Macdonald might also have been the impetus for his withdrawing from this influence. While Painters Eleven embraced Abstract Expressionism, Macdonald expressed considerable criticism of the tendency toward chaos that he saw in the work of Pollock and de Kooning.⁴⁵ We can assume that Macdonald was not enthusiastic about Pollock's famous oracular utterance, "I am Nature," in which he equated his studio practice with natural creative forces. Given Nakamura's and Macdonald's relationship during the 1950s, Carpenter's contention that Nakamura was influenced by Moholy-Nagy through Macdonald assumes greater probability. Macdonald was largely responsible for the interest among avant-garde artists in Toronto in the art and writing of Moholy-Nagy. According to Carpenter, ideas originating with Moholy-Nagy were "very much in the air."⁴⁶ during the 1950s. Considering the similarities between Nakamura's and Macdonald's art in the early 1950s, it is probable that they shared an enthusiasm for Moholy-Nagy's sense of rational design in art, including his preoccupation with the hidden structure of nature.

After teaching at VTS from 1938 to 1948, Macdonald accepted a teaching position at the Ontario College of Art (hereafter OCA). He taught there from 1948 to his death in 1960. While Macdonald was teaching at OCA, William Ronald became one of his students and, in the early 1950s Macdonald met Hodgson and his former VTS student, Nakamura. With the formation of

Painters Eleven, Macdonald became “the mentor and spiritual leader of”⁴⁷ the group, the final fulfilment of the elder artist’s penchant for a close association with and encouragement of younger avant-garde artists. Nakamura would have remembered Macdonald’s teaching at VTS, and the younger artist had a well-established history of showing his art to supportive teachers. The grounds for a continuing and intense dialogue between the two artists, whether verbal or not, was strongly indicated by their shared history, interests and personalities.

In spite of his later denial of such a working relationship,⁴⁸ evidence for a dialogue between Nakamura and Macdonald can be found in two sources. The first is in the close formal ties between their work in the early to middle 1950s, similarities that reflect the growing presence of the grid in Nakamura’s work. The second is in their shared involvement with the popular current interest in connections between art and science among artists, in which the grid served a vital formal and conceptual role.⁴⁹

Though he admired the revolutionary developments of American Abstract Expressionist painting, Macdonald thought of the grid as a solution to the chaos he saw in the work of Pollock and de Kooning. The grid appears in two forms in his art, and Nakamura was to emulate these experiments in his own work. In its first manifestation, the grid appears as a supporting armature in Macdonald’s painting. In its second appearance, the grid emerges from the patina of small brush strokes or knife scrapings across the canvas surface. Examples of such grids in Macdonald’s work can be found in numerous paintings. The ‘window series’, such as *From a Riviera Window*, 1955, (ILL. 44) were, according to Joyce Zemans, “anchored tightly in a shallow space that Macdonald imposed on them” ... “in the early fifties, Macdonald often relied on a grid design ... Colour [was] contained in shallow spaces that exist behind [a] grid.”⁵⁰ A similar supporting grid motif occurs in his *White Bark*, 1954, (ILL. 45) and *Twilight Forms*, 1954. (ILL. 46)

The grid as ‘texture’ is derived from fine brush drawing or scraping and scratching with a knife or razor-blade in Macdonald’s paintings. This is evident in the spiky surface slashes in *The White Bird*, 1952, (ILL. 47) and *Jardin (Riviera Garden)*, 1955. (ILL. 48)

Nakamura’s use of the grid as armature in the early 1950s is evident in numerous works, *Forest* and *Blue Green* being excellent examples. *Forest* in particular employed layers upon

layers of applied and then scraped or thinly masked fine grid lines. An example of his employment of the shattered or spiky grid lines applied with a razor blade or fine brush as an exclusive technique is *Inner View*, 1954. (ILL. 49)⁵¹

In spite of the similarities outlined above, there were considerable differences between the paintings of Nakamura and Macdonald. Notwithstanding his criticism of Abstract Expressionism, there is considerable similarity between Macdonald's final works and his American counterparts. By the end of the 1950s, Nakamura was fully committed to the grid as a non-Abstract Expressionist armature against which he assembled the ingredients of his scientific pursuits.

Macdonald's influence on Nakamura, while considerable, might have originated in the elder artist's penchant for mentoring younger artists through his ongoing public discourse on art, rather than the actual paintings he was producing. Macdonald's statement in the spring of 1955 that "I am not weary of non-objective painting but I feel that a long association with the visual world will be the necessary stimulation for future non-objective canvases,"⁵² is similar to Nakamura's statement that periodically he needed to make 'representational' paintings to support his more abstract work. Further, the origin of Nakamura's simultaneous pursuit of seemingly disparate 'series', a feature of his studio practice that was frequently commented on by art-writers, could reflect Macdonald's statement, "my expressions are always in a state of change. I haven't any set style. I move as I move consciously in relation to my awareness of nature...."⁵³

In his essay for *Fuse*, Richard Hill asks to "what extent the seeds of later, mathematical works are present in the Tashme pictures."⁵⁴ One purpose of Chapter One has been to establish the groundwork for answering that question; to demonstrate that Hill's own answer, "this might be an unanswerable question,"⁵⁵ may be too pessimistic. There is a clear path between Nakamura's early Vancouver drawings and his final projects. Chapter One has argued that the graphic armature of Nakamura's early art was the grid. The chapter reveals how Nakamura came to employ the grid as the ordering tool in his drawings and paintings from his earliest works to his mature independent experimentations of the middle to late 1950s. In Chapters Two and Three my argument will be extended to Nakamura's later projects, justifying Dennis Reid's claim that Nakamura's "number structure" works are ... the key to the trajectory of [Nakamura's] work."⁵⁶ For Reid, the presence of the grid in Nakamura's art is "like pulling a string through everything in

his career.”⁵⁷ Nakamura would probably agree with my assertion that the grid was the essence of the “natural progression,” or what Nakamura termed “evolution of forms.”⁵⁸ The grid was an important educational and formal graphic tool throughout the approximately twelve years that Nakamura studied fine and applied art. As well, the grid became the main formal and metaphoric sub-structure of his art. I have demonstrated that Nakamura was far from self-taught, and further, that the armature around which his education, and most of his art was built, was the grid, be it the grid of Renaissance perspective, the grid as metaphor of oppression and escape, the grid of drafting and metal-work, the grid of graphic art, Cézanne’s modernist or Wood’s nostalgic grid, the Bauhausian grid of modern art, or the grid of the Abstract Expressionist paintings being produced by Painters Eleven, and probably Macdonald in particular. Nakamura learned from and absorbed them all, both as a high-school student, and as a professional artist. In Chapter Two, I will demonstrate how the several educational influences of Nakamura’s early years led him to the grid of scientific rationality, and, in his final projects, to the grid of higher mathematics, and the grid of transcendence.

After the late 1950s, Nakamura worked more independently of outside artistic influences. Both his informal and formal education were complete, and he had established a reputation for himself through his affiliations with Painters Eleven. By the end of the 1950s he had full control of the formal and conceptual meaning of the grid in his art. This learning process, which had begun while he was a high-school student in Vancouver, was complete.

CHAPTER TWO

Art, Science, and Knowledge

If I have perceived numbers by the sense of the body, I have not thereby been able by the sense of the body to perceive also the nature of the separation and combination of numbers.... And I do know how long anything I touch by a bodily sense will persist, as, for instance, this sky and this land, and whatever other bodies I perceive in them. But seven and three are ten and not only now but always; nor have seven and three in any way at any time not been ten, nor will seven and three at any time not be ten. I have said, therefore, that this incorruptible truth of number is common to me and anyone at all who reasons.

St. Augustine quoted in Martin Kemp¹

Leonard Schlichting: When did you first begin to develop a theory of art?

Kazuo Nakamura: From the beginning I was inquisitive about the evolution of art. I started to develop theory in art from mid to late 1950's as I thought abstract artists (original) must be perceiving intellectually of their environment and thoughts, and not be based just on so called feelings.

Leonard Schlichting and Kazuo Nakamura²

Chapter One proposed a series of inter-related sources on which Nakamura may have drawn for the grids which underscore all of his work. In spite of his insistence that he was 'self-taught', it can be determined that Nakamura's knowledge of the grid originated in both his formal and informal applied-art and fine-art education. In the former he encountered the grid as a graphic tool for ordering visual information. During the two years that he was interned at Tashme, he continued his education on an informal basis. During this time, the grid took on other meanings in terms of 'order'. Here, it was associated with the dichotomy between the strict layout of the internment camp and the apparent chaos of the surrounding wilderness. After his internment, he continued his formal education at CTS, where he encountered the Bauhausian aspects of the grid. His formation as an artist continued throughout his involvement with Painters Eleven, and his rejection of the conventions of American Abstract Expressionism. This was especially so in his

contact with Macdonald who also used the grid and insisted on a conjunction between art and science.

Chapter Two will examine how Nakamura, after his education was completed, linked art and science through the grid, established his self-image as an artist-as-scientist and committed himself to the principle that through his practice of art as scientific research he could contribute to the improvement of the human condition. I will propose that this double identity allowed Nakamura to reconcile the dilemmas posed by his unique position within Euro-Canadian society. I will claim that it allowed him to overcome and transcend the conflicts between the order of confinement and oppression he experienced in the camp as an enemy alien in Canada and the disorder of nature beyond its borders. I will further propose that his dual identity allowed him to reconcile himself to modernism in its progressive developmental mode, while eschewing its tendency to privilege only formal components.

Nakamura was an avid reader of popular magazines that regularly included science articles, such as Life, Time and Popular Science. However, the most important of these was no doubt Scientific American, a scholarly scientific journal well known in the art community. There were good reasons for his interest. In May 1948, in a significant shift in editorial policy, Scientific American set out to attract a broader readership. The magazine was originally a trade journal for industry, concentrating on the exchange of theories and technologies among engineers, manufacturers and government. After May 1948, it began including articles, accompanied by colour illustrations and diagrams that would appeal to a broader readership. This shift in policy is discussed in a letter to the editor by R.W. Gerard of the Department of Physiology at the University of Chicago. His letter, published in the May 1948 issue, supported the magazine's promotion of scientific knowledge to the non-specialist citizen as part of the construction of a post-war American culture and identity.

Scientific writing addressed to the citizen must not assume general erudition as a background of understanding, an intelligent interest that he does not possess. College science presented to grade-school students will alienate, not educate, them. The bulk of Americans, even those with adequate intelligence, is not today beyond a most elementary acquaintance with science. We must hope that better teaching in schools, that adult-education efforts, that the presentation of simple but genuine science in print and by exhibits and over the airways, will slowly raise this level.

What then of the tens of hundreds of thousands prepared and eager to be abreast of science.... Each scientist is an advanced layman outside his limited area of expertness.... These men need something between the particular technical journals and the generalised mass magazine. I hope that *Scientific American* will meet this need.

I am concerned that the need be met not so that some magazine or other be a success, nor that some intellectuals be satisfied, but that civilisation be aided. For this group of men, largely if not wholly self-selected by talent and enterprise, dominates the thinking of the larger citizenry. The lawyer, the doctor, the engineer ... the educator ... the artist, is a maker of the minds of men; it is vital that he help make them well. No more important ingredient can be included in the mix than that habit of rational analysis and calculated testing and objective evaluation which is epitomised in the scientific method....³

Dating Nakamura's first interest in *Scientific American* is difficult. It is unlikely that it was before May 1948, when there were few articles that would appeal to the non-specialist. It is possible that he was introduced to the magazine at CTS, that is between 1947 and 1951. The magazine would have appealed to Howarth's Bauhaus-based teaching philosophy which advocated close relationships among art, culture, technology and science. We know for certain that Nakamura was reading the magazine before the middle 1950s, from the controversy which arose over whether he introduced the magazine to Macdonald or vice versa.⁴ While there may never be a solution to this vexing question, it demonstrates that, like many other artists of the period, Nakamura found the magazine stimulating. But it was also more than this. Indeed, it assumed a place within the construction of his own identity that is unique among his contemporaries. By about c.1957, *Scientific American* was important enough to his developing self-image that he had himself photographed with a copy in his hands. One of several photographs published in the catalogue to the exhibition *Kazuo Nakamura: The Method of Nature* shows him holding open the June 1957 edition, while he, as Gary Michael Dault states, gazes "with a flinty look that stops just short of being challenging." (ILL. 50)⁵ To me, what is interesting here is that the artist is presented not with conventional attributes of paintbrush, palette and easel, but with a text that underlines Nakamura as the artist-as-scientist. What was the difference? It was more than the opposition between the rationalism of science and the emotionalism of Expressionism. Science seems to transcend borders. Notwithstanding the title of the magazine, it went beyond mere

Americanism. Nakamura could conceive of it as universal, overcoming differences be they ethnic, rational, national, or political. It offered the means for overcoming the alienation he experienced at Tashme.

Quite possibly the recently-expanded visual components of Scientific American were of greater interest to the artist than the text of the specific articles, although, in these texts, he would have found validation for his own stance as an artist-as-scientist in the more broadly cultural position of the journal. The visual components took two forms: technical diagrams and illustrations produced by artists. Interestingly enough, it is the former to which Nakamura turned as inspiration for his own production. However, he never used these as direct quotations or appropriations. Rather, he came to grips with what he would have seen as their ability to depict the fundamental elements of material existence, and then extrapolated from this. Several examples will clarify this operation.

The issue that Nakamura holds in the photograph is subtitled “Visualising Atoms,” a reference to the feature article; “Visualising Atoms: The Field Ion Microscope Makes Pictures of Atoms in a Metal Crystal by Accelerating Positive Ions from a Fine Needle of the Metal to a Fluorescent Screen” by Erwin W. Müller.⁶ The article addresses both the structure and behaviour of atomic particles and a new imaging technology used to record the traces of their movement. I speculate that the illustrations in this article probably did not provide Nakamura with ideas about how to graphically represent the pattern of the dynamic movement of atomic and sub-atomic particles, a subject in which he was already interested. For this kind of inspirational images Nakamura probably found the illustrations for an article in July 1957 more useful. The article, “Elementary Particles,” by Murray Gell-Mann and E. P. Rosenbaum, is subtitled “An Account of the Abstract Theoretical Ideas which Physicists Use to Help Them Understand the Material World,”⁷ suggests a broader consideration of the nature of the universe than the article by Müller of the previous month. As the authors suggest “these ideas begin to show some order in the jumble of subatomic particles.”⁸ The illustration accompanying the later article, along with others in the magazine throughout this period, would have confirmed Nakamura’s belief that the structure of matter can be understood only through intense observation and analysis.

The scientific photographs (ILL. 51) accompanying the article by Gell-Mann and Rosenbaum bear a striking formal resemblance to a series of delicate broken ink line drawings, ranging from the realistic to the abstract, that Nakamura pursued in the 1950s. The broken lines in these photographs are similar to *Bridges*. Nakamura's drawing is, however, not a literal rendition of these engineered metal structures. Instead, Nakamura depicted the bridge in a metaphoric sense in order to examine and reveal structures outside the unaided visible range. Nakamura deliberately shattered the fine ink line in order to undermine the solidity of the material with which bridges are constructed, in this way reflecting the atomic rather than the visible structure of matter. Nakamura's interest in these ideas is clearly demonstrated by his statement, "Cézanne broke nature down into cones, spheres. But we are living in an age where we can see a structure, a structure based on atomic structure and motion."⁹

For example, in the illustrations to the article by Gell-Mann and Rosenbaum, the pions travelling through a chamber of liquid propane causes the particles of propane to turn to gas each time one is struck. Only the points of impact are registered in the photograph, causing the pion's movement to appear as a broken line. Nakamura was emulating the 'texture' of this line in his drawing *Bridges* and *Buildings*. As well as the broken lines in these illustrations suggesting an important formal tool to Nakamura, the photographs of the behaviour of atomic particles would have suggested the importance of mathematics in physics to him. The trajectory of each broken line is the result of the mathematics of the interaction among the particles depicted. Contributing to these mathematics is the angle of impact, the speed and the momentum of each particle. This is demonstrated in the center of the photograph where the pion strikes a particle of liquid propane and sharply changes both its angle of trajectory and its atomic structure. It divides into a muon and a neutrino. The new trajectory is the result of the angle and speed at which the two particles stuck. Physicists extrapolate mathematically from this that the impact produced one neutrino, even though this particular atomic particle is invisible in the photograph, due to its ability to travel through most atomic matter without detection. In the same photograph we observe the muon strike another atom of propane at such an angle and speed that changes it to a positron and two neutrinos.¹⁰

The photographs recording the behaviour of sub-atomic particles are also similar to a 'series' of abstract paintings, such as *Core Structure*, 1961. (ILL. 52) The title itself is

suggestive of his continuing concern with the fundamentals of matter. His method of depicting these is, although based in materials and processes, metaphoric as well as literal. Nakamura began by applying a white impasto in narrow vertical bands to the canvas support. When the pigment had dried, the thick, uneven paint surface was sponged or brushed with a thin brownish grey wash. This was then wiped away with a dry rag, leaving the colour in the recesses of the paint surface. The resulting effect was twofold. On the one hand the viewer sees a heavy opaque, but shattered surface that resembles a wall made from cement poured into a vertically textured form. Throughout the heavy paint surface, tenuous horizontal lines hover and shimmer with an optical resonance. This conjunction of solid materiality and unstable opticality suggests a transition between matter and light. This representation of the interchangeability of matter and energy is paradoxical, since it also suggests stasis. These marks, which I claim refer to the ever-present grid in Nakamura's work, could also act as traces of the ephemeral presence of static form for the instant in which its solidity defies time. This sense of the ephemeral and shifting relationship between matter and energy can be thought of as a subtext of much of Nakamura's art.

In a second example, *Number Structure*, 1980, (ILL. 53) the meaning of the patterns embedded in the impastoed white paint of *Core Structure* has evolved into a more rational mathematical representation. The pattern of numbers within the plane of grids can still be seen as representing the fundamental geometry of either matter or energy, ie. the basic order of the universe which transcends all difference. The radiating zigzag patterns that emerge from the close observation of the number sequencing are similar in their metaphoric meaning to the apparently random patterns of interference in *Core Structure*. However, in *Number Structure*, these patterns correspond to specific Catalan number sequences. Nakamura was demonstrating here that both abstraction and metaphor in his art were based in a rational mathematical analysis of nature.

Nakamura's categorisation of his art as "real abstraction,"¹¹ in fact, relied on the direct relationship between science and art and matter and energy. The paradoxical term indicates that Nakamura was engaged in two research projects. On one level he was investigating the structure of matter and energy - what Nakamura referred to as the 'environment'.¹² His other goal was to present this research objectively rather than emotionally, in a pedagogical manner that would be like post-1948 issues of Scientific American, accessible to all. Whether or not Nakamura's

drawings and paintings actually were scientific research is not important to this discussion; we are discussing Nakamura's perception of his art as science and himself as scientist. We could claim that he linked art and science in order to meditate on knowledge in a visual manner from which he believed that his viewers would benefit, especially if they were thereby encouraged to engage in a similar meditation. However Nakamura's attitude was probably the result of his association with science through the process of art-making as a meditation on knowledge rather than though art as actual scientific research. The term "real abstraction" represents two aspects of his self-perception. The first was that Nakamura perceived his art as a symbolic representation (with scientific codes) of the actual conditions of cosmic reality. The second is that "real abstraction" precluded both illustrative and emotional responses to the universe.

The point of the difference between Nakamura's "real abstraction" and applied or commercial or scientific illustration as it appeared in Scientific American is useful as a demonstration of the carefully constructed parameters of his self-image, and his idea of the function of art. The graphic art and illustrations of Scientific American were produced by technical or scientific illustrators, working with tools, visualising systems and materials similar to those that Nakamura employed. Given the content of Nakamura's art, it would have been the more technical diagrams in Scientific American articles and advertisements which influenced the formal aspect of Nakamura's art through the 1960s and 1970s. An example from the June 1957 issue of the different way Nakamura used the grid to show the fundamentals of matter/energy/space/time and illustration lies in an advertisement for the photographic film and paper research division of Du Pont. (ILL. 54) The advertisement shows two images of the same subject. On the left is a radiograph of part of an aeroplane wing. On the right is a photograph of an engineering drawing of the same wing. The draftsman's drawing on the right, with its inclusion of text, numbers and arrows, might have implied the kind of reliable clarity of visualisation for which Nakamura was striving. At the same time, the blurry radiograph on the left, though more naturalistic, would have reminded Nakamura of the unreliability of what is observed by the unassisted eye, although the purpose of radiographs was to assist the eye to see beyond the surface.

A number of Nakamura's works deal with the issue of modes of envisioning that this illustration suggests. *Spatial Concept 4*, 1970, (ILL. 55) for example, also shows two ways of representing visible reality. On the left, the center image shows the arc of the planet Earth

as seen from low orbit. The five images above it show greater and greater details of the same view, the top image being a landscape seen at ground-level. The five images below the central one show the same view from greater and greater distances from the planet, until the Earth is lost in the glow of the Milky Way Galaxy.¹³ The images at the top and bottom of the column are virtually identical. On the right side of the painting, the same evolution of perception is applied to a single diagonal line drawn in a square. The same evolution is drawn to a series of single diagonal lines placed within a sequence of squares which are arranged in a vertical format. In the center square, the diagonal line is unmodulated. In the images above and below the central square, the diagonal lines are increasingly agitated, so that at both ends of the column the straight line has evolved into a basic grid. The conjunction between the transforming diagonal lines and the adjacent macrocosmic and microcosmic images clarifies that, for Nakamura, there is a direct connection between the grid and the views of inner and outer space. As in the juxtaposition of the radiograph and the engineer's drawing in the Du Pont advertisement, Nakamura demonstrated that there are multiple ways of seeing and representing reality, but that if pushed to their extremes they coalesce, or become identical. Difference is again transcended in the grid.

Given Nakamura's proclivity for technical grid-based scientific imagery, to which he appended metaphoric meaning coupled with an engineer's drawing style, it may be useful to consider why he did not pursue a career as a technical or scientific illustrator. He would have been aware of the difference between art as science and art depicting science. Here, he would have parted company with Scientific American's view of the conjunction of art and science in that the journal tended to regard the former as at the service of the latter. For example, the Boeing Aircraft Company regularly advertised employment positions with full-colour reproductions of paintings of various outer-space phenomena by the "well-known team of scientist-artists"¹⁴ Simpson-Middleman. These images are most likely based on galactic bodies that have been photographed through a radio-telescope. The painting is produced with the stylistic crispness of Cubism as well as the prismatic distortions that occur when looking at a source of light through a distorting lens. Boeing's motivation for displaying the art of the Simpson-Middleman team as an example of a working relationship between artists and scientists would have appealed to Nakamura. However,

a close reading of the quote from the artists highlights the conflict between art as science and art about science that Nakamura was trying to resolve in his work.

Cygnus, {ILL. 56} another inspiration by Simpson-Middleman, painters of the meanings of science. "Knowledge of the Universe," say these artist-scientists, "is not a matter of man's sight, but of his imagination's vision. Our eyes show us *Cygnus*. But creations of our genius, such as the radio-telescope, reveal unexpected, unexplained sources of energy that man may someday master. They lie amidst and even beyond those mysterious, drifting clouds of cosmic matter, lit by stars they do not obscure."¹⁵

Nakamura would have reversed Simpson-Middleman's statement regarding the conflict between sight and vision as the basis for knowledge of the universe. He would have pointed out that their painting does not convey scientific data. Further, *Cygnus* is not an illustration of galactic phenomena as revealed by a radio-telescope. The painting is a product of the artists' imaginations, or personal vision, not a revelation of objective 'meanings of science'.

I believe that this painting by the Simpson/Middleman artists would not have appealed to Nakamura. It was neither fine art nor science. It did not fulfil the requirements of Nakamura's 'real abstraction'. He claimed that his art was not based on a personal or emotional interpretation of subject. Instead, his 'real abstractions' were diagrammatic representations of research-based knowledge. In this sense his work was closer to a depiction of actual knowledge of the nature of the universe than *Cygnus*.

The images accompanying articles in the June 1957 issue of Scientific American magazine were probably Nakamura's primary focus. However it is probable that the advertising copy in the magazine was also a major source of Nakamura's sense of himself as an artist-scientist. In the average issue of Scientific American, there were approximately eighty double-page and full-page advertisements. Using the June 1957 issue as a model, the largest and most sophisticated were advertisements from such companies as General Dynamic, IBM, Douglas Aircraft, Litton Industries, Dow Chemical, Rand Corporation, Hewlett Packard, Boeing Aircraft Company and Bell Laboratories. The advertisements published by these companies suggest that their products were available not just to the individual consumer, but to humankind at large. With the end of the

Korean War only four years previously and the launch of Sputnik One by the Soviet Union less than six months in the future, the advertising culture of the United States was deeply committed to the politics of the Cold War and the military industry. At the same time that most of the advertisers in Scientific American promoted their products as crucial for the defence of the United States, they also created the illusion that they are benefactors of all humankind, that they were working in the name of peace, freedom, culture and higher scientific knowledge. Both science and the United States were vaunted as good in Scientific American. In their advertisements, there were many examples of an assumed beneficial relationship among science, culture, the artist and a benevolent (read 'American') civilization. For example in an advertisement for Litton Industries, a copywriter made a direct association between the arts and the sciences. This copywriter wrote that

Mathematicians long ago divided an octave into twelve equal semitones, each a successive power of the twelfth root of 2. This "equal temperament" formula was the key to a new world of music that could be created for much simplified instruments. We like this example of one of the Arts benefiting from one of the Sciences - and of mankind benefiting from both. The example contains the mightiest of the Sciences, a new world of thought, creativeness, and refinement of design¹⁶

Unlike issues of the magazine in 2003, there were few references to consumer goods in 1950s issues of Scientific American, such as cars, household goods or personal computers (which did not exist yet). Instead, there were numerous references to American submarines, fighter jets, B-52 bombers, the Dew Line in Canada, and the necessity to protect the free world from a well-known but unnamed enemy. The intention of such advertisements was obviously not to induce the reader of the magazine to purchase an American B52 bomber. Such advertising language was employed to assure the reader that industrial and military products were manufactured for the good of a 'free' humankind. With phrases such as "Our product is not for sale,"¹⁷ and "New light on the world,"¹⁸ these companies sought to create the impression that their research and development goals were expressions of the creativity of individuals (usually men) living in an intellectually free society. It is this propaganda that I suggest Nakamura could have absorbed and reworked to

qualify himself as a artist-scientist benefiting free humankind with his own increasingly grid-based research into higher knowledge of the universe.

Scientific American also supported Nakamura's conception of a close link between art and science in the linear progression of civilisation. The synthesis of the grid of Renaissance perspective, the grid of scientific representation and the grid of modernism became the means with which Nakamura carried out his program. Using the language of progressive and enlightened science as reflected in Scientific American, Nakamura's analysis of the linear or gridded path of historical progress was the justification for his own advancing research. This is evident in his own few published essays, to which I now turn.

The longest, earliest and the most precise of Nakamura's few writings is his untitled essay for the exhibition catalogue, Kazuo Nakamura,¹⁹ published by the Robert McLaughlin Gallery in January 1974. This statement can be read as a schematic of the history of science, the history of perspective and perception, the history of art and the history of the development of Nakamura's own interest in art as science. While Nakamura's manner of writing can be cryptic and aphoristic, one can detect that each of Nakamura's sentences was rich with expressions of his philosophy and self-appointed program of research. Nakamura began this essay with this statement:

The science of art is at its most interesting stage. Through history, in man's search of knowledge, new thoughts such as Copernicus' theory of the solar system, Darwin's theory of evolution, etc., have caused controversy. Art and its theory at present is (sic) [are] a very controversial dilemma due to lack of adequate basic theory. The standard thought of visual perception based on perspective vision can also become a doubt, as it is based on the visual illusion that parallel lines meet at the horizon; in physical existence, it does (sic) [they do] not.

To analyse art is as complex as science analysing universal structures and evolution which are based on a certain logic and order.²⁰

In these paragraphs, Nakamura made the case that just as the theories of Copernicus and Darwin were controversial in their time, art and art theory were, at the time of his writing, also the

locus of controversy. According to Nakamura, this controversy arose out of the dilemma of an art practice in the twentieth century that was no longer grounded in basic scientific theory. Nakamura offered the example of visual perception to explain his claims; artists who persist in depicting the world through Renaissance perspective were making a fundamental error of visual perception, as well as a misinterpretation of the artist's role in modern society. A system of perspective that reflects the illusion that the picture plane is a window into the optically observed landscape does not reflect modern scientific perception of the world. As other scientists, from Copernicus to Einstein, had demonstrated, Nakamura claimed that the observed world is only an illusion, and therefore the traditional methods of representing it are also an illusion. He offered the example of railway tracks that apparently recede across the prairie in the seen world. As he wrote, "the tracks appear to meet at the horizon, but in the actual world this does not happen."²¹ In the next sentence - "art is not just emotional vision but more of man's concept of equation of his environment and thoughts,"²² - Nakamura indicated that, as in scientific practice, art ought to analyse the actual universe rather than the illusory one we perceive through our unaided eyes, or through our emotions.

In the next paragraph, Nakamura discussed two related issues. The first was that art and art theory require a new critical self-scrutiny, in order to develop new studio or intellectual methodologies that would bring art practice in line with scientific theories and practices. This is what Nakamura meant when he wrote that "art is not just emotional vision." Nakamura was critical of the tendency among earlier abstract artists and later Abstract Expressionists to associate art with spirituality, intuition, self-expression, and emotions over the intellect. It is probable that it was this critical position that largely accounted for his decision to abandon his own experiments with Abstract Expressionism. As well, I believe that even while he and Jock Macdonald shared an interest in science, he probably did not condone the older artist's lingering advocacy of art as a spiritual expression of "oneness" with the universe. The second issue that Nakamura addressed in this paragraph was the theory that art ought to be a logical practice paralleling the research practice of scientists. Finally, he advocated that the project of modern art ought to be a rational search toward a logical representation of scientific insights into the physical nature of the universe.

While criticising much of contemporary artistic practice, in this statement Nakamura nevertheless aligns himself with modernism. He believed art was a rational progression toward an ideal goal. He advocated a meta-narrative that parallels the notion of formal artistic self-criticism that American art critic Clement Greenberg promoted. On the other hand, Nakamura rejected the Greenbergian reductionist principle of art-about-art as the sole purpose of art. He also rejected any metaphysical or spiritual program for abstract art. Nakamura clearly equates art with an empirical rather than an emotional or spiritual search for ever higher scientific knowledge.

By declaring that art is not just emotions, personal visions and self-expression, Nakamura clearly disassociates himself from the theories of Abstract Expressionism, and in particular with their expression in Toronto, Painters Eleven.²³ Instead, Nakamura declared that art ought to focus on developing visual equations for humankind's broad scientific conceptions of the physical environment. In this statement Nakamura was declaring again that art should reflect scientific thinking, as a reflection of the search for ever more advanced scientific knowledge and that the artist's thinking and research ought to focus on measurable aspects rather than speculative ideas about the universe.

Nakamura's thoughts on the difference between emotions and thinking as the basis for his studio practice are clarified in the next paragraph of this statement. Nakamura constructed a historical rationale for his theory of the relationship among art, science and philosophy.

In the history of art, all civilisation and its developing period must be relative to the universal scientific and philosophic concept of its time (or the scientific and philosophic concept may be relative to art.)²⁴

Nakamura here declared that art, philosophy and science need to reflect the different stages of a civilisation's development equally, and that the stages of art, philosophy and science ought to reflect each other as well. As in earlier parts of Nakamura's statement, the tacit implication in this claim is that, in Western culture, art and art theory have not maintained the same pace of intellectual development as science and philosophy. This implies further that Abstract Expressionism did not provide an adequate "art theory" that corresponded with scientific development. Nakamura may have rejected it for several reasons: its anti-intellectualism and emphasis on intuition and emotion, as well as his, and Macdonald's, sense of Abstract Expressionism as chaotic.

In the next statement, Nakamura assembled a list of possible research projects to which artists might contribute. The list begins with atomic structures and ends with the universe itself. With such terms as 'phases' and 'facets', he claims that there is an historic and linear path to the growth of scientific knowledge.

Every developing phase and facet of science must produce some form of art. atomic / molecular / cellular / inorganic and organic / mental and mechanical / planetary / solar system / galaxial / the universe.²⁵

How Nakamura arrived at this map of the evolution of science is not clear. His statement that each facet of science "must produce some form of art" is also problematic. Nevertheless, his broad sweeping analysis suggests that there must always be a close relationship in the development of art and science.

Subsequently, Nakamura again stated that the development of art and science must parallel and support each other. Describing the broad spectrum of research issues that art ought to engage, he wrote

Art is relative with man's expanding and exploratory vision into inner and outer space and to its products; thus development of art and its perception must have a certain order and cycle and its vision can be based on such as the ...

- > scientific, philosophic and psychological concept of its time
- > man and nature concept
- > horizon and space concept
- > optical finite and infinite illusion
- > inner and outer topology illusion
- > expansion / compression of time / motion
- > vision point / distance / time-motion²⁶

The broad issue of inner and outer space that Nakamura referred to thus suggested a range of discipline possibilities or "products." These refer to a number of dualities; microcosmic to macrocosmic structures; Earth Space to Deep Space; what is perceived by sight versus what is

perceived though the intellect; different scales and degrees of structure, from the chaotic to the fractal.

I will discuss two of these paths of research from Nakamura's list. The dual nature of perspective referred to in the phrase "horizon and space concept" had been a central focus of many of his paintings, such as *Two Horizons*, 1958-62. (ILL. 57) Nakamura's pursuit of this line of research was intended to demonstrate the illusory nature of perspective and perception, as a criticism of Renaissance perspective in landscape painting.

A second area of scientific and artistic research listed, "optical finite and infinite illusion," was another duality within the manner of seeing the world that Nakamura often explored. Here, Nakamura reminded his audience that anything that is observed through our eyes, whether or not assisted by technology, is assumed to be finite. However, the finite is also a segment of the infinite, because perception is always limited, and therefore an illusion. Nakamura demonstrated this in *Time and Space 2*, 1973-74, (ILL. 58) wherein the shape of a square can also be one face of a cube viewed through different conventions of perspective, or extended in time, or unfolded or twisted, depending on the viewer's physical and intellectual position relative to the image.²⁷ Nakamura demonstrated this insight further in *Spatial Concept 2*, 1969-70. (ILL. 59) In this painting the single line is shown to also be a vibrating grid field, depending on how the line is observed. Extending Paul Klee's humorous statement that "a line is a dot that went for a walk," Nakamura demonstrated that an individual line is also a segment of a grid, if one looks closely enough - or from the appropriate angle - to see it vibrating. It is also possible that in this complex statement Nakamura reminded his audience that there are an infinite number of ways of depicting reality, and that since any individual view is finite, and therefore an illusion, all visual representations of reality, perhaps including his own, are illusions.

In the following statements, Nakamura developed a schematic of the evolution of his art since 1966 as a reflection of a charting of the history of the relationship between art and science in the Western world since the late Medieval period:

In recent years my work has become more analytical and since 1966 it is based on my theory of developing order in art phases:

1st tier: two dimensional perception concept - flat, latter period (to about 1400 A.D.)

2nd tier: three dimensional perception concept - perspective and isometric period (1400-1870 A.D.)

3rd tier: four dimensional perception concept - cabinet, flat, octagonal, circle, concave-convex, Möbius and wave period (1870 to present)

As all things are made of atomic structure and motion, all shapes are based on atomic (or molecular) structure and motion. Bases of shapes are geometrical form; therefore, the evolution or cycle of man's environment must be based on the cycle of geometric forms.²⁸

As suggested by this statement, in 1974 Nakamura could see the outlines of his future work as well as his past accomplishments. The statement that after 1966 his work became more analytic suggests that in 1974 he was aware that he was already somewhere in the second stage of his own artistic history. In his work from about 1966 onward, the grid is often more central to the organisation of the painting.

Nakamura's "theory of developing order in art phases" divided the history of Western art into three broad eras, each of which he briefly outlined. Though he did not directly discuss his notion that "developing order" is progressive, his commitment to an intellectual and cultural evolution toward a specific goal is evident in all his writing. He claimed that the three tiers of Western art history loosely corresponded with major developments in the science of perspective and perception, as well as those sciences exploring structure in nature. According to his structure the first period, from pre-history to about 1400 A.D., the European world was perceived as essentially flat and its representation in paintings necessitated that contour was more important than form.

Nakamura's second tier of artistic and scientific advancement coincides with the period from 1400 to 1870. The date 1400 A.D. corresponds to the approximate beginning of the development of Renaissance perspective, when the grid became a tool of perspective rather than a decoration as it was in the Mediaeval world. During this period most of the ramifications of three-dimensional perspective were worked out by artists and scientists. It was assumed that the

structure of the universe matched the way it was observed to function. From Copernicus, Galileo and Newton to the late Victorian era, the universe was seen as predictable, stable, measurable, and art was employed as a window into that world.

Nakamura's third tier more or less corresponds with the dates of the rise of modernism. This date also corresponds approximately to the beginning of the theoretical and perceptual collapse of the human-centered Newtonian universe. This historical gloss, despite its superficiality, was intended to establish the principle of corresponding developments in the arts and sciences.

The third tier might also allude to the rise of those esoteric sciences in the late nineteenth century that also contributed to the interest in popular science among many Western artists whom Linda Dalrymple Henderson discusses in The Fourth Dimension and Non-Euclidean Geometry in Modern Art.²⁹ However, I have found no evidence that Nakamura was aware of or interested in the history of the nineteenth-and early twentieth-century quasi-sciences and spiritual practices such as Theosophy that underpin the discussions of four twentieth-century Canadian artists, Lawren Harris, Bertram Brooker, Emily Carr and Jock Macdonald, in Ann Davis' book The Logic of Ecstasy: Canadian Mystical Painting, 1920-1940.³⁰ A possible connection with this history might have been Nakamura's exposure to Jock Macdonald's theories and language during his high-school training in Vancouver and his association with Painters Eleven. Other members of painters Eleven, Alexandra Luke and William Ronald in particular, gave titles to their paintings that implied a concern for mystical interests. If Nakamura was exposed to Macdonald's mysticism, it would have been countered by Nakamura's rationalism and avoidance of non-logical speculation. In spite of the similarity of titles among the works of some members of Painters Eleven in the early 1950s, Nakamura was not interested in art that was based in anything 'less' than rational and empirical science.

In the final paragraph of this statement, Nakamura summarised his theory regarding the relationships among art, science and the physical structure of nature. He wrote that since all structure and motion in nature are based in the geometric configurations of atoms or molecules, the evolution of art ought to reflect and emulate these patterns.³¹ Again, this could be read as Nakamura's argument for rational analysis rather than either an emotional or spiritual response to

the 'hidden' or esoteric structure of the universe. Nakamura was more interested in mathematically quantifiable structures and processes in nature than a mystical 'indwelling spirit'.

The next example of writing by Nakamura is part of a recorded interview that he and the art art dealer, gallery owner and curator Dorothy Cameron conducted for the exhibition "Sculpture '67".

.... My concern in sculpture, as in my structural paintings, is with the atomic particles moving perpetually in space. Where unnatural perfection is static, natural imperfection implies motion. My tower-structures are imperfect. Their surfaces of natural concrete retain the imperfections (and hence, the motion) of the medium itself, which polishing would destroy. They move in space with the rhythm of slight asymmetry, like a constant, subtle shifting of the component strips or blocks. Such simple geometric forms, bare of all "period" decoration, are always timeless in essence. Although for me these structures seem to project our time toward a future of stacked tower environments, for other people they may well evoke relics of an ancient past. In either case, I am obviously working with structural echoes of architecture.³²

While Nakamura's responses to Cameron's questions focused on his sculptural practice, which I believe was ending about 1967, his words could apply to his series of 'block structure' paintings. In this statement Nakamura brought new insight to the purpose of those paintings. He referred to the "slight asymmetry, like a constant, subtle shifting of the strips or blocks."³³ As in the 'block structure' paintings, few of the lines of perspective along the edges of the blocks converge to a common vanishing point. The result is that, as with the 'block structure' paintings, the sculptures, such as *Structure*, 1967, (ILL. 60) appear to resist placement within a three-dimensional field based in Renaissance perspective because the lines of sight do not actually converge toward common vanishing points. The structures appear unstable in their three-dimensional environment. This is the sculptural equivalent of the instability of the 'towers' of the 'block structure' paintings, such as the painting, *Structure*, 1962. (ILL. 61) In these paintings, the perceived instability is the result of their constant shift between painting of flat shapes and a painting as a window, all the result of the "slight asymmetry" of the lines of perspective.

The next sentence states that

.... Since 1958, I have alternated angular open-cage forms with blocky constructions: even in painting I use a block stroke. And though I work "small", I try to achieve, through correct proportion, an architectural command of space.³⁴

With this analysis of his other sculpture project, his 'open-cage forms', Nakamura could also be referring to his early to mid 1950s 'inner view' series of paintings. If one looks closely at virtually any of these paintings it is obvious that they are produced with Nakamura's "block stroke." Whether the lines of these paintings are constructed with a razor blade dipped in thick oil paint, or applied with a loaded or semi-dry chisel brush, the result is a "block stroke" of colour suspended in an ambiguous space. Nakamura's reference to his small sculptures made with fine welded metal rods as "open-cage" is an interesting reference to the ambiguous and even claustrophobic and chaotic gridded space he achieved, perhaps more precisely, in his "inner view" paintings. His concept of an open cage can easily be associated with his teenage experience of living in an internment camp. Further, the contradiction between the concept of openness and the cage can also be associated with his loosely gridded forest paintings of the early 1950s, such as *Blue and Green*.

There was a high degree of consistency among all the diverse projects that Nakamura pursued over the years in that they all required some use of the grid. As well, they were informed by the same unconscious response to the trauma of his experience of exile, and his 'desire' to again belong, albeit now to an international group. At the same time, they contributed to a clarification of one aspect of Nakamura's long-term subject, the evolution toward greater scientific understanding of the nature of physical reality.

This is the essence of how I interpret much of the next paragraph of Nakamura's statement.

The contribution of the artist is to extend visual knowledge as a way of understanding our universe. I, as an artist, am never wholly isolated from anyone else, from the labourer or the scientist. We are all, each in his own way, making a new society, or a part of that

society. On the other hand, since some perception and foresight beyond the norm is a necessary attribute of the functioning artist, I must admit to a certain sense of unavoidable "apartness".³⁵

Nakamura envisages himself as an artist/scientist/worker, claiming no special status for himself on the basis of talent, creativity, vocation, social, or professional status. On the other hand, these words could be interpreted as a quasi-political or revolutionary manifesto. As such, his self-image is comparable to Vincent van Gogh's view of himself as artist-labourer, or Paul Klee's view of himself as an artist/scientist, and like these artists, he saw his research as benefiting society. However, at the same time, Nakamura acknowledged that, as a member of an elite, or avant-garde sector of society, one that he claims is more perceptive and forward-thinking than the normal citizen, he admits "to a certain sense of unavoidable 'apartness'." In the 1960s, Marshal McLuhan commented that avant-garde artists are the "Dew-Line of society,"³⁶ in this way clearly associating culture with advanced North American military technology. It is possible that with this statement, Nakamura was rationalising the impact of the trauma of his loss of community and exile, one that had forced a racist "apartness," or apartheid onto him. In the last paragraph of this interview with Dorothy Cameron, he further qualified his 'apartness' in terms of the evolution of ideas. He placed himself at the "outer fringes"³⁷ of true inventiveness, where "every artist yearns to be."³⁸ In this way, Nakamura further naturalised his own experience of internment and exile, equating his personal experience with the conditions of the avant-garde artist, yet at the same time including himself within a universal community of artist/scientists that transcended national or ethnic difference. The world in which he was declared and treated as an alien became the equally alien site of investigation. As Nakamura wrote

In any period of art there is always an accepted mainstream and an outer fringe, not yet accepted, that tries new ideas. And then, in time, that outer fringe becomes the influence of another mainstream. Although I am as much concerned with the future, with what is going to happen, as with the present, when I am actually painting or making a sculpture I just try to work out my own ideas, with no conscious thought of a breakthrough. If I am truly inventive, I will

inevitably work on that outer fringe, where every real artist yearns to be ... although most of us today are not quite sure just how we should place ourselves.³⁹

At the same time, Nakamura recognises the inevitable insecurity of ideas during any period of rapid change in culture and politics, as in the late 1960s. At this time Nakamura was 41 years old, perhaps unable or unwilling to participate directly in the various artistic or political movements that were beginning to undermine the Cold War homogeneity of the 1950s. With the statement, "... although most of us today are not quite sure how we should place ourselves,"⁴⁰ he admitted to not being sure how to relate to the social upheavals of the 1960s.

In his next statement, published in the group-exhibition catalogue, Shikata Ga Nai, published by Hamilton Artists' Inc. Gallery in 1987, Nakamura looked back to the period of rapid social and artistic change that the 1960s represented. In this statement, Nakamura wrote that

During the Sixties, the development of one aspect of abstract art was based on the perception and exploration of polygonal, polyhedral and basic geometrical forms. I believe that to explore beyond that concept requires the perception of the linkage of form to number structure. This structure formation through number sequences, series and tables gives universal key and order to form and design.

For Canadian painters, the main building block is based on the impact and awareness of western cultural flow - its diversified abstract perception and concept of development in art, philosophy and science through the ages.

For Canadian painters of Japanese parentage, it means some awareness of eastern flow, in particular the development of nature concept and sophistication of natural design. These may have some impact on our thinking.

But today the dominant flow in art and science is universal. So it definitely will be hard to differentiate the influence of background in our international art development.⁴¹

Once again, in this statement Nakamura traced the path of his own research. He acknowledged the experiments of many artists during the 1960s, particularly those artists whose work analysed fundamental geometric shapes and forms. He reminded us that his own research into the phenomena of nature pushed his art during the 1960s into the realm of higher mathematics.

Mathematics is the scientific key to order, form and design. For Nakamura, all structure and its formation can be described mathematically through such terms as 'number sequences', 'series' and 'tables', each of which requires some kind of grid in order to be represented and decipherable. Through mathematics the threatening confining grid of his youth became a fundamental and universal organising tool with which to study the structure of the universe in order to escape its apparent tendency to confine him.

Nakamura then related his theory to the two complementary but distinct streams of Western and Eastern art research in Canada. European-Canadian traditions are expected to reflect the history of the relationship among art, philosophy and empirical science. This statement is similar to the one published by the Robert McLaughlin Gallery in 1974.

However, possibly for the first time, in Shikata Ga Nai Nakamura related his theory of art as research into the structure of the universe to Asian traditions and sensibility. In the words, "nature concept and sophistication of natural design,"⁴² Nakamura acknowledged the possibility of a specifically Asian aesthetic and style behind his work. However he avoided qualifying his own work as being directly influenced by Asian aesthetics or philosophy. Instead, he appeared to acknowledge the possibility that ethnicity might have an indirect influence on the kind of art that Japanese-Canadian artists younger than he might make.

In keeping with his positioning himself within the avant-garde, Nakamura appeared to step back from his previous declaration in the final sentences of this statement. He reasserted the universal meta-narrative of his modernist training and vision. He suggested that in his practice of art as research into the structure of the universe, coupled with the modernist notion of a world-art, there is little possibility of ethnicity having an influence. Nakamura's image of himself as an international, rather than Japanese-Canadian scientist-artist, reflected a naturalisation of his exile from the Pacific coast of British Columbia as well as his metaphoric exile from Canada. Nakamura's association between science and a universal art allowed him to escape the impact of the racist image of his ethnicity that had destroyed his sense of place in Canada. In this respect, the grid of his exile from the world of his youth becomes the grid of a universal science against which he measured his growing knowledge of a private but universal world, one that he believed the rest of a non-ethnic humanity would someday be capable of contemplating and experiencing.

CHAPTER THREE

Nakamura's Grids-as-Windows

The stars shone so golden
I stood at the window alone
And heard from a distance
A post-horn in the quiet night.
My heart ached within me
And I thought to myself:
Oh, if only I could travel along
into the marvellous summer night.

J. F. Eichendorff¹

Perspective is a way of thinking about observation, a method that harnesses and organizes space. It is a fundamentally practical technique: given two dimensions, it computes the third and, conversely, it permits three dimensions to be projected into two....

Making use of perspective opens doors in several directions: it enables the observer to see not only what is, but also what was and what might be and what might have been - and what could be. Perspective states the facts, but it also stimulates the imagination; it shows the past and the future as well as the present

Pierre Descargues²

It is necessary, but insufficient, to place Kazuo Nakamura within the Canadian and North American context, as has been done thus far. But it must also be kept in mind that broader issues were at work here. Chapter Three will show that Nakamura was heir to several nineteenth-century Northern European traditions which continued into the twentieth century. These gave his work a more complex, but still coherent significance. The first, which we have already demonstrated, although not identified as such, carried with it the idea of the artist as genius and avant-garde outsider. It proposed that the artist was in touch with a special knowledge, and hence was an enlightened pedagogue. This tradition began with the rise of German Romanticism, and continued through the philosophy and teaching methodology of the Bauhaus, especially in the painting department. It was eventually passed on, indirectly, through Josef Albers, to the art program at CTS.³

Nakamura, however, adapted this tradition to his own ends. It has been shown that Nakamura's artistic identity included the image of himself as an outsider and an exile, stemming from his exclusion at Tashme, yet, at the same time, he cast himself as a teacher and scientist, endowed with an awareness that set him apart from the ordinary. For him, the avant-gardist may have been an outsider, but he was, paradoxically, also devoted to the production of didactic works that were part of an inclusive, all-encompassing world culture. His self-image and his research projects were imbued with the sense that art was a privileged activity, one that gave the artist a unique and important role in society, both integral and yet set apart. He also believed that through art-as-science, rather than spirituality, his audience would gain a more accurate and objective knowledge of themselves and their rightful place within the universe.

It should not be surprising then, that unlike his colleagues in Painters Eleven, Nakamura did not pursue the path of either Canadian or American Abstract Expressionism. This movement was devoted to the metaphoric placing of the subjective self on large canvases through either the gestural brush stroke or simplified coloured forms. His enterprise, which was more concerned with the conjunction of perception and conception as well as cultural integration, lay outside this rarefied subjectivity and amplified individualism.

But the influence of this tradition went beyond the construction of his identity as an artist/scientist. I would also like to propose that Nakamura was heir to a more specific aspect of Romanticism, that is, the meaning of the motif of the 'view from the window'. This convention, which seems to have begun with Caspar David Friedrich in the early 1800s, persisted throughout the nineteenth and into the twentieth century. It continued within the works of such diverse artists as the Symbolist Odilon Redon and the Orphic Cubist Robert Delaunay. It also turned up at the Bauhaus with artists such as Johannes Itten, Josef Albers and Paul Klee. More to the point, however, it found expression in Canadian painting, specifically in that of Frederick Horseman Varley in Vancouver in the 1930s, precisely at the moment when Nakamura was beginning his artistic practice. In briefly examining this history, I will propose that this motif became one of the foundations for Nakamura's grids and their multiple meanings.

We have seen that in 1978 Rosalind Krauss already directly linked the use of the grid in modernism to the Romantic tradition, citing Lorenz Eitner's classic article on the subject. Although Eitner's exposition was 23 years old at the time of Krauss' writing, she still found validity in it.

For this reason alone, it is worth re-examining. Eitner situated the origins of the 'view from the window' in the international revival of genre painting which began about 1810 in France, Germany, the Scandinavian countries, the Lowlands and Russia.⁴ Painters known collectively as "little masters"⁵ began producing "intimate scenes of domestic life,"⁶ re-working Dutch traditions from the seventeenth century. Martin Drölling's *Kitchen Interior*, 1815, (ILL. 62) represents this new type of painting. "The typical picture of this kind shows an interior of a fairly ordinary character, with a figure quietly at work or absorbed in meditation near a window."⁷ At this early stage in the development of the image, these windows did not yet have special meaning; their presence suggested only the artists' interest in the effects of light.⁸ This would soon change.

The motif assumed its full potential as an icon of Romantic yearning in the works of Friedrich. To emphasise the window's importance, Friedrich radicalised its position within the painting. Dutch genre paintings, such as *Gentleman Writing a Letter*, 1662-1665, (ILL. 63) by Gabriël Metsu (1629-1669) tended to depict the window obliquely, foreshortened, and as a source of light rather than a view into space.⁹ Friedrich picked up this tradition in a pair of transitional works. The window in *View from the Artist's Studio*, (left-hand window), 1805-06 (ILL. 64) is virtually identical to that represented in *View from the Artist's Studio*, (right-hand window), 1805-06. (ILL. 65) The titles infer that it is perhaps the windows themselves that are the subject of the works. With the drawing of the left-hand view, in which the window is set obliquely to the picture plane, he referred to the Dutch origins of the motif as merely a source of light. In the right, he gives the window its own autonomous significance.¹⁰ This window's frontal centrality and scale relative to the drawing dimensions make the rendering of the latter a paradigm of its kind. In fact, even in the left-hand window the focus is on it rather than the light flowing into the room.

The result became a Romantic innovation - "neither landscape, nor interior, but a curious combination of both." Eitner claims that:

It brings the confinement of an interior into the most immediate contrast with an immensity of space outside, outdoors, a space which is not a landscape, but can be a view of houses or the empty sky. It often places the beholder so close to the window that little more than an enclosing frame of darkness remains of the interior, but this is sufficient to maintain the suggestion of a separation between him and the world outside. He is actually put in the

position of the “figure in the window.” The situation closely resembles a favourite theme in romantic literature: the poet at the window surveys a distant landscape and is troubled by a desire to escape from his narrow existence.¹¹

Koerner adds to Eitner’s analysis. In *View from the Artist’s Studio* (right-hand window) Friedrich “encodes the relationship between interior and exterior as a play between self and world, consciousness and nature as a double self-portrait.”¹² A partial image of the artist, focused on his eyes, is reflected in a looking-glass to the left of the window. Through this reflection, the artist displays himself contemplating an imaginary landscape. Friedrich imagines himself at his easel, facing the window, with his back toward us. He shares this position with the viewer. His contemplative gaze invites us to participate in a similar reverie. The eyes in the mirror could be our own as much as they are the artist’s.

Friedrich developed the theme more fully in *Woman at a Window*, 1818. (ILL. 66) Here, the window itself has become the subject, more important than the figure of the the artist’s wife gazing through it.¹³ The atmosphere of this painting “is reminiscent of Dutch intimists, like Vermeer.” However, according to William Vaughan, the figures in these paintings “are always turned away from the spectator, always gazing outside, scrutinising the horizon for some ‘distant place.’”¹⁴

Friedrich’s new interpretation of the theme rested on the idea that the window provided a view through and beyond, out into an undefined space. Further, according to Weiland Schmied, the painting embodies the desire to escape into the less-confining, larger world. As Schmied writes

She feasts her eyes on the river, the waves, the sailboats, the opposite shoreline, the trees, the distance beyond. The interior urges us to follow her example [and this is] the picture’s sole meaning. Erik Forssmann stated this problem more clearly and directly in his 1966 essay “Window Paintings from the Romantic to the Modern.” “In Romanticism, he wrote, “the figure seen from the back is meant to express the soul’s yearning for the infinity of nature, freedom from its earthly bonds, or unsatisfied yearning in general.”¹⁵

It is important to note that these attributes belong to the painter, not the figure per se. Schmied's narrative interpretation makes this clear. "She has come into [Friedrich's] studio and opened the window that the artist closed so as not to be distracted in his work. She has opened the window for him; through her and with her - virtually with her eyes - he looks out into the world."¹⁶ She is not the motivator of Friedrich's vision as much as the symbol of it.

Schmied also emphasises the grid-like characteristics of the image.

The composition is based on the interplay of verticals and horizontals, the mullions at the top, the rectangles of the window opening and the niche. The rhomboids of the floor planking and the subtle triangle described by the taut ropes of the rigging only accentuate the prevalence of right angles. The horizontal moulding below the window, the two bottles on the windowsill - the only objects in the bare room - even the row of poplars on the opposite bank obey the orthogonal system.¹⁷

The composition reflects Philipp Otto Runge's declaration that "strict regularity" is "most essential especially in works of art that rise straight out of the imagination and the mysticism of our soul."¹⁸ "It would be difficult to imagine a stricter architecture than that of this symmetrical picture of a sterile interior, a bare cell."¹⁹ This simplicity has, however, a purpose. Everything in the painting, from the pose of Friedrich's wife, to the perspective lines of the shutters and floorboard, leads our gaze past the window. "We cannot help but follow."²⁰

The theme of the figure at the window subsequently became a prominent motif of the romantic imagination in painting and literature. The image was popular among artists from 1810 to 1830, and can be traced forward to later paintings such as Moritz (Ludwig) von Schwind's *Morning*, c. 1860. (ILL. 67) There are many variations. Painters often depicted themselves, or their fellow artists beside or in front of windows, "as if [the window] had a special meaning for them."²¹ Georg Friedrich Kersting's *Friedrich's Studio*, 1811, (ILL. 68) is a good example. Eitner proposed that these paintings have an autobiographical content that suggests a "more personal statement pertaining to the artist himself, to his outlook and his craft."²² According to Schmied:

Kersting's picture shows us ... Friedrich as he was and as he wished to be seen. The artist who created landscapes like abstracts does not look outside. His windows are closed. The only light in the room comes from the sky. The painter looks within; it is there that he sees his picture. Everything that might distract him has been removed. Only what he most requires for his work is permitted. The emptiness is suggestive of asceticism, meditation, vision.²³

The conjunction of these formal and iconographic attributes is further suggested by the crucifix-like mullions of the window above Friedrich's head. These symbolised his desire to express his faith through landscapes, and landscapes gazed at through windows.

In paintings of views from windows, the window is, then, both a threshold and a barrier. The world beckons and offers escape through the window, but the artist remains imprisoned. Eitner claims that the artist was captured by "domestic snugness."²⁴ But this domesticity is limiting and confining. For the romantic imagination, Friedrich's window paintings illustrate the theme of "frustrated longing, of lust for travel or escape."²⁵ The juxtaposition of the very close and the very far adds a "peculiar tension to the sense of distance, more poignant than could be achieved in pure landscape."²⁶ Eitner continues:

The emotional stress on the view of space from an enclosing shelter, on the tension between the human and the natural setting, between the "inside" and the "outside," are such striking features of these ... that the expression "view from the window" has been used ... to characterise a romantic attitude toward nature.²⁷

According to Eitner, the image of the window became a symbol of a romantic attitude toward nature.²⁸ He continues:

But the contrast between the interior space and the space outside need not be literally represented to achieve this effect. Some ... paintings merely hint at it. In Carl Gustav Carus' *Studio Window in the Moonlight* [c. 1826] [ILL. 69] the moonlight in the curtain describes the night beyond the window; and in Menzel's painting *Balcony Room*, [1845] [ILL. 70] the sunlight and the air from the world outside enter a quiet room, quite tangibly, in the luminous folds of a curtain.²⁹

The view of confinement and release continued as the window theme was taken up later by artists associated with other movements. Indeed, as Eitner suggested and Krauss confirms, it maintained its currency throughout the course of modernism. Without attempting an exhaustive survey, I would like to trace out some of these occurrences. For example, it reappeared in a transformed state in Symbolism. Douglas W. Druick discussed several of Redon's numerous drawings and paintings in which the window, sometimes gridded with iron-like bars directly suggestive of a prison cell, carried important private meanings for the artist. The charcoal drawing titled *Behind the Grating*, also known as *The Secret*, 1880, (ILL.71) depicts a square window with a grid of bars occupying most of the picture plane. Behind this hovers a haloed, circular head with the fingers of one hand touching the chin. Like all Symbolist works, the meaning of the image is ambiguous and multivalent. The face "appears serene, its closed eyes suggesting the ability to spiritually transcend its prison of the flesh by turning inward."³⁰ The drawing might also refer to "the spatial ambiguities," implied by incarceration. On the other hand, "the drawing implies that the host - the Church - is hostage, imprisoned and anguished, like [a] convict."³¹ Furthermore, the drawing also may refer to the world of the viewer, who "inhabits the dark prison of matter, who [is] cut off from a source of light and spirituality that [he] can see but cannot reach."³² In short, the window image still implies confinement and release.³³

By the end of the nineteenth century, the validity of Symbolism was being questioned by artists, writers and critics.³⁴ According to Paul Desjardins "symbolism was doomed by the very fact that it neglected the source of all artistic inspiration, nature 'Where can the painter start if not from the visible world.'"³⁵ After the turn of the century, nature seen as external reality, again returned as subject matter, albeit in an abstract form.

For example, the Orphic Cubist paintings of Robert Delaunay, done primarily in the second decade of the twentieth century, are firmly based in empirical reality. His use of windows and grid patterning in his paintings displays a program of research similar to Nakamura's, that is, a coming to grips with radical changes in perception of the material world brought on through innovations in science and technology. Taking up these themes, Delaunay explored grid patterning in a series of works, entitled collectively *The City* and produced between 1909 and 1912, as in the painting *The Window on the City No. 3*, 1911-1912. (ILL. 72) He followed this theme with

another series called *Windows*. These views of Paris, which he worked on until 1914, “focused the viewer’s interest, metaphorically, on the concept of looking.”³⁶

Delaunay’s correlation of the window and the picture plane was astute. In the nineteenth century, the window was frequently used as a “frame through which one saw the world.”³⁷ By coordinating the scale of the window and the canvas, Delaunay reconsidered the fundamental issue of the view through the window “from the Renaissance on: a view through a window into another space.”³⁸ As Buckerrough writes

As the Renaissance had transcended the flat picture plane by the rational creation of an illusion of depth, Cubism removed the rational boundaries of that depth and, as if by magic, reinstated the reality of the two-dimensional canvas. The canvas became totally spatial and totally flat.³⁹

Like Nakamura forty years later, though with a different personal goal and program, Delaunay sought to develop formal content that was both on the surface and in an implied three-dimensional space in the painting. Within this process, “light both constructs [Delaunay’s] synthetic forms and connects his metaphoric means. Light itself became analogous, in Delaunay’s thinking, to the motion of the universe.”⁴⁰ Within the *Window Series*, the grid was primarily a formal tool. However, in conjunction with representations of the Eiffel Tower, the window paintings took on other meanings. Delaunay himself recognised the complexity of the subject.

I wanted to find points of view on different sides and juxtapose them, but although I hoped to find the complete form. I could not do so because at the same time I was caught between traditional painting and the new reality.⁴¹

In the *Eiffel Tower* series, “all the energies of nature were synthesised into the nonphysical form of light rays.... Thus the tight integration of city and tower was precipitated by the synthetic quality of diagonal shafts of light,”⁴² through windows and across forms, represented by a mosaic-like grid scattered across the picture plane as light across a window pane. Light was the controlling

formal element on which the multi-dimensional manipulations of The Eiffel Tower were based. "Light itself became analogous to ... the motion of the universe."⁴³ Eventually the personal perception of visual sensations evolved into a focus on "universal dynamics ... and the merging of "object and space," as Delaunay sought to free himself from the "constraints of descriptive painting." The clues to this goal, and its final breakthrough, were in the window series, as in the painting *Window on the City*, 1914. (ILL. 73)⁴⁴

It must be noted that although there are parallels between Delaunay and Nakamura, especially in their respective approaches to science, technology, perception, and the picture plane, no actual connections should be inferred. This is not to say, however, that the tradition of the window/grid did not reach him. Two avenues seem particularly relevant: Paul Klee and the Bauhaus, and the continuation of the Northern Romantic tradition in landscape painting in Canada.

In 1991, Rainer Crone and Joseph Leo Koerner investigated Klee's works from his Bauhaus period in light of their perpetuating the 'view from the window' theme.⁴⁵ In *Composition with Windows*, (*Composition with a B'*), 1919, (ILL. 74) Klee reverses the tradition of the Romantic 'view from the window', with its suggestion of a longing for both nature and the infinite.⁴⁶ Koerner writes:

we do not see through *Composition with Windows* as through a window, but rather we see flat, transparent signs of windows which let light in exactly where they should frame the hallowed illusionistic "space" of the painted image. Illusionism, the painting-as-window, appears here as a mere convention and in the place of the naturalistic panorama, arbitrary signs have taken root as the solid inhabitants of the visible world. The window, that mediator between nature and culture, between the closed dwelling place of man and the endless prospect of the universe, has thus revealed quite a different prospect. The mimetic depiction of nature in the form of landscape or view, becomes a cultural construction, a conventional sign....⁴⁷

The relationship of Nakamura's grids-as-windows with Friedrich's 'view from the window' could, then, be described as paralleling the "ghosts of the romantic tradition"⁴⁸ found in Klee's use of the grid, particularly in relationship to windows.

The history of the use of the view through the window as part of the Northern Romantic tradition from Friedrich to artists such as Van Gogh has been traced by Robert Rosenblum in Modern Painting and the Northern Romantic Tradition: Friedrich to Rothko.⁴⁹ Although he followed the tradition forward to Klee, he did not demonstrate the continuity of this specific motif into Canada. However, the window, as a precursor of the formal modernist grid in the sense that Friedrich 'invented', came to Canada as a lingering icon of German Romanticism. In the 1930s, Frederick Horseman Varley produced several important canvases that correlate the window with the desire for escape or the desire for a transcendental experience. As Roald Nasgaard wrote, *The Open Window*, 1931-1932, (ILL. 75) "borrowed an iconographic theme that dates back to Friedrich, juxtaposes the near and the far, the private and the universal, and metaphorically swings open the window of the soul onto the infinity of nature focused in the long white snow-covered mountain ridge."⁵⁰ Produced at a time when Varley's marriage was in conflict with his "natural desire to be independent,"⁵¹ *The Open Window* embodies Varley's yearning for an escape from domesticity and his search for personal peace. The painting was produced in his Point Gray home overlooking Jericho Beach and English Bay, with the snow-capped mountains of North Vancouver shimmering in the bright morning light in the distance. The oblique angle of the window frame conflicts with the edges of the painting. This might, according to Christopher Varley, "act as a metaphor of the artist's own vision newly awakened on the West Coast."⁵² Another interpretation could equate the jarring relationship between the window frame and canvas edges with Varley's frustration with domesticity, which, it seems, stood in the way of his self-fulfilment. However, as Christopher Varley writes, "whatever the case, the theme of *The Open Window* became an obsession,"⁵³ for he painted several versions before leaving B.C. at the end of the 1930s. Varley exhibited the painting at the Vancouver Art Gallery in December 1932 under the title *Morning*.

After Varley separated from his family and moved to North Vancouver, he produced *Mirror of Thought*, 1937, which can be more directly associated with Romanticism, the iconography of the grid, and oppression and transcendence. *Mirror of Thought* (ILL. 76) is divided into four uneven quadrants by the mullions of a window set parallel to the picture plane. The window overlooks Lynn Valley above Vancouver. In the lower-right quadrant, a man and woman stand close together and face each other at the right side and the near end of a bridge over a gorge. The

road that crosses the bridge travels onward toward the mountains in the upper-right quadrant, and a small section of brightly lit sky near the top edge of the painting. A circular mirror hangs against the inner side of the intersection of the mullions. The mirror reflects Varley's head, and particularly his eyes, as he gazes down toward the couple on the bridge. Behind, and to Varley's left, the same intersection of crucifix-like window mullions are visible in the mirror.

An iconographic reading of this painting clearly associates it with Romanticism. Indeed, the painting's symbolic content is similar in some respects to the lithograph by Redon discussed earlier. Varley conceives of himself as a Christ-like figure. Yet, as suggested by the closed window in front of him and the window behind him, he is still trapped in spite of being free of family and living in the near-wilderness north of Vancouver. At the same time, he, as Christ, is standing at the intersection of the worldly and the transcendent. Although he seems to gaze wistfully at the couple on the bridge, he appears ready to follow the path to transcendence suggested by the road travelling toward the distant sky.⁵⁴ Obviously, the Northern Romantic tradition and the theme of the open window were still alive and well in western Canada in the late 1930s, at the moment when Nakamura was beginning his formation as an artist.

Having considered the 'view through the window' of the Romantic movement as one of the origins of the modern grid, it is now possible to offer a more nuanced and complex iconographic interpretation of several examples of Nakamura's works. It must be kept in mind here that Nakamura's grids have multiple but conjoined significances. They relate to the grid-as-window in their Romantic appearance as images of confinement and escape, and of the material and the transcendent. Although they originated in the early nineteenth century, these motifs were still 'in the air' in Vancouver during the 1930s. Furthermore, the grid must be seen as an integral part of Nakamura's experience of displacement, alienation and incarceration at Tashme. Here, his geometric layout of the camp, in opposition to the chaos of the surrounding forest, produced additional readings. The gridded environment could represent the regimentation of camp-life, or the camp itself as an urban structure. It could represent the camp's architecture, particularly the regularity of the windows of the 'houses' which he spent so much time drawing in accurate perspective. The grid could represent the fence around the camp. As Nakamura struggled to resolve the ambiguities and contradictions vis-à-vis his position within the larger cultural context after Tashme, the grid must also be related to his investigation of science and his privileging of it

over religion as the means for comprehending and representing the fundamental structures of the material universe and his place and role within it. And finally, as Krauss points out, the grid must also be seen as an integral part of the modernist project, which involved abstraction and the flattening of space. But here, Nakamura was more interested in the relationship between the second and third dimensions rather than pure flatness. Of most importance here is the fact that these complex and interrelated concerns allow for a metaphoric and iconographic, rather than a strictly formal, reading of the work. I would then like to offer a sequence of reinterpretations of key pieces from throughout Nakamura's oeuvre.

March 18/44 gains significance from the contrast between the warm light that glows from the windows of the living quarters of the camp and the cold moonlight that bathes the peaks of the distant mountains with a still ethereal atmosphere. Unlike most of Nakamura's other perspectival views of the camp, this is a ground-level depiction of one long passage between two lines of barrack-like structures in strict one-point perspective. The warm light streaming from the windows is actually inviting, countering the rigid order imposed by the racist state agency that controlled the residents' lives. The vanishing point at the end of the converging row of buildings gives the mountains in the background an impossible distance and scale. The imaginary vanishing-point beyond both nature and culture represents the sublime hopelessness of Nakamura's situation, the impossibility of escape. The vanishing point that appears to reside within the camp suggests the camp itself is infinite, and dominant, in time and space. The surrounding mountains form a dark, chaotic alien world. The painting, as a whole, is a reminder of his oppression. It might have been made at a time that officials of the federal government informed the internees that they would never be allowed to return to the Pacific side of the Rocky Mountains. The painting could easily be a manifestation of Nakamura's sense that his exclusion from his first home would continue forever.

However, in an odd reversal of the meaning of the 'view from the window', Nakamura's depictions of the camp suggest that he preferred the view from the forest to the camp, rather than the other way around. For both Friedrich and Varley, the view from the window represented a yearning to escape domesticity, security, material life and community. Friedrich longed to escape through his art, and in Varley's case, through his behaviour as well as his art. Nakamura's views of the camp, particularly those drawn in the evening, suggest his yearning for those very conditions that the others rejected. Nakamura did not paint the camp bathed in moonlight. Instead,

he painted the welcoming rays of bright warm domestic light from the windows of the camp, the light seemingly, and ironically, brightening the path home. The moon, for all its representation of escape, lights only the peaks of the distant snow peaks. Nakamura clearly prefers the more intimate, domestic and confining artificial light.

Nevertheless, countering the restraint of this subject, the moon, for all its coldness, *does* symbolise escape. Without a sense of renewal that a painting of the B.C. interior in mid to late March could suggest, the moon, and its light, was the only natural element that moved above, through and away from the camp. For all its alien and cold presence, the moon, as a sign of infinite distance, was, still, a Romantic symbol of escape through inner contemplation for the young artist. At the same time, being the only element in the painting that consistently moved in time and space, it would have nightly articulated the grid lines of both Nakamura's internment and yearning.

July 1944, produced three months before the internment camp was closed by the federal government, has a more optimistic iconography, in spite of its identical subject. Here, the camp is depicted from the side of a hill. Though little of the sky is depicted, continuing the implication of the oppressive rugged landscape as a barrier between him and the rest of the world, Nakamura had obviously climbed 'half-way' to the moon, as if he anticipated escape.

This possibility is further suggested by the presence of two grids in the drawing; the one-point perspective of the camp itself, plus the vertical proto-modern grid across the picture plane. Since the whole camp is visible from the side of the hill, its finite dimensions are more apparent than in *March 18/44*. Further, the light touch of the pale watercolour, as opposed to the opaque gouache of the previous painting, has a new hint of lightheartedness. This may be only an extrapolation from the natural characteristics of the different media. However, the vertical and horizontal gridding of the picture plane clearly implies that Nakamura was more objectively studying his subject rather than continuing to be oppressed by it. Unlike those depictions of Vancouver that he produced at Tashme, the modern gridding suggests that Nakamura knew he would soon be leaving. The gridding is a memory-tool, like a camera, suggesting Nakamura's anticipation of future work. It also suggests his commitment to working from and therefore reworking memory itself. As well, the grid was a graphic tool to allow him to transfer the subject to a new surface, for a new painting. However, its most important attribute must surely be that

Nakamura anticipated escaping from his environment of incarceration by setting up a process/matrix by which he could study the superficial appearance of his oppression. As evidence of his first step away from the limiting nature of one-point perspective, *July 1944* anticipates the research that would engage the rest of Nakamura's life.

The vertical grid in *July 1944* implies that Nakamura had already learned to employ the grid as a transfer tool, something he may have learned at VTS. It also suggests that Nakamura was learning to control the composition of his subject with the grid, something he might have gained from Cézanne. However, in this drawing the vertical grid has another significance, one that associates it with the 'view from the window'. In this work, Nakamura may have begun the process of separating himself from the trauma of internment. The grid represents a window into unknown future possibilities for the young artist, as well as a mechanism by which the traumatic present is being fixed as memory, and relegated to the past.

Within a few weeks at the most, Nakamura employed *July 1944* as a model for another painting. *Tashme at Dusk* is essentially the same painting. Oddly, the camp now resembles a small city, suggesting a certain amount of invention by Nakamura, as if he was beginning to anticipate a new urban and cultured life. The one-point perspective in this painting is less accurate, perhaps because the work was produced from memory, or, more interestingly, because the camp had lost its power of oppression over him. His sense of impending release from internment was releasing new horizons of creativity in his art.

In late 1944, while living in Hamilton, Nakamura produced a drawing that formally connects his interest in windows and grids with the ongoing tradition outlined by Eitner, Crone and Koerner. *Hamilton, December 1944* ⁵⁵ confirms that Nakamura's art partook of the historic formal relationship between the grid and the window, as well as the relationship between Romanticism and Modernism, from Friedrich to the Bauhaus. The window depicted in *Hamilton* is in an upper storey of a house. The room depicted could have been the young artist's bedroom. The view through the window overlooks fenced-in backyards in a working-class or lower-middle-class neighbourhood. The window, which is viewed straight on, is divided into four panes separated by a grid comprised of a single horizontal and vertical mullion. This configuration suggests that, as in Friedrich's drawing of his right-hand studio window, the window itself was as much the subject of the rendering as was the interior or exterior spaces. Only part of the room is

visible. The centrality of the gridded window counters the view of the world beyond the glass. There is little evidence of linear perspective in the drawing, either within the interior or in the view of the backyard beyond. This flatness, coupled with the central position of the window, suggests that Nakamura had already, at this early stage in his career, taken a major, if tentative, step from Renaissance perspective to the modernist grid, with the window itself as the transitional formal and symbolic cue to the meaning of the drawing as a view from an interior to an exterior space, with all the relevant iconographic cues in place. It must be admitted that this is possibly the only explicit image of an isolated window in Nakamura's art. Nonetheless the characteristics associated with the open-window theme can be traced throughout his work.

Hillside, 1954 (ILL. 77) is clearly a landscape painting, a view of a hillside loosely covered with evergreen trees. The predominant colour is green in shades of blue-greens toward the top of the canvas, and brown- or yellow-greens toward the base. Sometimes the colour resembles foliage supported by branches, and elsewhere it resembles ground cover. Toward the top of the canvas, the colour appears to refer to sky as often as it evokes the land. These colours are applied thinly and sketchily over a faint graphite or light charcoal matrix of randomly placed vertical, diagonal and horizontal lines that resemble evergreen trees reduced to a geometric motif. Once the application of colour was complete, Nakamura returned to the linear component of the painting. Employing the sharp edge of cardboard, a knife or a razor blade, he applied thick black paint in fine broken lines, in effect redrawing the original chaotic matrix of the trees across the hill. The paint stands out in relief against the coloured ground. Here and there across the canvas there is evidence that Nakamura applied colour again within the rectangular and triangular shapes defined by the fine black lines, and occasionally, new black lines are applied on top. The end results are loose and spontaneous, with lots of white ground showing through around the colour. As a result, the careful organisation of the patterns of colour and line seems to exist on the edge of dissolving into either light, or the white of the canvas behind the image. In some areas, as in the lower right of the canvas, the colour and black lines of the trees become dense and impenetrable, much as an actual heavily forested hillside. In other areas, the lines of the trees thin out, possibly to suggest the slash that remains embedded in the bright new growth of berry bushes that covers the ground following clear-cutting or a forest fire. In effect, while, on the one hand, the painting verges on the completely abstract, it is also a semi-realistic 'memory landscape' of the details of a forested

hillside in British Columbia. Though produced in 1954, the painting of a rugged hillside landscape does not suggest the landscape of southern Ontario. *Hillside* must therefore refer back to the chaotic forest he studied during the two years that he lived at Tashme. In 1954, Nakamura's *plein air* drawing in Ontario focused on urban and suburban settings.

Within this path of formal evolution, *Hillside* is a logical extension of the compositional and perspectival challenge of *Twelve Mile Lake*. In the early 1950s, one of Nakamura's concerns was to reduce the chaos of wilderness landscape to controllable geometric pattern. In *Hillside*, we see an example of the emergence of a proto-gridding system across the picture plane. The vertical lines are wider than the horizontals only as a concession to the fact that trunks of trees are more massive than the near-horizontal branches they support.

Hillside is an early formal and iconographic theme related to Nakamura's 'memory landscapes' in that it is a reference back to his Tashme experience and the search for an escape from both the internment camp and the Renaissance perspective it represented as a form of oppression. However, this painting predates the more obvious and better known 'memory landscapes' by about four years. It actually relates more to the fact that in 1954 Nakamura's projects were embedded in experiments with Abstract Expressionism, and his new involvement with Painters Eleven.

As a result, in the early 1950s much of Nakamura's work was transitional. He maintained his penchant for landscape themes from memories associated with Tashme, while his work was being influenced by techniques, styles and subjects that he was absorbing at CTS, and, after 1951, from his new, more experienced friends, Painters Eleven. An example of his rapid development is evident in *Hillside*. The fine bas-relief black lines that dominate the picture plane evoke both trees and a proto-grid. *Hillside* is a clear shift toward a greater utilisation of the grid as a carrier of information regarding the fundamental structure of nature.

While being a transitional painting, *Hillside* still relates to the 'view from the window' theme as a metaphor of oppression and escape. The proto-gridding of the picture plane conforms to the dictates of 'over-allness' that distinguishes Abstract Expressionism. It also represents the seemingly infinite dimensions and claustrophobic impenetrability of the enclosing forest. Even while *Hillside* is an important topological step toward the rational grid of mathematics, the "universal structure of nature," it represents the opposite, the entrapment of the forest around the

internment camp. It evokes the desire to escape through the trees toward a visible but unreachable light that beckons through the chaotic window-like intricacies of the forest.

Structure, 1962, is one of the last 'block structure' paintings. Here, the distant horizon line cuts the picture plane across the center. Several 'block structures' stand in the immediate foreground, and two more are visible in the distance. The 'towers' have no sense of scale, resulting from the fact that the position of the viewer relative to the ground is not clear. The tallest towers could be about twice human size (suggesting robotic presences), or they could be the size of office towers.⁵⁶ Like all of Nakamura's 'block structure' paintings, *Structure* evokes a sense of personal unease. This arises from a number of possible sources. The painting is bathed in strong harsh light and yet the sky is deep shiny blue-black. The setting suggests a moonscape rather than a 'earthscape'. This could be interpreted as a reference to a personal meaning that could have been identical to Joy Kogawa's statement that arriving at the internment camps in Alberta was like arriving on the moon.⁵⁷ However, at the same time that the sky suggests outer space there are no stars to confirm this. The source of light is unclear, creating an eerie atmosphere that is heightened by the shadows falling in different directions around the 'blocks'. As in the Romantic 'views from the window, the window is not necessarily a source of light; "sometimes it reveals a nocturnal sky, with a moon and transparent clouds, and provides a poetic rather than a dryly realistic setting."⁵⁸ In *Structure* the source of the threatening unnatural light is clearly outside the window of the picture plane.

In this respect, these paintings can be read as 'memory landscapes'. The multiple directions of the long shadows in the painting suggest a malevolent and moving artificial light close to ground level. This image could have arisen out of Nakamura's memory of watching the sharp shadows move through his sleeping quarters as guards with powerful flashlights moved through the silent internment camp during the wintry night. This would account for the fact that both the sky and the cast shadows are both black and shiny, while the dark sides of the "towers" are matte black. As well, the shiny surface of the shadows across the ground at the base of the painting could have been based on his recollection of the threatening blackness of the night sky entering through the window.

In this case, the window is both protective and a source of threat. The camp, represented by the window-as-barrier, would have seemed safer than the forest, particularly at night. The penetration of strange moving night-lights and night-shadows through the window and on the walls of his room would have confirmed the precariousness of his displacement. It would have inclined him to seek escape through inner contemplation as much as through physically or artistically confronting the forest.

There is another reason why this painting evokes a sense of displacement in keeping with the tradition of the 'view from the window'. This arises out of a deceptive blending and manipulation of Renaissance perspective and the modernist grid in the same painting that we first encountered in Nakamura's *July, 1944*. A superficial scan of *Structure* suggests that the 'blocks' conform to the canon of one-point perspective. However, there is no common vanishing point at the center point of the horizon. While the 'towers' on the left correctly display the receding surface of the right side, this is 'mistakenly' but obviously deliberately continued by the 'tower' on the right side of the painting. The orthogonals of the 'tower' over which the viewer sees into the painting in the lower left bear no relationship with the other 'towers'.

The vertical grid that emerges across the picture plane of *Structure* contradicts the implied depth of field created by the receding scale of the 'towers' coupled with the deliberately inaccurate one-point perspective. This becomes apparent if the viewer stares at the painting with unfocused eyes. Within seconds, the white plane on which the 'towers' stand becomes independent vertical flat shapes that optically move in front of the 'towers'. This is as disorienting as the claustrophobic perspective of *Inner View*. Nakamura achieved this optical illusion by designing each of the white background shapes between the towers as unique 'structures' in themselves. As well, the way the horizontal edges of the segments of the 'towers' line up across the picture-plane tend to flatten the image.

Finally, as is the case with much of Nakamura's work, the title is a ironic cue to the program he pursued in this painting. The painting's title is in the singular rather than the plural. *Structure* could refer to the construction of oppression, the dimensions of space, or even the pattern of the universe. However, I suspect the title refers to the structure of the painting itself. This would reflect the dual nature of Nakamura's life-long project; his search for rational structure in the universe as well as its rational representation. Nakamura was either trapped within a

memory of his teenage trauma, or he was working out the means of his escape through a synthesis of the two modes of perspective, each of which represented a barrier between himself and the freedom that knowledge symbolises. Nakamura used the 'window' of the painting to recall his traumatic experience, while at the same time deconstructing and reconstructing 'diagrams' of that world into an ideal scientific configuration, one that resides uncomfortably in an ambiguous zone between the world of sense experience and an analytic mind. In this respect, *Structure* reflected the conflict between the ambiguous meaning of the enclosure inside the window as a metaphor of the camp, and the space outside, which, while dangerous, represented the path of escape.

Number Structure and Fractals is a representation of the logical solution to the dilemmas with which Nakamura's earlier series struggle. The mixture of the themes of geometry, mathematics and modern aesthetics is in virtually perfect equilibrium. The painting could be a metaphoric demonstration of the mathematical structure of the universe. The work includes several dualities; colour and non-colour, randomness and control, infinite depth and breadth, mathematical notation and abstract pattern, the microscopic and the macroscopic, craft and science, the seen and the imagined, the material and the transcendental, the inner and the outer, the near and the distant. It also encompasses different modes of representation, and a shifting relationship between foreground and background. As economical as a diagram in a text on mathematics, suggesting that it is both contemplative and pedagogic, the work pushes the windowed picture plane and the view through it to a level of harmony that resolves the formal, mathematical and personal dilemmas and concerns that background much of Nakamura's previous work.

Against a processed and pre-primed white canvas surface, Nakamura drew a grid with approximately one-inch squares in pencil. Then the canvas was divided into two unequal sections with a vertical line. In the right-hand section, Nakamura applied a pattern of triangles that become larger toward the bottom-right corner of the painting. The strong pattern of expanding triangles is not symmetrical, except along the top and left side. The apparent symmetry is an illusion, but it is a deliberate one necessary to inform the viewer that the expanding pattern of fractal triangles beginning in the upper-left corner is an infinite field of which this painting depicts only a fragment. In this section of *Number Structure and Fractals*, Nakamura demonstrated one of the more simple patterns that results from fractal mathematics. Based on the same mathematics that *Square Limit*, 1964, (ILL. 78, 79, 80) by M.C. Escher (1898-1972) utilised, *Number Structure and Fractals* is

open-ended only in the direction of the infinitely large. Whereas most of Escher's later mathematical puzzles are bound by the parameters of his designs, Nakamura's work was more concerned with demonstrating the dilemma of the Romantic window into the infinite, be it microcosmic or macrocosmic, and the philosophy of the modernist picture-plane wherein the work of art exists only within the confines of the two dimensions of the canvas. In this respect, *Number Structure and Fractals* replicates and resolves the narrative of confinement and limitation within the work of art itself, with the interior view as painting and the infinite space beyond the window as pure meditation. It is not surprising that not long after this painting, Nakamura put aside making art, and concentrated on studying the mathematics of number structures.⁵⁹

In the narrower, left-hand rectangle, Nakamura demonstrated the mathematical armature that supported the vision he gives us on the right. Here, before applying the deep blue paint, he hand-wrote with pencil the columns and rows of at least four different number structures that coalesce into triangles. These patterns overlap each other, creating the sense that this field of numbers, unlike the carefully controlled drawing/painting *Number Structure 9*, is spontaneous and undesigned. This juxtaposition of apparently scribbled arcane mathematics of fractal patterns and a precise diagramming of these patterns in a simple graphic representation is both objective and personal. The painting reveals, as few others do, Nakamura's private engagement with the Romantic 'pastime' of meditating on the night sky through the grid of the window. As in Klee's painting, each grid unit in *Number Structure and Fractals* is a window. However, unlike the Klee painting, here the light (the light of knowledge) that penetrates the world, and the intelligent mind, is the glowing grid itself. While Nakamura's overt intention was to demonstrate the omnipresence of fractals in nature, his hidden project was to uncover the mathematical grid that makes all pattern and structure, and therefore reality, possible.

At the right edge, two columns of numbers begin at the top of the canvas, and reach to the bottom. Along the row of grids along the top of the right-hand rectangle, the numbers are repeated, suggesting that there is a field of number structures underneath the rectangle on the right. This causes the painting to be read as consisting of two flat surfaces. The one on the left extends conceptually across the whole picture plane. The right-hand rectangle carrying the visualisation of the number structures being developed on the left as a window into the patterned infinity of the night sky, is, as well, a contradictory flat plane floating over Nakamura's surface of mathematics.

The painting is a view of a section of a gridded window within the window of the picture place, which is itself windowed. The picture plane supports infinite mathematical progressions. This is overlaid by a second picture plane, itself unmeasurable, because we can see only the upper-left corner. This second picture plane is also a window into infinite space. This is signified by its fractal pattern expanding endlessly from a particular microcosmic starting point.

I contend that *Number Structure and Fractals* is a window into the invisible structure of the infinite night sky with its stars. Nakamura's achieved this by his careful retention of the fine negative grid lines and intersections within the dark blue field that evoke the sense that the stars pattern a huge dome above Earth. There is virtually no area devoid of dim twinkling light that constantly shifts within larger silhouettes of recognizable triangles. These triangles, which supplant the celestial beings that humans saw in the sky prior to modern science, range from the infinitely small to the infinitely large. These triangles, which Nakamura saw as integral to the mathematics of nature at all levels, are the result not of the optical game one plays with the shapes of spaces among the stars, but, in this painting, a synthesis of memory and intellectual visualisation. While the picture plane is covered with grids and the picture is filled with windows, the intersections of the mullions represent stars and starlight in the near-infinite distance, the locus of the yearnings of mathematicians.

In "Kazuo Nakamura's Number Structure," Christopher Cutts analyzes *Untitled Drawing 1* (no date - possibly c. 1983), (ILL. 81) which could have been produced in preparation for *Number Structure and Fractals*. He focuses exclusively on the mathematics within the drawing, since he claims that this was the primary concern of all Nakamura's research. While I disagree with this specialised and limited study of Nakamura's program, a purely mathematical reading of *Drawing 1* is useful to appreciate the complex armature against which Nakamura worked out the final manifestations of his research. Cutts writes

.... The upper-hand corner is a rectangular configuration of Pascal's Triangle. The grid juxtaposed to the left of the number table correlates with Pascal's triangle. The pattern with the grid is constructed by taking all the numbers in Pascal's triangle that are divisible by two and outlining them in the corresponding squares of the grid. The resulting repeatable pattern is called a Sierpinski gasket or triangle, and is a familiar feature of fractal geometry.

Regardless of how small or large they become the pattern is always the same. This is ... the most basic fractal pattern....

In each triangular fractal pattern there are multiplications, such as $2 \times 3 = 6$, $4 \times 7 = 28$, $8 \times 15 = 120$ and $16 \times 31 = 496$. The totals 6, 28, 120 and 496 are the total number of squares blocked out in the grid to form the correlating fractal pattern. The numbers 2, 3 and 4, 7 and 8, 15 and 16, 31, etc., which are indicated in specific triangles, illustrate, in the case of 3, 7, 15 and 31 ..., the number of squares running along the bottom of the triangles. The numbers 2, 4, 8, 16 represent the number of squares running down the middle axis of the triangles. If you multiply these numbers you get the total number of squares composing each triangle. The bottom right-hand section of *Drawing 1* is a further illustration of an extrapolation of the Cabala number sequence from Pascal's Triangle.⁶⁰

Cutts summarises his analysis of Nakamura's program in *Drawing 1* by pointing out the importance of Pascal's Triangle to the "building blocks of form such as the Golden Section of the Fibonacci sequence, the Catalan number sequence, the fractal pattern ... and the doubling number sequence."⁶¹ He claims that the central contribution of Pascal's Triangle to Nakamura's 'number structure' series "lies within the individual lines of numbers, which are the key components in the composition of Nakamura's multi-dimensional tables."⁶²

Reflecting his own specialised representation of Nakamura's work, Cutts ends his essay with the statement that Nakamura explored "the measurable relationship between beauty and mathematics. Not only a beauty manifest in nature but also in the intrinsic aesthetics found in a sequence of numbers, calculations and geometric forms."⁶³

M-Square, Evolving Pattern, 1987-96, (ILL. 82) might be one of the last drawings Nakamura completed before his illness made drawing too difficult. Though this drawing could be read in a manner similar to Cutts' reading of *Drawing 1*, I will offer another interpretation. Like *Drawing 1*, it was produced on pre-gridded paper. Toward the end of his career, Nakamura employed pre-gridded paper surfaces to produce finished drawings which may, in fact, be cleaner versions of ideas he developed on pads of graph paper. Whether this shift in drawing surfaces was a convenience to overcome the strain of hand-drawing grids with mechanical pencil and T-square or the result of a new development in his visualisation of the grid is unclear.

In this drawing the pre-gridded surface implies a windowing of the picture-plane as a metaphor of the prior condition of the universe. The grid-lines represent the fundamental pattern of

the universe, and the intersections represent individual points of reference, or light, or idealised geometric relationships among stars. This interpretation of the purpose of the grid is based on the notion that on a clear night sky, the pinpoints of star light appear to settle into patterns. The grid could be a metaphor of the theory that if the universe is infinite then light would appear to emanate from every point above the Earth. Nakamura's drawing over the grid could suggest that in an infinite universe with light radiating from every point in the cosmic dome, there are an infinite number of patterns through which the universe can be contemplated.

In this drawing, Nakamura explored graphic pattern interpretations of about thirty number structures, some or all of which are Magic Squares.⁶⁴ Each of these drawings is set within a square, most of which are comprised of 12 grid units to the side, each of which is a window into a tiny arc of the night sky. Freed from the duality of the window as barrier, and freed from the self-imposed project of representing the material world as a mathematical structure, Nakamura is now describing a variety of paths through mathematics itself as a multidimensional landscape. His zigzagging line from number point to number point appears completely whimsical, but careful scrutiny of this drawing would reveal - at least to a mathematician - the utter logic of his cerebral travels. In this work Nakamura has accomplished through modern science what Friedrich could not. He has put aside the craft of articulating his yearnings with paint and, instead, he has escaped.

Nakamura's first steps in the pursuit of mathematics encompassed his search for an understanding and then an alternative to Renaissance perspective. The purpose of this project could have been to demonstrate that one's personal political relationship with place is always ambiguous, shifting and unreliable, a reflection of his relationship with the Canadian state. However, Nakamura's confrontation of the dilemma of the perceived stability of one-point perspective in a post-Einsteinian world led him to an appreciation that spatial ambiguity, shifting or unreliable perspectives, are, in fact, the actual conditions of the natural as well as the social-political environment. The romantic basis of this condition of the world that Nakamura would have been conscious of as a result of his experience of loss of community and internal exile accounts for his pursuit of a more stable mathematical conception of place. In his final paintings, perhaps especially those works in which the white grid and each unit's number structure is

carefully articulated through a gridded field of deep blue, or in his final drawings on pre-gridded paper, Nakamura was escaping “into the marvellous summer night.”⁶⁵

CONCLUSION

The Grid as a Path to Knowledge

Order is the actual key of life.

Le Corbusier¹

Pythagoras (580-500BC) taught that simple numbers and their relations to each other, and also simple geometrical figures constructed to such measures, are an image of the innermost secret of nature.

Müller-Brockmann²

This thesis has demonstrated that the grid in the art of Canadian artist Kazuo Nakamura requires an iconographic reading as well as a formal and mathematical one in order to fully appreciate his unique contribution to Canadian art and culture. My iconographic reading has provided an insight into Nakamura's life and work that distinguishes his art from mainstream modern Canadian art, and, in particular, from Painters Eleven, his closest associates in the 1950s. Further, this iconography of Nakamura's grid associates his art with the Northern Romantic tradition in landscape painting, particularly with the German genre of the early nineteenth century known as 'the view from the window'.

The methodology of this thesis utilised the disciplines of biography and formal analysis as the basis for the culminating iconographic reading of Nakamura's art. Each chapter dealt with a different aspect of my argument that the formal and metaphoric nature of Nakamura's art parallels the 'view from the window' theme that has been claimed to be a source for the modernist grid, and, with reference to Nakamura, the evolution of the window-as-grid to grid-as-window.

I have addressed the sources, uses and meanings of the grid in Nakamura's art, demonstrating that this motif, whether visible or not, was the most dominant unifying formal and metaphoric element in his oeuvre. Tracing the development of the grid through Nakamura's career, I have demonstrated its early presence in the form of realistic one-point perspective studies of Vancouver and Tashme Internment Camp; then as an emblem of modernist abstraction; and finally as a framework for scientific and mathematical diagramming that signifies the "fundamental

pattern” of natural phenomena. The later grids also function, I believe, as a metaphor - a topological or formal transmutation of the German Romantic ‘view through the window’ and the ‘window-as-grid’ into the ‘grid-as-window’ on to the basic mathematical structures of the universe.

My thesis claims that while the origins of the form of Nakamura’s grid can be traced to his early efforts at one-point perspective in Vancouver, the beginnings of the metaphoric meaning of his grids were in the trauma of Tashme. For two years, beginning in October 1942, Nakamura was quite literally a ‘displaced person’, an ‘enemy alien’, and in his drawings and paintings while interned, his grids carry his sense (conscious or otherwise) of confinement, oppression and loss of traditional community. Nakamura’s subsequent life and art were an interconnected search for an identity that would overcome his exile from a sense of ‘place’. Subjectively, he sought to discover an identity beyond ‘Canadian’ or ‘Japanese’ or even ‘Japanese-Canadian’. He wanted to be a citizen of the world, and through science and mathematics he discovered his models. Physics and mathematics are not subject to personal, cultural or national variations. They cannot be taken away or destroyed by government.

I have argued that science and mathematics, and the grid that supported them in Nakamura’s art, served as a cathartic escape from the memory and effects (conscious or otherwise) of oppression. My thesis of Nakamura’s ‘acting out’ of a research-as-art for an objective ‘mathematical’ solution to the subjective dilemma of identity and citizenship is speculative. Nevertheless, there were contributing factors in his life from the late 1930s to the 1950s that would have encouraged this program and goal. The traditions of ‘transcendence’ through esoteric spiritual practices in art advocated by Jock Macdonald, which Nakamura rejected as irrational, nevertheless would have supported his notion that avant-garde art melded with advanced science and mathematics could contribute to the improvement of the human condition through a resulting higher consciousness of the universe. Another important source justifying my speculation was Nakamura’s early and lifelong penchant for scientific literature, and Scientific American in particular. This magazine clearly advocated a close relationship between science and culture in the material and intellectual progress of western (read American) civilisation. It supported Nakamura’s contention that artists and scientists had an equal responsibility to direct society’s attention toward objective truths of science and mathematics in order to better the human condition. Nakamura was

not explicit as to how advanced scientific and mathematical knowledge of the universe would benefit human beings, or how his own art would. He did not speculate on the nature of this improvement, and did not suggest whether it would be material, intellectual or spiritual. However, Nakamura was not interested in revealing a personal and subjective epiphany of spiritual truth in the structure of the universe. Like scientists, he was concerned with finding an objective methodology to discover ever-advancing but always quantifiable facts that could be described by mathematics.

Nakamura's transcendence was not spiritual, mystical or religious. He was not concerned with escaping the material world. His grids-as-windows were not gateways between an earthly bondage and a heavenly release which is how some scholars interpret Friedrich's windows. Within the context of Nakamura's claim that he was a landscape painter, his early grids were windows onto the appearance of nature, while his later grids were views onto mathematical schemata of the structure of nature, schemata that signified, for him, the underlying order of the world. As a manifestation of mathematical principles, Nakamura considered this natural order to be objective, impersonal and absolute. The gist of my thesis, then, is that Nakamura's personal quest for escape or transcendence culminates in the personal security of an objective natural and fundamental reality. To come to terms with the trauma of Tashme, to counter his sense of exile, Nakamura transcended subjective place through a synthesis of geometric art, scientific thinking and mathematics.

For a number of reasons, no doubt to do with cultural background, personality and experience, Nakamura never discussed or mentioned his work in the context of a personal catharsis. He did not participate in the cult of self-revelation that was the norm in 1950s art practice. He did, however, see himself as a teacher, or at least a guide to others. While he never claimed that his mathematical formulations provided answers to life's dilemmas, he arguably saw his final works as metaphors of his own escape from personal subjectivity through meditation on mathematically quantifiable and therefore objective truths. The drawings of endless number structures that culminated his career are the final manifestations of his meditations on the mathematical keys to the structure of the universe. In order to understand the mathematics of his 'number structures' the viewer must work out, through a process of iteration, each arithmetical step in the process of logic articulated in the work. This mental activity - and Nakamura rejected

calculators and computers - was a kind of cerebral discipline as a contemplation of the structure of the universe. In order to understand the principles on which the number structures are based, knowledge of mathematics is useful, but not necessary, as the 'number structure' works are self-explanatory, once the viewer has pinpointed the particular sequence of integers on which the 'number structure' is based. A person with an undergraduate degree in mathematics would be able to unravel the labyrinth-like or mandala-like patterns of Nakamura's 'number structures'.³ As one begins to work out the path of the mathematical progression in a particular 'number structure' one will be emulating the path of Nakamura's cerebral travels. One may experience a similar escape from the oppression of superficial appearances and transcend the perceived world to an awareness of the impersonal universal pattern of the world.

END NOTES

INTRODUCTION:

1. Leonard Mlodinow. Euclid's Window: The Story of Geometry from Parallel Lines to Hyperspace. New York: Free Press. 2001. p. 1.
2. Sarah Milroy. "Adding and Subtracting with Nakamura," The Globe and Mail. [Toronto] 24 Nov. 2001.
3. There are several other 'series' as well, some of which I will discuss briefly.

My choice of which individual works or 'series' to discuss is, unfortunately, the product of the availability of Nakamura's art in reproduction. As a result, I concentrate on individual drawings and paintings or works or "series" that are more well-known. Even though I believe they would embody yet other important aspects of Nakamura's subject, I do not discuss his "still-life series" in which he apparently manipulated views of potted plants to demonstrate his theories regarding the mechanics and perception of the geometry of perspective, and the nature of the horizon as a threshold between different dimensions. I do not consider a group of works in which he considered the shape of the physical universe as either a series of points or a field of radiation, in which he worked out a graphic representation of the dual nature of atomic material as either solid matter or flowing energy. As well, because little of his sculpture has been catalogued or recorded, and he stopped making sculpture in 1967, I do not discuss Nakamura's three-dimensional works. These are probably important as demonstrations of his research into the relationship between perspective and structure, and between the plane and form.

Like most writers on Nakamura's art, I will discuss his various projects as "series" of works, a word which he himself on occasion employed. It is not clear whether Nakamura himself adopted the term "series" with reference to his own work, or if it has come to be applied as a visual and writing aid imposed by art critics and historians. It is possible that, as a matter of convenience, art-writers applied the term to distinguish one project - or theme - from another. However, it is important to note that Nakamura did not actually work in series, but rather within themes. For example, while his "string paintings" can be thought of as a series, they were, in fact, a theme, one that resurfaced occasionally over many years, approximately 1987 being the last time he utilised strings in his work. I stress the importance of the use of the word "series" as only a guide-line because Nakamura did not actually give formal titles to his various projects. His works exploring topology were not titled as a group as the Topology Series. For example, Nakamura did not design or organize them as a unit, with a clear beginning, and an equally clear conclusion. As well, there were many works which cannot be clearly placed within one "series" exclusively. His many different projects supported each other's research, and often he included aspects of one in another project.

4. Katherine Barber, ed. The Canadian Oxford Dictionary. Toronto: Oxford University Press, 1998. p. 617.
5. Encyclopaedia Britannica; Micropaedia. Chicago: Encyclopaedia Britannica 4 1974. p. 736.

6. Alan and Isabella Livingston, editors. The Thames and Hudson Encyclopaedia of Graphic Design and Designers. London and New York: Thames and Hudson, 1992. p. 105.

Swiss Style, a rational typographic style, was developed from innovations associated with Constructivism, De Stijl, The Bauhaus and the New Typography of the 1930s.

The achievements of the Bauhaus in the field of architecture, graphic and industrial design, and art education were a springboard for Swiss Style following the Second World War. Swiss Style was able to display complex information in a structured and unified manner influenced by important early practitioners, such as Max Bill, Ernst Keller and Théo Ballmer. The style was characterised by its reliance on the grid, sans serif typeface designs, such as Helvetica, narrow text columns and photographs rather than hand-drawn illustrations. The international popularity of the style lasted through the 1960s and 1970s. In the late 1970s, the style was associated with corporate design, such as the logo for Canadian National Railway, the design for VIA, and the symbol for the Swiss National Exhibition, 'Expo '64'.

7. Williamson, Jack. "The Grid: History, Use, and Meaning." Design Issues: History, Theory, Criticism. Vol. 3 No. 2 Fall 1986. Footnote No. 1 p. 15.
8. Lucy Lippard. "Top to Bottom, Left to Right," Introductory essay in the Exhibition Catalogue, Grids, Grids, Grids, Grids, Grids, Grids, Grids, Grids, Grids, Grids. Philadelphia: Institute of Contemporary Art, University of Pennsylvania (Jan. 1972): n. p.

Ryman's phrase, "the horizontal and vertical lines crossing each other," is the most exact definition I have found with reference to the grid in fine art. However, this definition, like the one provided by the Oxford Canadian Dictionary, does not include irregular or natural grid-like patterns, such as soap bubbles, (ILL. 83) glazed ceramic surfaces (ILL. 84) and cracks in crystals. (ILL. 85)

The exhibition included 27 artists, most of whom are mentioned in the brief essay. However Lippard focuses almost exclusively on Robert Ryman, Larry Poons, Alan Shields, Ad Reinhardt, Will Insley, Jasper Johns and Sol LeWitt.

9. Lippard. n. p.
10. Sol LeWitt quoted in Lippard. "Top to Bottom, Left to Right." n. p.

LeWitt's statement, like each of the artists discussed, supports Lippard's conviction that anything other than a formal employment and analysis of the grid was unnecessary in the early 1970s.

11. Lippard. n. p.
12. Lippard. n. p.
13. Lippard. n. p.
14. Lippard. n. p.
15. Lippard, n. p.

16. Lippard, n. p.
17. Lippard, n. p.
18. John Elderfield. "Grids," Artforum Vol. 10 (May, 1972). pp. 52-59.
19. Lawrence Alloway. "Systemic Painting," quoted in Elderfield. p. 54.
20. Elderfield. p. 53.
21. Elderfield. p. 53.
22. Elderfield. p. 53.
23. Elderfield. p. 53.
24. Elderfield. p. 53.
25. Elderfield. p. 53.
26. Elderfield. p. 53.
27. Elderfield. p. 53.
28. Elderfield. p. 53.
29. Elderfield. p. 53.
30. Elderfield. p. 53.
31. Elderfield. p. 53.
32. Elderfield. p. 54.
33. Elderfield. p. 54.
34. James W. Davis. "Unified Drawing Through the Use of Hybrid Pictorial Elements and Grids," Leonardo 5 (1972). pp. 1-9. I especially recommend the section, "Grid Structures in Western Art."

Training manuals for applied art are common in the history of Western art. The grid was common in Egyptian wall art as a decorative motif and pattern. In the design and execution of art, the grid was also a tool for the conception, enlargement and transfer of images to walls to be painted or blocks of stone to be carved. A gridded drawing of an proposed mural image or bas-relief sculpture that could have been part of a training or studio manual is an image of a "gesso-coated wooden board with a line drawing of King Tuthmosis III seated on a throne, overlaid with a grid for transfer to larger scale, c.1400 BC," (ILL. 86) illustrated in the book Egyptian Art in the Days of the Pharaohs 3100-320 BC, by Cyril Aldred.

The grid was also central to the Egyptian world view and the visual representation of it. This image of a graphic synthesis of a seated Egyptian king and a grid is explained as an indication of the appreciation of "the rule that had been imposed by the Creator upon Chaos at his epiphany." Aldred continues:

This orderly system was re-established on the land and its inhabitants during every reign by the god incarnate in the pharaoh. Every year Egypt was remade in the old mould after the substance of the inundation [of flood-waters from the south] had left the fields with fresh deposits of fertile silt ready to sprout into new life. The cultivable tracts, on which old landmarks had often been obliterated by the flood, formed a vast tabula rasa that had to be demarcated anew to re-establish the limits of fields and estates. If the Egyptian, even from earliest times, could impress a system of mensuration upon his environment and reduce it to a rational and finite pattern, it is also no wonder that he also devised a canon of proportion to which his works of art should conform. Thus in ground-plan and elevation his buildings reveal a mathematical order based upon the use of such geometrical figures as the 'sacred' right-angled triangle, with sides of three, four and five units.

Cyril Aldred. Egyptian Art in the Days of the Pharaohs 3100-320 BC. London and New York: Thames and Hudson (1980). pp. 13-14.

My thesis maintains that the same need for order after a period of chaos was the motivating force that compelled Nakamura to devote his life to a science and scientific understanding and self-identity that is similar to the annual communal activity of ancient Egyptians. Through Nakamura's youthful study of perspective he came to the grid system of controlling visual information about the world. The grid provided him the greatest protection against natural and social chaos. In this respect, Nakamura's practice has broad cultural, social, political and psychological meaning.

35. Davis. pp. 6-7.

36. Davis. p. 7.

37. Davis. p. 7.

Unfortunately, Davis does not relate these tools to gridding mechanisms that artists employed to establish perspective.

38. Davis. p. 8.

This characteristic is possibly comparable to Nakamura's concerns. Davis writes that "while Morris considers such drawn and photographed forms to be 'proposals' for earth constructions," the picturing of a place as a gridded landscape is somewhat similar to Nakamura's use of the grid in his final works as a symbol of landscapes viewed through mathematics.

39. Davis. p. 8

40. Amy Goldin. "Patterns, Grids and Painting," Artforum 14.1 (1975). pp. 50-54.

41. Goldin. p. 50.
42. According to Goldin the grid in art today implies craft and contrivance, which she seems to view as negative attributes. However, perhaps during the Renaissance the increasing use of grids by artists improved the professional status for artists relative to craftsmen.
43. Goldin. p. 50.
44. Goldin. p. 50.
45. Goldin. p. 50.

The article, "Patterning," published by Neil Marshall in Arts Magazine. 55.1 (1980). pp. 120-121, suggests a psychology of patterning in avant-garde painting in the twentieth century that is more positive than that outlined by Amy Goldin. Marshall writes:

Originally, a "pattern" meant an archetype, so that a certain value was attached to the very notion of pattern. The pattern was something ideal which was repeated because it was inherently good or valuable in some way. After 1700 this meaning began to fade, and the modern sense gained currency: to mean a motive that was repeated, matched, paralleled, or equalled according to a design. Patterning lay solely in the perception that an archetype could conceivably be duplicated, even beyond the field of vision. Therefore, "pattern" never really lost its original meaning, if only because pattern does not necessarily need to be repeated in order to be a pattern; as long as the archetype, or motive, has a real potential toward duplication, there is a pattern. If it is patternable, there is a pattern. If we can think it, then it exists.

46. Rosalind Krauss. "Grids, You Say," Grids: Format and Image in 20th Century Art. New York: The Pace Gallery; Akron, Ohio: The Akron Art Inst., 1978. n. p.
47. Krauss, "Grids, You Say." n. p.
48. Lorenz Eitner. "The Open Window and the Storm-Tossed Boat: An Essay in the Iconography of Romanticism," Art Bulletin. 37 (1955). pp. 281-290.
49. Krauss, Rosalind E. "The Originality of the Avant-Garde," in The Originality of the Avant-Garde and Other Myths. Cambridge, Mass: MIT Press. 1985. pp. 151-70.
50. Krauss, Rosalind E. p. 158.
51. Krauss, Rosalind E. p. 158.
52. Krauss, Rosalind E. p. 158.
53. Krauss, Rosalind E. p. 158.
54. Krauss, Rosalind E. p. 158.

55. Krauss, Rosalind E. p. 158.
56. Krauss, Rosalind E. p. 158.
57. Krauss, Rosalind E. p. 158.
58. Krauss, Rosalind E. p. 158.
59. Krauss. n. p.
60. Krauss. n. p.
61. Krauss. n. p.
62. Krauss. n. p.
63. Krauss. n. p.
64. Krauss. n. p.
65. Krauss. n. p.
66. Krauss. n. p.
67. Jack Williamson, "The Grid: History, Use, and Meaning," Design Issues: History, Theory, Criticism. 3.2 (Fall 1986). pp. 15-30. p. 30.
68. Williamson. p. 20.
69. Williamson. p. 30.
70. Williamson. p. 30.
71. Williamson. p. 30.
72. Williamson. p. 18.
73. Williamson. p. 18.
74. Williamson. p. 18.

Williamson continues, p. 20, Footnote 7.:

The cross was but one of a host of symbols that represented Christ as the conjunction between heaven and earth. Another such symbol, also popular in Christian religious art, was the almond-shaped mandorla in which was placed the seated or standing figure of Christ. The shape was formed by overlapping two circles that represented the spheres of heaven and earth. As the link between both, Christ occupies the area of their conjunction.

75. Williamson. p. 18.

76. Williamson. p. 18.
77. Williamson. p. 18.
78. Williamson. p. 18.
79. Williamson. pp. 19-20.

Williamson continues. p. 20. Footnote 10.:

Earlier world maps treating spiritual in addition to physical geography often featured Jerusalem at the center. Operating as the *axis mundi*, a concept derived from earlier "world tree" mythologies that posited a spiritual connection (trunk) between heaven (branches) and earth (roots), Jerusalem was highest in qualitative status, other geographic locations being measured in value by their proximity to it. Considered alternately as a "world navel" a similar umbilical-like connection between earth and heaven was implied.

80. Williamson. p. 19.
81. Williamson. p. 19.
82. Williamson. p. 20.
83. Williamson. p. 20.
84. Williamson. p. 20.
85. Williamson. p. 20.
86. Williamson. pp. 20-21.
87. Williamson. p. 21.
88. Williamson. p. 21.
89. Williamson. p. 21.
90. My discussions with Nakamura, summer, 2001.

Nakamura's first exposure to an infinite Cartesian space might have been his personal and artistic confrontation with the forest around Tashme Internment Camp.
91. Williamson. p. 22. Footnote 17.
92. Williamson. p. 22. Footnote 17.
93. Sabina Rewald. "Caspar David Friedrich's 'Window with a View'; a Mystery Solved," Burlington Magazine. 134.1070 (1992). pp. 299-304.
94. Rewald. p. 304.

95. Anonymous Exhibition Review. The Globe and Mail. [Toronto] 12 Oct. 1968.
96. Nakamura's concept of "real abstraction" refers to the fact that he considered himself to be a realistic painter. In his article, "Artist was Looking for the Grand Theory," Globe and Mail. (Toronto), April 26, 2002. Gary Michael Dault writes:

For the past thirty years or so, Mr. Nakamura has progressively abandoned painting, turning instead to a relentless and epic investigation of what he once told me were the ways form and dimension are linked. This body of work, the 'number structure' enterprise, would engage the artist for the rest of his life.

... Cézanne ... had already reduced the world to what he identified as sets of cones, spheres and planes. It was Mr. Nakamura's desire to strike beneath that set of surfaces, ending with an understanding of the internal structure that constitutes order at an atomic, molecular level

This work typically took the form of large sheets of white paper upon which the artist would construct his penciled calculations - rows after rows of numbers in series, in progression, in aggregate, in accumulation - which he felt sure, were bringing him closer to the fundamental blocks of form in nature. For Mr. Nakamura, this increasing abstraction was, paradoxically, a way of cutting through abstract (sic) to the truth beneath it. "You might say I am actually a realist," [declares Nakamura]

97. Sarah Milroy. "Adding and Subtracting with Nakamura," The Globe and Mail. [Toronto] 24 Nov. 2001.
98. Milroy.
99. Robert Fulford. "The New World of Pattern," Mayfair Magazine. [Toronto] Feb. 1956.

According to Nakamura, everything in the universe can be reduced to patterns of matter, energy and time or duration. All these patterns are variations on a fundamental universal grid or pattern. Nakamura's search for this grid, which he maintained can be described best by mathematics, was, in his opinion also the goal of scientific research.

100. Fulford.
101. Fulford.
102. Fulford.
103. Hugh McPherson. "Can Toronto Overtake Montreal as an Art Centre," Canadian Art. [Toronto] 15.4 (1958). pp. 262-269 & 320.

Almost fifty years before Nakamura's paintings from the Tashme Internment camp were exhibited for the first time, writer George Elliott, writing in Canadian Art magazine, described Tashme as "a twentieth-century phenomenon, composed ... of efficient cubes

of dwelling units marshalled in the shadow of great mountains.”(Hugh McPherson. “Can Toronto Overtake Montreal as an Art Centre.” Canadian Art, Toronto, Autumn, 1958) In 2001 Sarah Milroy referred to the “ordered world of barracks.”(Milroy, Sarah. “Tashme2: Early Works of Kazuo Nakamura”. The Globe and Mail, Toronto. July 21, 2001) Without the benefit of hindsight George Elliott claims that a Nakamura canvas painted at Tashme “reveals nothing of the direction Nakamura took later.” (Elliott, George. “Nakamura - Painter on the Threshold”. Canadian Art, Toronto. Autumn 1954) However, as we now know, Nakamura’s depiction of efficient cubes as dwelling places marshalled below great mountains could be a metaphor of the origins of the research-project that Nakamura began at Tashme.

I mention these references to cubes to indicate the relationship between grids and cubes. A grid is two-dimensional, while a cube is a three-dimensional grid. While Nakamura chose to work exclusively in two-dimensional media from the late 1960s onward, he was concerned with further dimensions.

His concern for time and motion as part of a fundamental universal pattern implies a fourth and possibly a fifth dimension. He did not try to either depict or work within these dimensions; his work never included kinetic or durational patterns. However, toward the end of his career, as his employment of geometry to research and visualise patterns in all aspects of nature evolved into number structure, he increasingly acknowledged that in spite of working on paper and canvas his research was concerned with other dimensions.

104. Anonymous Exhibition Review. Montreal Star. Nov. 1960.
105. Bennett Metcalfe. “Abstract Artists Have Made Their Point - Now What ?” Vancouver Province. 23 Oct. 1961.
106. Woods, Katherine. Nakamura. Exhibition Catalogue. Oshawa, Ontario: The Robert McLaughlin Gallery, 1974. n. p.
107. Mays, John Bentley. “Kazuo Nakamura at the Moore Gallery.” The Globe and Mail. [Toronto] 10 May 1984.
108. Kanbara, Bryce. Tashme2: Early Works of Kazuo Nakamura. Exhibition Catalogue. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre, 2001. pp. 1-5.
109. Ihor Holubizky. “The Methods of Nature.” introductory essay in Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: The Robert McLaughlin Gallery, 2001. p. 14.
110. Gary Michael Dault. “Kazuo Nakamura: The Trajectory to Universe,” Tashme2: The Early Work of Kazuo Nakamura. Edited by Bryce Kanbara. Gendai Gallery, Japanese Canadian Cultural Centre, Don Mills, Ontario. 2001: pp. 7-9.
111. Dault. p. 7.
112. Richard William Hill. “Tashme2: Early Works of Kazuo Nakamura,” Fuse. [Toronto] 24.4 (2001). pp. 1-6.
113. Hill.

114. Holubizky. p. 14.

Holubizky appears to be stating in this quote that, unlike many other abstract painters, Nakamura's employed a compositional device based on the square rather than the more traditional Euclidian Rectangle with 2.3 proportions. This system of 2.3 composition, known as the Golden Rectangle or the Golden Section, has been explored aesthetically by many artists such as Juan Gris. There is also a long tradition of artists exploring 2.3 proportions in composition for its supposed spiritual implications.

For an introductory discussion of this history, I recommend Linda Dalrymple Henderson . The Fourth Dimension and Non-Euclidean Geometry in Modern Art. Princeton, New Jersey: Princeton University Press, 1983.

For interesting and skeptical discussions of the history, of two particular modern artists' interpretation and employment of the Golden Rectangle, I recommend William A. Camfield's article, "Juan Gris and the Golden Section," published in The Art Bulletin, Vol. 48. (March 1965) 128-34 and Roger Herz-Fischler's article, "An Examination of Claims Concerning Seurat and 'The Golden Number'" Gazette des Beaux Arts 125 (1983). pp. 109-112.

115. Holubizky. p. 14.

116. Holubizky. p. 14.

117. Holubizky. p. 12.

118. Holubizky. p. 12.

119. Holubizky. p. 14.

120. Klepac. p. 41.

121. Klepac. p. 43.

122. Klepac. p. 41.

123. Klepac. p. 42.

124. Klepac. p. 45.

125. Klepac. p. 45.

126. Klepac. p. 45.

127. Klepac. p. 46.

128. Klepac. p. 46.

129. Klepac. p. 46.

130. Christopher Cutts. "Kazuo Nakamura's Number Structures," Kazuo Nakamura: The Method of Nature. Edited by Bryce Kanbara. Oshawa, ON: The Robert McLaughlin Art Gallery, 2001. p. 61.

131. Cutts. p. 66.

132. Cutts. p. 64.

Unfortunately, Christopher Cutts does not discuss Nakamura's long interest in Magic Squares, several examples of which appear in *M-Square, Evolving Pattern* 1987-96 and other works, especially toward the end of his career.

Magic squares are essentially mathematical games in which particular arrangements of numbers in gridded squares can generate interesting linear patterns when the numbers are connected according to different formulas. I am not suggesting that Nakamura's was pursuing research into mathematics as the language of form and dimension in these drawings. Instead I speculate that Nakamura's many drawings of Magic Squares had two possible origins and meanings. The first was his intellectual interest in visual mathematical games that he shared with many artists. The second origin of his interest in Magic Squares was their visual and meditative relationship with Nakamura's history of reducing the visible world to a fundamental mathematical structure. Just as this necessitated that he visualise the world as a gridded field, the patterning of line within Magic Squares is dependent on the presence of a grid.

On page 484, the Encyclopaedia Britannica defines Magic Squares:

... square matrix often divided into cells, filled with numbers or letters in particular arrangements that were once thought to have special, magical properties. Originally thought of as religious symbols, they later became protective charms or tools for divination; and finally, when the original meaning was lost, people considered them mere curiosities or puzzles - except for some Western mathematicians who continue to study them as problems in number theory.

... In the arithmetical magic squares, the numbers are generally placed in separate cells and arranged so that each column, every row, and the two main diagonals can produce the same sum, called a constant. A standard magic square of any given number contains the sequence of natural numbers from 1 to 9. If these nine numbers are simply listed in three rows or three columns, they form the natural square of 3. A natural square has no "magical" properties, but one is often made as a first step to constructing a proper magic square. When these nine numbers in the 3 X 3 frame are rearranged so that they can produce a constant number of 15, they constitute the magic square of 3.

133. Sarah Milroy.

134. Walter Klepac. "Kazuo Nakamura; The Number Structure Works," Kazuo Nakamura: The Method of Nature. Edited by Bryce Kanbara. Oshawa, Ontario: The Robert McLaughlin Gallery, 2001. pp. 41-48.

135. As well, like the 'block structure' paintings, this series of works might be partially based on the artist's experience of watching the winter prairie landscape from the window of the train as his family travelled east across Canada into exile.

136. Cutts. p. 61.

137. Cutts writes, "this block of numbers acts as a beginning point in the generation of the other tables." p. 61.
138. Note the symbols n1 to 6 at the upper-right corner of several of the blocks of numbers.
139. For a detailed explanation of the mathematics of *Drawing 2*, I recommend Christopher Cutts essay in this exhibition catalogue.

CHAPTER ONE:

1. Kemp, Martin. The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat. New Haven and London: Yale University Press. 1990. pp. 342-343.
2. Family tree information provided by Lillian Nakamura, August, 2003.
3. The Canadian Oxford Dictionary. Toronto: Oxford University Press. 1998.
4. Grison: Interview with Kazuo Nakamura, Summer 2001.

Nakamura's older brother, Mikio, born in 1925, became the Vice-President and General Manager of Industrial Corporation in Toronto. His younger brother, Yukio, born in 1927, received a Masters Degree in Anthropology at the University of Toronto, and a Doctorate at the London School of Economics, becoming a professor of Anthropology at the University of Toronto. Nakamura's first sister, Masako, born in 1931, became a bookkeeper, and Jane, born in 1934, became a grade-school teacher and librarian.

McDonell, Marion Christine. 'A Quiet of the Spirit': Cultural Identity Reflected in the Work of Japanese Canadian Artists. Masters Thesis, York University. Toronto. 1991. p. 92.

Torizuka, Sakura. "Kazuo Nakamura, A Living Treasure of Canadian Art." The New Canadian. Toronto. April 5, 2001.

In her article Torizuka writes, "Mikio Nakamura was a central figure at the Japanese Canadian Cultural Centre, serving as president for a while."

5. McDonell. p. 92.

Grison. Interview with Nakamura. According to Nakamura, after the family moved to the southern edge of Vancouver, his father also worked for a while as a baker.

6. McDonell. pp. 92-93.
7. McDonell. p. 93.

At the end of his grade school years, unlike his brothers, Nakamura decided to pursue a technical high-school education rather than a liberal arts one.

Both of Nakamura's brothers had chosen to pursue an educational agenda that would lead them to university studies. Considering that as a young teenager, Nakamura's ambition

was to pursue some science, it is not clear why he chose to pursue a technical high-school education, one that would not generally lead to a university education. It is also unclear why he did not return to his early ambition of pursuing science once he was free to pursue a university education, like his younger brother, after the end of the Second World War.

I suggest that Nakamura's ambition to become a scientist might have originated in his design classes with Jock Macdonald. As members of Painters Eleven, both artists shared an interest in science, and scientific magazines. See Chapter Two. See also: Beale, Nancy. "Nakamura Uncovers the Inner Structure in Life." The Ottawa Citizen. October 25, 1993. Nakamura claims to have always been interested in art and science. "But because of the war, and being interned, I lost time, and decided not to become a professional scientist, but to go into art."

8. Zemans. p. 96.

Regarding the ten years that he taught at Vancouver Technical High-School, beginning in September 1939, Joyce Zemans quotes Macdonald: "... I have got rid of the laborious checking I had to do at the last school but now I feel myself absolutely closed in opportunity to give the kids knowledge of my teaching. I will have to give the kids period furniture style for elementary carpentry classes, little designs for ashtrays for their metal-work classes, a letter inside a two inch square for their lead cutting classes. I am fairly certain that I will burst wide open and give them what I want..." I have not discovered if Macdonald ever did "burst wide open" during a class that Nakamura was attending, but I believe it is likely that he did. Between 1933 and 1938 he worked as enthusiastically with high-school students as he did with the older students of the British Columbia College of Arts and as he did with older students between 1947 and 1960 at the Ontario College of Art. At Templeton High-School in Vancouver, where he taught in the academic year of 1938-39, Macdonald's "influence was felt [and] former students fondly remember his art classes and the linocutting club he established."

Much of what Macdonald would have wanted to give his high-school students is outlined in Zeman's book in her discussion of the teaching program of the British Columbia College of Arts.

9. McDonell. p. 95.
10. Zemans. p. 96.
11. Zemans. p. 90.
12. Rombout, Luke, ed. Vancouver Art and Artists, 1931-1983. Vancouver: Vancouver Art Gallery, 1983. pp. 66-67.
13. McDonell. p. 93.
14. Murray, Joan. Jock Macdonald's Students. Oshawa: McLaughlin Art Gallery. 1981. p. 286.
15. The Canadian Encyclopaedia: Toronto: McClelland and Stewart. 2000.
16. McDonell. pp. 94-98, and Kanbara. p. 3.
17. Kanbara. p. 2.

18. Broadfoot, Barry. Years of Sorrow, Years of Shame: A History of Japanese Canadians in World War II. Toronto: Doubleday, 1977.
19. Rombout. pp. 66-67.
20. McDonell. pp. 95-96 and Kanbara. p. 2.
21. Kanbara. p. 2.
22. Kanbara. p. 2.
23. Kanbara. p. 2.
24. Kanbara. p. 2.
25. Kent, Rockwell. World Famous Paintings. New York: Wise and Company, Inc. 1939. Another book Nakamura bought while at Tashme was Peyton Boswell Jr's. Modern American Painting. New York: Dodd, Mead and Co. 1939.

I do not discuss this book because I see no evidence of it having influenced Nakamura as much as Rockwell Kent's book.
26. Kent. n. p.
27. Beale, Nancy. "Nakamura Uncovers the Inner Structure of Life." The Ottawa Citizen. October 24, 1993.

"It was Mr. Nakamura's desire to strike beneath [Cézanne's] set of surfaces, ending with an understanding of the internal structure that constitutes order at an atomic, molecular level."
28. Corn, Wanda M. "The Birth of a National Icon: Grant Wood's *American Gothic*." in Reading American Art, edited by Marianne Doezema and Elizabeth Milroy. Reading American Art. New Haven and London: Yale University Press. 1998. p. 386-408.
29. Andrew Bell quotes Nakamura as saying, "I decided there were easier ways of making a living" in response to his employment as a sheet-metal factory worker in Hamilton. It is possible that his plan to pursue commercial art probably resulted as much, if not more, from his need to find a career better suited to his developing personality and self-image, than from a an insight into his future as a graphic artist.
30. Kanbara. p. 3.
31. Duval, Paul. Four Decades: The Canadian Group of Painters and Their Contemporaries - 1930-1970. Toronto: Clarke, Irwin. 1972. p. 45.
32. Duval. p. 45.
33. Anonymous writer. "The Bridge from Bauhaus and Beyond". Promotional brochure article. Art Centre, Central Technical High-School, Toronto. 2001.
34. Anonymous writer. "The Bridge from Bauhaus and Beyond". Promotional brochure article. Art Centre, Central Technical High-School, Toronto. 2001.

35. Goldstein, Carl. Teaching Art: Academies and Schools from Vasari to Albers. Cambridge: CUP 1996. pp. 272-296. Especially Chapter 13; "Teaching Modernism."
36. Lippard. n. p.
37. Goldstein. p. 279.
38. Goldstein. p. 279.
39. Sisler, Rebecca. Art for Enlightenment: A History of Art in Toronto Schools. Toronto: Fitzhenry & Whiteside. 1993. pp. 95-96.
40. Anonymous writer. "The Bridge from Bauhaus and Beyond." Promotional brochure article. Art Centre, CTS. 2001.

Also Grison: Telephone interview with Corey Gould, current director of the Art Department, CTS, Summer 2001.

41. During one of my visits with Nakamura, he showed me a portfolio of artwork assignments from his studies at Central Technical School. This small, and no doubt carefully edited selection of early works consisted of pattern and colour design, illustrations, poster and typography design, figure drawings and pen and ink technique exercises, several of which had been organized by Nakamura within grids. I was impressed by the craft-skill Nakamura displayed in his rather conventional responses to his assignments. This kind of work is a hallmark of the teaching program in the CTS.

Also Elliott, George. "Nakamura - Painter on the Threshold." Canadian Art 11.4 (Toronto) 1954. p. 137.

See also Central Technical School Alumni & Staff Exhibition. Exhibition Booklet. Art Department, Central Technical High-School. Toronto. May 1990.

42. Kanbara. p. 1.
43. Doris McCarthy told me that Nakamura would often show her artwork that he had produced on his own, at home, drawings or paintings that had little to do with school assignments. It is probable that these works were worked up from the small drawings he showed me.
44. Winther-Tamaki, Bert. Art in the Encounter of Nations; Japanese and American Artists in the Early Postwar Years. Honolulu: University of Hawai'i Press. 2001. p. 62.
45. Zemans. p. 165.
46. Telephone conversation with Ken Carpenter, July 2003.
47. Zemans. p. 156.
48. In his letter-interview with Leonard Schlichting (see Appendix Two), Nakamura states that none of the members of Painters Eleven influenced him, and that the group met only about six times a year, and only to discuss business. Statements by other members of Painters Eleven suggest that there was lots of discussion about art during meetings of Painters Eleven. I would argue that while Nakamura was reticent to take part in these talks, he

certainly listened and watched. See Joan Murray's interview with Alexandra Luke in Appendix Two. Nakamura's behaviour during encounters with other members of Painters Eleven is hinted at in the unpublished interview between Joan Murray and Alexandra Luke. Archives, The Robert McLaughlin Gallery.

49. During the 1950s Jock Macdonald employed ordinary graph-paper pads as sketch-surfaces to develop ideas for his abstract painting.
50. Zemans. p. 156.
51. Zemans. p. 162.
52. Zemans. p. 177.
53. Zemans. p. 177.
54. Hill, Richard William. "Tashme2: Early Works of Kazuo Nakamura." Fuse 24.4 (Toronto). 24 Dec. 2001. pp. 35-36.
55. Hill. pp. 35-36.
56. Dennis Reid, quoted in Dault, Gary Michael. "Artist was 'Looking for the Grand Theory.'" Globe and Mail (Toronto) 26 Apr. 2002.
57. Reid quoted in Dault.
58. Nakamura quoted in Holubizky. p. 19.

CHAPTER TWO:

1. St. Augustine. De Libero Arbitrio (book 2, chapter 8, section 21) quoted from Crombie, A.C. Mediaeval and Early Modern Science; Volume I and II. Garden City, New York: Doubleday Anchor Books, 1959. p. 14.
2. Nakamura's response to a question by Leonard Schlichting, March 20, 1978. Archive. Winnipeg Art Gallery.
3. Gerard, R.W. Letter to the editor. Scientific American. May 1948. Vol. 178 No. 5. p. 2-5. I include the complete letter here.

Sirs:

Two years ago you described a plan for the founding of The Sciences, a new magazine which was to cover all of science for the intelligent layman. Now, I understand, you have combined your plan for The Sciences with the acquisition of the venerable Scientific American. I hope you have not taken the change of title too literally. Science is not American - it transcends nations. But the Scientific American is an established name, doubtless chosen for good reasons. What will be between your covers is the important question.

Your original prospectus asserted that the new Scientific American would be designed to fill a gap in American journalism. I, for one, have been acutely aware of this gap.

Technical journals for technical readers abound and are, mostly, excellent. Popular articles, even entire magazines on science and technology for mass readers have also grown in abundance and, more slowly, in excellence. Twenty years ago, those of us in science who were concerned with the problem cried for almost any science coverage that would give the citizen (who pays the bills and should enjoy the party) even the simplest undistorted information. Today, while plenty remains to be done, trained science writers, working with the media for reaching men by the millions, do present the findings of science and some of their underlying significance, and often do it well, sometimes superbly. But even if this job of mass communication were done to perfection, certain inexorable limitations would exist.

Scientific writing addressed to the citizen must not assume general erudition as a background of understanding, an intelligent interest that he does not possess. College science presented to grade-school students will alienate, not educate, them. The bulk of Americans, even those with adequate intelligence, is not today beyond a most elementary acquaintance with science. We must hope that better teaching in schools, that adult-education efforts, that the presentation of simple but genuine science in print and by exhibits and over the airways, will slowly raise this level.

What then of the tens of hundreds of thousands prepared and eager to be abreast of science.... Each scientist is an advanced layman outside his limited area of expertness.... These men need something between the particular technical journals and the generalised mass magazine. I hope that Scientific American will meet this need.

I am concerned that the need be met not so that some magazine or other be a success, nor that some intellectuals be satisfied, but that civilisation be aided. For this group of men, largely if not wholly self-selected by talent and enterprise, dominates the thinking of the larger citizenry. The lawyer, the doctor, the engineer ... the educator ... the artist, is a maker of the minds of men; it is vital that he help make them well. No more important ingredient can be included in the mix than that habit of rational analysis and calculated testing and objective evaluation which is epitomised in the scientific method. If I may quote a few words I wrote a few years ago:

If we think of science as an exciting sport, as indeed it is, then the final score of each game is certainly for the public. So also is the inning-by-inning progress, provided it is clearly recognised by all as just a progress report and provided the reporter has official or semi-official authority for his statements. Still better, if the public is taught some of the rules of the game, it can follow with excitement a play-by-play account. It must never be placed in the role of the umpire. Also, it must learn to respect the expertness of the players. A democracy that does not respect expertness in the intellectual arena, as it does in the sports arena, is bound for extinction in an age of technology.

Let me sum up. For a healthy democracy the following circular relations should hold: The public should be kept informed of the authoritative advances of science and, even more, should be instructed in the manner in which science achieves them. The public must be made aware of the dignity of expertness and the compulsion of facts. Only so can the state, and all states, act rationally in this era of great sociological interdependence and tremendous physical power. Only so will science receive the financial support and dignified position it must have for the good of the whole. Only so will science flourish and serve. Those who work with the mass media of communication must insist on ever better standards of reliability and significance in what they communicate - standards which guarantee the discharge of a public duty as well as accumulation of a private gain. Only so will they be allowed long to continue as private enterprise. Only so can the public learn what it must know to function as a democracy.

So if the new Scientific American has indeed chosen to convey science in an accurate and lucid manner to the intelligent laymen, it has chosen a momentous and difficult task. It is earnestly to be hoped that it will succeed.

R.W. Gerard

Nakamura told me that he received over a dozen serious and popular magazines each month, most dealing with scientific matters, and that he was a member of the American Society for the Advancement of Science for many years. In her book, The Crisis of Abstraction: The 1950s, Denise Leclerc refers to other artists being interested in Scientific American.

4. Joan Murray interview with Kazuo Nakamura. Archives, Robert MacLaughlin Gallery, Oshawa, Ontario. See Appendix Two.
5. Dault, Gary Michael. "Kazuo Nakamura: The Trajectory of the Universe," in Kanbara, Bryce. Tashme²: Early Works of Kazuo Nakamura. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 7.
6. Müller, Erwin W. "Atoms Visualised: The Field Ion Microscope Makes Pictures of Atoms in a Metal Crystal by Accelerating Positive Ions from a Fine Needle of the Metal to a Fluorescent Screen" Scientific American. June 1957. pp. 113-22.
7. Gell-Mann, Muray and E. P. Resenbaum. "Elementary Particles; An Account of the Abstract Theoretical Ideas which Physicists Use to Help Them Understand the Material World." Scientific American. July 1948. Vol. 197 No. 1. pp. 72-88.
8. Gell-Mann, Muray and E. P. Resenbaum. p. 72.

Other articles in Scientific American dealt with this subject. Assuming that Nakamura began reading the magazine in the early 1950s, he could have read articles such as "The Multiplicity of Particles," by Robert E. Marshak, January 1952. Vol. 186 No. 1; "What Holds the Nucleus Together?" from the issue titled "Fundamental Questions in Science," September 1953, Vol. 189 No. 3; or "The Tracks of Nuclear Particles," May 1956, Vol. 189.

9. Beale, Nancy. "Nakamura Uncovers Inner Structure in Life." The Ottawa Citizen, Sunday, October 24, 1993.
10. Dr. Brett Stevens, professor of Mathematics at Carleton University assisted me in the technical description of the events in the illustration/photographs accompanying the article by Murray Gell-Mann, and E. P. Rosenbaum.
11. Nakamura explains the meaning of his term 'real abstraction' in his unpublished video interview with Bryce Kanbara in 1993.
12. Nakamura quoted in interview with Kanbara.
13. Kirkham, Pat. Charles and Ray Eames; Designers of the Twentieth Century. Cambridge, Massachusetts: The MIT Press, 1995. pp. 315-360.

Demetrios, Lucia Eames and Mills, Shelley, with Introduction narrated by Gregory Peck. The Films of Charles and Ray Eames. Santa Monica, California: Pyramid Film and Video. 1989. 2 video volumes.

The first volume of this collection of films by Charles and Ray Eames includes "Powers of Ten," made in 1977 as well as the original version, "A Rough Sketch for a Proposed Film Dealing with the Powers of Ten and the Relative Size of Things in the Universe," produced in 1968.

Charles and Ray] Eames's educational films relate to mathematics, science and technology. They attempted to explain concepts of mathematics to non-specialists, beginning in 1961 with films to accompany the Mathematica exhibition. Their next project, "A Rough Sketch for a Proposed Film Dealing with the Powers of Ten and the Relative Size of Things in the Universe," was "originally commissioned to be shown at a conference of 1000 American physicists [The film] presented 'a linear view of our universe from the human scale to the sea of galaxies, then directly down to the nucleus of a carbon atom. With an animated image, a narration and a dashboard, [the film] gives a clue to the relative size of things and what it means to add another zero to any number.'" p. 350.

14. Advertisement for Boeing Aircraft Company, in Scientific American. June 1957. Vol. 186. No. 1. p. 149.
15. Advertisement for Boeing in Scientific American. Vol. 186. No. 1. June 1957. p. 149.
16. Advertisement for Litton Industries in Scientific American. Vol. 186. No. 1. June 1957. p. 35.
17. Advertisement for Sandia Corporation in Scientific American. Vol. 186. No. 1. June 1957. p. 117.
18. Advertisement for Systems Laboratories Corporation in Scientific American. Vol. 186. No. 1. June 1957. p. 183.
19. Woods, Kay. Nakamura. exhibition catalogue. Oshawa, Ontario: Robert McLaughlin Gallery, 1974. n. p.
20. Nakamura, quoted in Woods. n. p.

21. Nakamura, quoted in Woods. n. p.
22. Nakamura, quoted in Woods. n. p.
23. In response to a questionnaire sent to him by a Leonard Schlichting of Winnipeg, Manitoba in 1978, Nakamura stated that no member of Painters Eleven had any direct influence on his work; for complete questionnaire see Appendix Two.

In conversation with me and others, Nakamura adamantly denied any connection between his work and graphic art. He also denied any lingering influence from his instructors at CTS. We discussed this possible association before I began to research the influence of the Bauhaus on CTS. I do not know if Nakamura would have denied this possible influence on his work and thinking. Artists often reject art historians' search for influences in their work. Nakamura might have been an extreme example of an artist denying influences on his work. While I disagree with the notion of artistic isolation from influence, I note Nakamura's instance of such resistance.

24. Nakamura, quoted in Woods. n. p.
25. Nakamura, quoted in Woods. n. p.
26. Nakamura, quoted in Woods. n. p.
27. The program of this painting might be close to discussions of the fourth-dimension in the book Flatland. A.C. Abbott describes perception in a situation in which it is possible to move from the third dimension to the fourth-dimension. There is no physical evidence that this is actually possible, and there is no empirical evidence that a fourth-dimension exists. Nakamura was concerned with the present world, and it is probable that he would have considered theories of the fourth-dimension - except as a mathematical construction - to be indicative of the esoteric pseudo-sciences practised within Theosophy.
28. Nakamura, quoted in, Woods. n. p.
29. Henderson, Linda Dalrymple. The Fourth Dimension and Non-Euclidean Geometry in Modern Art. Princeton, New Jersey: Princeton University Press, 1983.
30. Davis, Ann. The Logic of Ecstasy; Canadian Mystical Painting, 1920-1940. Toronto, Ontario: University of Toronto Press, 1992.
31. In his notions of art, science and knowledge evolving toward ever greater material and intellectual order, Nakamura's theory is close to that of the gestalt psychologist, Rudolf Arnheim. It is possible that Nakamura was aware of Arnheim's writing about the relationship between art and natural order, of which, in both nature and the human-built world, the grid is a prime example. In his book Entropy and Art: An Essay on Disorder and Order, published in 1971, Arnheim writes, in a section titled "A Need for Complexity":

... the activities of nature and man cannot be said to be basically at odds with each other. Man's striving for order, of which art is but one manifestation, derives from a similar universal tendency throughout the organic world; it is also paralleled by , and perhaps derived from, the striving towards the state of simplest structure in physical systems.... p. 74.

32. Nakamura, quoted in Cameron, Dorothy. Sculpture '67. n. p.
33. Nakamura, quoted in Cameron. n. p.
34. Nakamura, quoted in Cameron. n. p.
35. Nakamura, quoted in Cameron. n. p.
36. McLuhan, Marshall. Understanding Media: The Extension of Man. New York: Mentor, 1964. p. ix-xi; and Grosswiller, Paul. Method is the Message: Rethinking McLuhan through Critical Thinking. Montréal: Black Rose Books. 1998. p. 90. In discussing the relationship between art and society, McLuhan referred to artists as an

“early warning system” for culture. In anticipating social and technological changes by several decades, artists are “the antennae of the race. The artists enables [others] to prepare to cope with these changes The artist understands the impact of technology decades before the impact, and then builds models - “Noah’s arks” - for adjusting to the impact.”

37. Nakamura, quoted in Cameron. n. p.
38. Nakamura, quoted in Cameron. n. p.
39. Nakamura, quoted in Cameron. n. p.
40. Nakamura, quoted in Cameron. n. p.
41. Nakamura, quoted in, Kanbara, Bryce. Shikata Ga Nai. Exhibition Catalogue. Hamilton, Ontario. Hamilton Artists Inc. 1967. n. p.
42. Kanbara. n. p.

CHAPTER THREE:

1. “Longing” (“Sehnsucht”), poem by J. F. Eichendorff, published in J. F. Eichendorff’s Sämtliche Poetische Werks, 3rd ed., Leipzig, c. 1883, p. 61. Quoted and translated in Eitner, Lorenz. “The Open Window and the Storm-Tossed Boat: An Essay in the Iconography of Romanticism.” Art Bulletin 37 (1955). p. 286.
2. Descargues, Pierre. Perspective. New York: Abrams. 1977. p. 2.
3. Albers, Josef. The Interaction of Colour. New Haven: Yale University Press, 1963. This colour physics manual was purchased for the library of the Art Department at CTS within twelve months of its publication. This large folio book of handmade silkscreen colour theory charts and diagrams became an important component of the Colour Theory course taught by Dawsen Kennedy throughout the 1960s.
4. Eitner. p. 283.

5. Eitner. p. 283.
6. Eitner. p. 283.
7. Eitner. p. 283.
8. Eitner. p. 283.
9. Eitner. p. 284.
10. Eitner. p. 284.
11. Eitner. p. 284.
12. Crone, Rainer and Koerner, Joseph Leo. Paul Klee; Legend of the Sign. New York: Columbia University Press. 1991. p. 74.
13. Eitner. p. 285.
14. Vaughan, William. Caspar David Friedrich: Line and Transparency. Paris: Maurice Guiland. 1984. p. 94.
15. Schmied, Wieland. Caspar David Friedrich. New York: Abrams, 1995. p. 100
16. Schmied. p. 100.
17. Schmied. p. 100.
18. Runge, quoted in Schmied. p. 100.
19. Schmied. p. 100.
20. Schmied. p. 100.
21. Novalis, quoted in Eitner. p. 285.

On page 286 Eitner also quotes Novalis regarding the meaning of the juxtaposition of the very near and very far. "Everything at a distance turns into poetry; distant mountains, distant people, distant events; all become romantic." from Novalis Schriften (edited by J. Minor), Jena, 1907, 11, p. 301.

22. Eitner. p. 285.
23. Schmied. p. 52.
24. Eitner. p. 286.
25. Eitner. p. 286.
26. Eitner. p. 286.
27. Eitner. p. 286.

28. Eitner. p. 286.
29. Eitner. p. 286.
30. Eitner. p. 286
31. Druick, Douglas W. Odilon Redon: The Prince of Dreams, 1840-1916. New York: Harry N. Abrams, and Chicago: The Art Institute of Chicago, 1994. p. 154.
32. Druick. p. 154.
33. Druick. p. 145.
34. Druick. p. 214.
35. Druick. p. 214.
36. Buckberrough. Sherry A. Robert Delaunay: The Discovery of Simultaneity. Ann Arbor, Michigan: UMI Research Press, 1982. p. 66.
37. Buckberrough. p. 68.
38. Buckberrough. p. 68.
39. Buckberrough. p. 68.
40. Buckberrough. p. 71.
41. Delaunay, quoted in Buckberrough. p. 63.
42. Buckberrough. p. 63.
43. Buckberrough. p. 71.
44. Buckberrough. pp. 72-73.
45. Crone and Koerner. p. 74.
46. Crone and Koerner. p. 74.
47. Crone and Koerner. p. 74.
48. Crone and Koerner. p. 74.
49. Rosenblum, Robert. Modern Painting and the Northern Romantic Tradition: Friedrich to Rothko. New York: Harper and Row, 1975. p. 10.
50. Nasgaard, Roald. The Mystic North: Symbolist Landscape Painting in Northern Europe and North America 1890-1940. Toronto: University of Toronto Press, 1984. p. 197.
51. Tippet, Maria. Stormy Weather: F.H. Varley - A Biography. Toronto: McClelland & Stewart, 1998. p. 179.

52. Varley, Christopher. F.H. Varley. Ottawa: National Gallery of Canada, 1979. p. 17.
53. Varley, Christopher. p. 17.
54. Varley, Christopher. p. 17.
55. *Hamilton* has never been reproduced, and I saw it only once, at Nakamura's exhibition Tashme² at the Gendai Gallery, Don Mills in 2001. Therefore, for my analysis of the drawing, I am depending on memory.
56. Anonymous. "Toronto Artists' Work Included in Exhibition." Kingston Whig-Standard. October 18, 1960.

In this article, Nakamura is quoted as calling *Prairie Towers*, a typical painting from his 'block structure' series, a

transformed landscape scene of abstract structures based on today's external form of orderliness and a concept of function and purpose to house the complex mechanisms brought about by man's expanding observation and application of various sciences.

57. Kogawa, Joy. Obasan. Toronto: Penguin, 1981.
58. Eitner. p. 284.
59. Dault, Gary Michael. "Kazuo Nakamura's Lucky Numbers." Globe and Mail [Toronto] 1998. Dault writes:

His untiring research into number and structure has gradually taken over his life. "I hope that someday these explorations will be united - though maybe not by me - into a universal theory of number structure." This is his art - the relentless passion for numerical exploration, the hundreds of sheets of paper on which his researches are ordered. What about painting? "Painting?" muses Nakamura. "Yes, I hope to someday go back to painting."

60. Cutts. p. 61-75.
61. Cutts. p. 61-75.
62. Cutts. p. 61-75.
63. Cutts. p. 61-75.
64. Weisstein, Eric W. CRC Concise Encyclopedia of Mathematics. New York: Chapman Hall. 1999. p. 1127-1128.

Weisstein defines a Magic Square as consisting of the distinct positive integers $1, 2, \dots, n^2$ such that the sum of the n numbers in any horizontal, vertical, or *main* diagonal line is always the same Magic Constant.

65. J. F. Eichendorff, quoted in Eitner. p. 286.

CONCLUSION:

1. Le Corbusier. Modular One. p. 77, quoted in Müller-Brockman. Grid Systems in Graphic Art. New York: Hastings, 1981. p. 158.
2. Müller-Brockman. p. 158.
3. This estimation of Kazuo Nakamura's knowledge of mathematics was provided by Dr. Brett Stevens, Professor of Mathematics, Carleton University, August 2003.

ILL. 1
Kazuo Nakamura
Fortress, 1956
oil on canvas
111.8 x 152.3 cm. (44 x 60 in.)

ILL. 2
Kazuo Nakamura
Lake, B.C., 1964
oil on canvas
121.6 x 93.9 cm. (40 7/8 x 36 3/8 in.)

ILL. 3
Kazuo Nakamura
Twelve Mile Lake, 1944
graphite pencil, pen and ink and watercolour on paper
21.6 x 29.2 cm. (8 1/2 x 11 1/2 in.)

ILL. 4
Kazuo Nakamura
Number Structure 9, 1984
oil on canvas
81.3 x 101.6 cm. (32 x 40 in.)

ILL. 5
Piet Mondrian (1872-1944)
Composition in Black and Grey, 1919
oil on canvas
60.3 x 59.7 cm. (23 1/4 x 23 1/2 in.)

ILL. 6
Jacques-Louis David (1748-1825)
The Death of Socrates, 1787
oil on canvas
129.9 x 195.9 cm. (51 1/8 x 77 1/8 in.)

ILL. 7
Gerrit (Thomas) Rietveld (1888-1964)
Red and Blue Chair, 1917
paint on beech five-ply wood
86.6 x 65.9 x 82 cm, (34 1/8 x 25 1/2 x 32 1/4 in.)

ILL. 8

Caspar David Friedrich (1774-1840)

Window and Garden, 1806-1811

graphite pencil and sepia ink on paper

39.8 x 30.5 cm. (15 1/4 x 12 in.)

(In Rewald's article the drawing is titled *Window with View of a Park*, dated 1836-37)

ILL. 9
Kazuo Nakamura
Bridges, 1958
pen and ink on paper
71.2 x 86.2 cm. (28 x 33 7/8 in.)

ILL. 10
Vredeman de Vries
Perspective View of an interior
no medium or dimensions given

ILL. 11
Vrederman de Vries
Perspective View of an Italianate Palace Courtyard
no medium or dimensions given

ILL. 12

Leon Battista Alberti (1404-1472)

Diagram of Alberti's method for the perspective projection of a circle on the floor plane. The circle is drawn on a square grid. The grid is drawn in perspective. Equivalent points on the projected grid permit the construction of the circle in projection.
no medium or dimensions given

ILL. 13
Kazuo Nakamura
Number Structure and Fractals, 1983
oil on canvas
71.1 x 101.6 cm. (28 x 40 in.)

ILL. 14
Kazuo Nakamura
Strawberry Farm, c.1941
graphite pencil and watercolour on paper
21.6 x 29.2 cm. (8 1/2 x 11 1/2 in.)

ILL. 15
Kazuo Nakamura
Blue and Green, 1953
oil on canvas
25.6 x 38 cm. (10 1/16 x 15 in.)

ILL. 16
Kazuo Nakamura
Suspension, 1956
oil on canvas
120.1 x 91.3 cm. (47 1/4 x 36 5/8 in.)

ILL. 17
Kazuo Nakamura
Block Structure, 1956
oil on canvas
123.2 x 92.8 cm. (48 1/2 x 36 1/2 in.)

ILL. 18
Kazuo Nakamura
Structures, 1956
oil on canvas
123.8 x 92.7 cm. (48 3/4 x 36 3/8 in.)

ILL. 19
Kazuo Nakamura
Spring, 1957
oil on canvas
73.7 x 78.7 cm. (29 x 31 in.)

ILL. 20
Kazuo Nakamura
Cycle, 1957
oil on canvas
71.1 x 81.6 cm. (28 x 43 in.)

ILL. 21
Kazuo Nakamura
Topological Series I, 1968
oil on canvas

ILL. 22
Kazuo Nakamura
Polygonal Forms, 1980
graphite pencil on wove paper
38.1 x 53.3 cm. (15 x 21 in.)

1 4 10 20 35 56 84 120 165
 2 6 15 30 45 75 110 150 210
 3 9 21 36 54 81 117 162 225
 4 12 28 48 72 108 156 216 300
 5 15 36 60 90 135 195 270 375
 6 18 42 72 108 162 234 324 450
 7 21 49 84 126 189 273 385 525
 8 24 56 96 144 216 312 432 600
 9 27 63 108 162 243 360 504 675
 10 30 70 120 180 270 405 560 780
 11 33 78 132 198 297 441 615 855
 12 36 84 144 216 324 486 672 945

1 4 10 20 35 56 84 120 165
 2 6 15 30 45 75 110 150 210
 3 9 21 36 54 81 117 162 225
 4 12 28 48 72 108 156 216 300
 5 15 36 60 90 135 195 270 375
 6 18 42 72 108 162 234 324 450
 7 21 49 84 126 189 273 385 525
 8 24 56 96 144 216 312 432 600
 9 27 63 108 162 243 360 504 675
 10 30 70 120 180 270 405 560 780
 11 33 78 132 198 297 441 615 855
 12 36 84 144 216 324 486 672 945

1 5 15 35 70 105 150 210 285 385
 2 6 16 36 72 108 162 234 324 450
 3 7 19 42 84 126 189 273 385 525
 4 8 22 48 96 144 216 312 432 600
 5 9 25 54 108 162 243 360 504 675
 6 10 28 60 120 180 270 405 560 780
 7 11 31 66 132 198 297 441 615 855
 8 12 34 72 144 216 324 486 672 945
 9 13 37 78 156 234 360 522 729 1035
 10 14 40 84 168 252 405 594 840 1260
 11 15 43 90 180 270 450 660 990 1575
 12 16 46 96 192 288 495 720 1125 1800

1 5 15 35 70 105 150 210 285 385
 2 6 16 36 72 108 162 234 324 450
 3 7 19 42 84 126 189 273 385 525
 4 8 22 48 96 144 216 312 432 600
 5 9 25 54 108 162 243 360 504 675
 6 10 28 60 120 180 270 405 560 780
 7 11 31 66 132 198 297 441 615 855
 8 12 34 72 144 216 324 486 672 945
 9 13 37 78 156 234 360 522 729 1035
 10 14 40 84 168 252 405 594 840 1260
 11 15 43 90 180 270 450 660 990 1575
 12 16 46 96 192 288 495 720 1125 1800

1 5 15 35 70 105 150 210 285 385
 2 6 16 36 72 108 162 234 324 450
 3 7 19 42 84 126 189 273 385 525
 4 8 22 48 96 144 216 312 432 600
 5 9 25 54 108 162 243 360 504 675
 6 10 28 60 120 180 270 405 560 780
 7 11 31 66 132 198 297 441 615 855
 8 12 34 72 144 216 324 486 672 945
 9 13 37 78 156 234 360 522 729 1035
 10 14 40 84 168 252 405 594 840 1260
 11 15 43 90 180 270 450 660 990 1575
 12 16 46 96 192 288 495 720 1125 1800

1 6 21 56 105 168 243 336 456 612 816
 2 7 24 63 112 175 252 357 484 661 908
 3 8 27 68 120 184 264 376 512 704 976
 4 9 30 72 126 192 276 400 552 768 1080
 5 10 33 77 132 200 288 420 584 816 1155
 6 11 36 81 138 210 300 432 600 840 1215
 7 12 39 86 144 216 312 444 624 876 1260
 8 13 42 91 150 222 324 456 648 900 1305
 9 14 45 96 156 228 336 468 672 936 1350
 10 15 48 101 162 234 348 480 704 972 1405
 11 16 51 106 168 240 360 492 720 1008 1455
 12 17 54 111 174 246 372 504 732 1044 1500

1 7 28 84 196 392 588 884 1276 1764 2401 3249
 2 8 32 96 224 448 672 1008 1472 2144 3024 4176
 3 9 36 108 252 504 756 1134 1656 2424 3456 4752
 4 10 40 120 288 576 864 1296 1920 2816 4096 5616
 5 11 44 132 324 648 972 1458 2184 3276 4752 6534
 6 12 48 144 360 720 1080 1632 2448 3696 5424 7512
 7 13 52 156 396 792 1188 1776 2688 4032 5904 8136
 8 14 56 168 432 864 1296 1920 2816 4096 5616 7744
 9 15 60 180 468 936 1404 2124 3216 4752 6534 9000
 10 16 64 192 504 1008 1512 2256 3360 5040 7200 9960
 11 17 68 204 540 1080 1620 2400 3600 5280 7560 10440
 12 18 72 216 576 1152 1728 2592 3888 5760 8352 11664

1 7 28 84 196 392 588 884 1276 1764 2401 3249
 2 8 32 96 224 448 672 1008 1472 2144 3024 4176
 3 9 36 108 252 504 756 1134 1656 2424 3456 4752
 4 10 40 120 288 576 864 1296 1920 2816 4096 5616
 5 11 44 132 324 648 972 1458 2184 3276 4752 6534
 6 12 48 144 360 720 1080 1632 2448 3696 5424 7512
 7 13 52 156 396 792 1188 1776 2688 4032 5904 8136
 8 14 56 168 432 864 1296 1920 2816 4096 5616 7744
 9 15 60 180 468 936 1404 2124 3216 4752 6534 9000
 10 16 64 192 504 1008 1512 2256 3360 5040 7200 9960
 11 17 68 204 540 1080 1620 2400 3600 5280 7560 10440
 12 18 72 216 576 1152 1728 2592 3888 5760 8352 11664

1 8 36 144 360 720 1080 1632 2448 3696 5424 7512
 2 9 40 160 400 800 1200 1800 2700 4050 5940 8316
 3 10 44 176 440 880 1320 1980 2970 4455 6534 9000
 4 11 48 192 480 960 1440 2160 3240 4860 7056 9960
 5 12 52 208 520 1040 1560 2340 3510 5268 7584 10656
 6 13 56 224 560 1120 1680 2520 3780 5616 8136 11376
 7 14 60 240 600 1200 1800 2700 4050 5940 8316 11664
 8 15 64 256 640 1280 1920 2880 4320 6336 9120 12672
 9 16 68 272 680 1360 2040 3060 4590 6816 9888 13776
 10 17 72 288 720 1440 2160 3240 4860 7200 10440 14544
 11 18 76 304 760 1520 2280 3420 5130 7584 11088 15456
 12 19 80 320 800 1600 2400 3600 5400 7920 11664 16416

1 8 36 144 360 720 1080 1632 2448 3696 5424 7512
 2 9 40 160 400 800 1200 1800 2700 4050 5940 8316
 3 10 44 176 440 880 1320 1980 2970 4455 6534 9000
 4 11 48 192 480 960 1440 2160 3240 4860 7056 9960
 5 12 52 208 520 1040 1560 2340 3510 5268 7584 10656
 6 13 56 224 560 1120 1680 2520 3780 5616 8136 11376
 7 14 60 240 600 1200 1800 2700 4050 5940 8316 11664
 8 15 64 256 640 1280 1920 2880 4320 6336 9120 12672
 9 16 68 272 680 1360 2040 3060 4590 6816 9888 13776
 10 17 72 288 720 1440 2160 3240 4860 7200 10440 14544
 11 18 76 304 760 1520 2280 3420 5130 7584 11088 15456
 12 19 80 320 800 1600 2400 3600 5400 7920 11664 16416

1 8 36 144 360 720 1080 1632 2448 3696 5424 7512
 2 9 40 160 400 800 1200 1800 2700 4050 5940 8316
 3 10 44 176 440 880 1320 1980 2970 4455 6534 9000
 4 11 48 192 480 960 1440 2160 3240 4860 7056 9960
 5 12 52 208 520 1040 1560 2340 3510 5268 7584 10656
 6 13 56 224 560 1120 1680 2520 3780 5616 8136 11376
 7 14 60 240 600 1200 1800 2700 4050 5940 8316 11664
 8 15 64 256 640 1280 1920 2880 4320 6336 9120 12672
 9 16 68 272 680 1360 2040 3060 4590 6816 9888 13776
 10 17 72 288 720 1440 2160 3240 4860 7200 10440 14544
 11 18 76 304 760 1520 2280 3420 5130 7584 11088 15456
 12 19 80 320 800 1600 2400 3600 5400 7920 11664 16416

1 9 45 180 450 900 1350 2025 3038 4557 6835 9953 13930
 2 10 50 200 500 1000 1500 2250 3375 5063 7594 11391
 3 11 55 220 550 1100 1650 2475 3713 5569 8354 12531
 4 12 60 240 600 1200 1800 2700 4050 6075 9113 13671
 5 13 65 260 650 1300 1950 2925 4388 6582 9874 14711
 6 14 70 280 700 1400 2100 3150 4725 7088 10635 15851
 7 15 75 300 750 1500 2250 3375 5063 7594 11391 17001
 8 16 80 320 800 1600 2400 3600 5400 8100 12160 18161
 9 17 85 340 850 1700 2550 3825 5738 8605 12921 19321
 10 18 90 360 900 1800 2700 4050 6075 9113 13671 20481
 11 19 95 380 950 1900 2850 4275 6413 9569 14431 21641
 12 20 100 400 1000 2000 3000 4500 6750 10125 15191 22801

ILL. 23
 Kazuo Nakamura
 Untitled Drawing 2, c. 1990
 graphite pencil on graph paper
 21.6 x 27.9 cm. (8 1/2 x 11 in.)

ILL. 24
Jock Macdonald (1897-1960)
Untitled Modality, unknown date, possibly c. 1938
unknown medium
unknown dimensions

ILL. 25
Kazuo Nakamura
First Frost, Vancouver, 1941
graphite pencil and watercolour on paper
21.6 x 29.2 cm. (8 1/2 x 11 1/2 in.)

ILL. 26a
Photo of Tashme Internment Camp, Hope, British Columbia, 1942-44

ILL. 26b
Photo of Tashme Internment Camp, Hope, British Columbia, 1942-44

ILL. 26c
Photo of Tashme Internment Camp, Hope, British Columbia, 1942-44

ILL. 27
Kazuo Nakamura
July 1944, 1944
graphite pencil and watercolour on paper
16.9 x 27.3 cm. (6 5/8 x 10 3/4 in.)

ILL. 28
Kazuo Nakamura
Tashme at Dusk, July/August, 1944
oil on board
34.6 x 53 cm. (13 5/8 x 20 7/8 in.) (image)

ILL. 29
Kazuo Nakamura
March 18/44, March 18, 1944
gouache on card
27.9 x 35.6 cm. (11 x 14 in.) (support)

ILL. 30
Kazuo Nakamura
Forest, 1953
oil on canvas
48 x 60.9 cm. (19 x 24 in.)

ILL. 31
Paul Cézanne (1839-1906)
Chestnut Trees at Jas de Bouffan, 1885-1887
oil on canvas
70.5 x 89.7 cm. (27 3/4 x 35 3/8 in.)

ILL. 32
Grant Wood (1891-1942)
Fall Plowing, 1931
oil on canvas
76 x 103.5 cm. (30 x 40 3/4 in.)

ILL. 33
Johannes Itten (1888-1967)
Colour Sphere from "Utopia", (from Itten's Bauhaus course on colour physics), 1921
unknown medium
unknown dimensions

ILL. 34
Itten, Johannes
Horizontal, Vertical, Diagonal, 1955
oil on canvas
50 x 50 cm. (19 5/8 X 19 5/8 in.)

ILL. 35
Peter Howarth (1889-1986)
Farmlands, no date
watercolour on paper
57 x 40.1 cm. (22 1/2 x 15 3/4 in.)

ILL. 36
Virginia Luz (1911-)
Sun on the Harbour. Barachois de Mal Baie, 1957
watercolour on paper
50.7 x 60.5 cm. (20 x 23 7/8 in.)

ILL. 37
Paul Klee (1897-1940)
Autumn Place, 1921
watercolour on paper
33 x 22.5 cm. (13 x 8 7/8 in.)

ILL. 38
Kazuo Nakamura
Buildings, 1954
pen and ink on paper

ILL. 39
Peter Howarth
Lake Fringe, Northern Ontario, no date
watercolour on paper
48.8 x 86.3 cm. (19 1/4 x 34 in.)

ILL. 40
Doris McCarthy (1910-)
Loon Lake, Haliburton, 1952
watercolour on paper
44.2 x 62.7 cm. (17 3/8 x 24 5/8 in.)

ILL. 41
Kazuo Nakamura
Landscape, 1952
pen and ink and watercolour on paper

ILL. 42
Kazuo Nakamura
Molecular Drop, 1955
watercolour on card

36.5 x 51.4 cm. (14 3/8 x 20 1/4 in.) (support)

ILL. 43
Jackson Pollock (1912-1956)
Autumn Rhythm: Number 30, 1950, 1950
oil on canvas
266.7 x 525.3 cm. (105 x 167 in.)

ILL. 44
Jock Macdonald
From a Riviera Window, 1955
watercolour on paper
42.7 x 32.5 cm. (16 3/4 x 12 13/16 in.)

ILL. 45
Jock Macdonald
White Bark, 1954
oil on canvas
102.9 x 81.3 cm. (40 1/2 x 32 in.)

ILL. 46
Jock Macdonald
Twilight Forms, 1954
oil on canvas
80 x 100 cm. (31 1/2 x 39 3/8 in.)

ILL. 47
Jock Macdonald
The White Bird, 1952
watercolour on paper
37.3 x 48 cm. (14 5/8 x 18 7/8 in.)

ILL. 48
Jock Macdonald
Jardin (Riviera Garden), 1955
oil on canvas
80 x 101 cm. (31 1/2 x 39 3/4 in.)

ILL. 49
Kazuo Nakamura
Inner View, 1954
oil on canvas
62.5 x 80.3 cm. (24 5/8 x 31 1/2 in.)

ILL. 50
Photograph of Kazuo Nakamura, Toronto. c. June, 1957

ILL. 51

Illustration for the article "Elementary Particles; An Account of the Abstract Theoretical Ideas which Physicists Use to Help Them Understand the Material World," Gell-Mann, Murray and E. P. Rosenbaum. Scientific American. July 1957. Vol. 197 No. 1. p. 73.

ILL. 52
Kazuo Nakamura
Core Structure, 1961
oil on canvas
81.9 x 106.8 cm. (32 1/4 x 42 in.)

ILL. 53
Kazuo Nakamura
Number Structure, 1980
graphite pencil on paper
38.1 x 53.3 cm. (15 x 21 in.)

ILL. 54
 Illustration for advertisement for Du Pont. (*Photograph* courtesy Industrial X-ray Corporation, New Hyde Park, N.Y., and *Drawing*: Douglas Aircraft Company, Santa Monica, California. Illustrations for Du Pont advertisement). Scientific American. June 1957. p. 17.

ILL. 55
Kazuo Nakamura
Spatial Concept No. 4, 1970
oil on canvas
94 x 121.9 cm. (37 x 48 in.)

ILL. 56
Simpson-Middleman
Cygnus
Illustration for an advertisement for The Boeing Company
Scientific American. June, 1957. p. 149

ILL. 57
Kazuo Nakamura
Two Horizons, 1958-62
oil on canvas
103.5 x 123.2 (40 3/4 x 48 1/2 in.)

ILL. 58
Kazuo Nakamura
Time and Space 2, 1973-74
oil on canvas
88.9 x 127 cm. (35 x 50 in.)

ILL. 59
Kazuo Nakamura
Spatial Concept 2, 1969-70
oil on canvas
94 x 121.9 cm. (37 x 48 in.)

ILL. 60 (left)
 Kazuo Nakamura
Structure, 1967
 concrete
 77.4 x 19.1 x 19.1 cm. (30 1/2 x 7 1/2 x 7 1/2 in.)

ILL. 60 (middle)
Structure 66, 1967
 concrete
 76 x 22.9 x 22.9 cm. (30 1/2 x 9 x 9 1/2 in.)

ILL. 60 (right)
Structure 66B, 1967
 concrete
 77 x 22.9 x 22.9 cm. (30 1/2 x 9 x 9 1/2 in.)

ILL. 61
Kazuo Nakamura
Structure, 1962
oil on canvas, 43.6 x 57 cm. (17 1/8 x 22 1/2 in.)

ILL. 62
Martin Drölling (1752-1817)
Kitchen Interior, 1815
oil on canvas

ILL. 63
Gabriël Metsu (1629-1667)
Gentleman Writing a Letter, 1662-1665
oil on canvas
52.8 x 40.2 cm (20 3/4 x 15 7/8 in.)

ILL. 64
Caspar David Friedrich
View from the Artist's Studio (left-hand window), 1805-06
graphite pencil and sepia ink on paper
31.2 x 23.7 cm. (12 1/4 x 9 1/8 in.)

ILL. 65
Caspar David Friedrich
View from the Artist's Studio (right-hand window), 1805-06
graphite pencil and sepia ink on paper
31.2 x 23.7 cm. (12 1/4 x 9 1/8 in.)

ILL. 66
Caspar David Friedrich
Woman at a Window, 1818
oil on canvas
44 X 37 cm. (17 1/8 X 14 5/8 in.)

ILL. 67
M(oritz) (Ludwig) von Schwind (1804-1871)
Morning, c. 1860
oil on canvas
34.8 x 41.9 cm. (13 1/8 x 16 1/2 in.)

ILL. 68
Georg Friedrich Kersting (1785-1847)
Friedrich's Studio, 1811
oil on canvas
108 x 70 cm. (42 1/2 x 66 7/8 in.)

ILL. 69
Carl Gustav Carus (1798-1869)
Studio Window in the Moonlight, c. 1820
oil on canvas
28.5 x 21.5 cm. (11 1/4 x 8 1/2 in.)

ILL. 70
Adolfe Menzel (1815-1905)
Balcony Room, 1845
oil on canvas

ILL. 71
Odilon Redon (1840-1916)
Behind the Grating (or, *The Secret*), 1880
charcoal on paper

ILL. 72
Robert Delaunay (1885-1941)
The Window on the City No. 3, 1911-1912
oil on canvas, 113.7 x 130.8 cm. (44 3/4 x 51 1/2 in.)

ILL. 73
Robert Delaunay
Window on the City, 1914
oil on canvas, 24.8 x 20 cm. (9 1/4 x 7 7/8 in.)

ILL. 74
Paul Klee
Composition with Windows (Composition with a B'), 1919
oil over pen and India ink, varnished, on cardboard
50.4 x 38.3 cm. (20 x 15 in.)

ILL. 75
Frederick Horseman Varley (1881-1969)
The Open Window, c. 1933
oil on canvas
102.9 x 87 cm. (40 1/2 x 34 1/4 in.)

ILL. 76
Frederick Horseman Varley
Mirror of Thought, c. 1937
oil on canvas
50.7 x 60.9 cm. (20 x 24 in.)

ILL. 77
Kazuo Nakamura
Hillside, 1956
oil on Masonite
61 x 78.7 cm. (24 x 31 in.)

ILL. 78
M(auritis) C(ornelis) Escher (1898-1972)
Square Limit, 1964
woodcut on paper
no dimensions given

ILL. 79
M. C. Escher
untitled drawing for *Square Limit*, c. 1964
graphite pencil on graph paper
no dimensions given

ILL. 80
M. C. Escher
untitled drawing for *Square Limit*, c. 1964
graphite pencil and watercolour on graph paper
no dimensions given

ILL. 81
Kazuo Nakamura
Untitled Drawing 1, no date (possibly c. 1983)
graphite pencil on paper
dimensions not available

ILL. 82
 Kazuo Nakamura
M-Square, Evolving Pattern, 1986-96
 graphite pencil on paper
 38.1 x 53.3 cm. (15 x 21 in.)

ILL. 83

Froth of irregular soap bubbles showing a cellular structure analogous to that of metals. These bubbles were blown between parallel panes of glass and are essentially two dimensional.

ILL. 84
Pattern of craze lines on a glazed ceramic surface.

ILL. 85
Pattern of ridges formed by a crack moving in a crystal of a brittle compound of copper and magnesium, Cu_2Mg . The crack preceded from the top to the bottom of the figure.

ILL. 86
 unknown artist
 Untitled (*King Tutankhamun Seated on a Throne*), c.1460 BC.
 (line drawing overlaid with a grid for transfer to a larger scale)
 possibly graphite on gesso-coated board
 36.4 x 30.2 cm. (14 1/2 x 11 7/8 in.)

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SOURCES OF ILLUSTRATIONS

FRONTISPIECE:

- ii Kazuo Nakamura (1926-2002)
Untitled (*Drawing*) Summer, 2001
blue ballpoint pen on paper, with additional markings in graphite pencil, by Roger Herz-Fischler, Professor of Mathematics, Carleton University, 21.6 x 27.9 cm. (8 1/2 x 11 in.)
Collection: Brian Grison
Reproduced from original drawing

INTRODUCTION:

- ILL. 1. Kazuo Nakamura
Fortress, 1956
oil on canvas, 111.8 x 152.3 cm. (44 x 60 in.)
Collection: Robert McLaughlin Gallery, Oshawa, Ontario
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature.
Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 96.
- ILL. 2. Kazuo Nakamura
Lake, B.C., 1964
oil on canvas, 121.6 x 93.9 cm. (40 7/8 x 36 3/8 in.)
Collection: Robert McLaughlin Gallery
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature.
Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 106.
- ILL. 3. Kazuo Nakamura
Twelve Mile Lake, 1944
graphite pencil and watercolour on paper, 21.6 x 29.2 cm. (8 1/2 x 11 1/2 in.)
Collection: the artist
Reproduced from Kanbara, Bryce, ed. Tashme²: Early Works of Kazuo Nakamura. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre. 2001. outside of back cover.
- ILL. 4. Kazuo Nakamura
Number Structure 9, 1984
oil on canvas, 81.3 x 101.6 cm. (32 x 40 in.)
Collection: the artist
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature.
Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 110.

- ILL. 5. Piet Mondrian (1872-1944)
Composition in Black and Grey, 1919
oil on canvas, 60.3 x 59.7 cm. (23 4/4 x 23 1/2 in.)
Collection: Philadelphia Museum of Art
Reproduced from Fauchereau, Serge. Mondrian and the New-Plastic Utopia. New York: Rizzoli, 1994. p. 85.
- ILL. 6. Jacques-Louis David (1748-1825)
The Death Of Socrates, 1787
oil on canvas, 129.9 x 195.9 cm. (51 1/8 x 77 1/8 in.)
Collection: Metropolitan Museum of New York City
Reproduced from Nanteuil, Luc de. David. New York: Abrams, 1985. Colouplate 12. p. 96.
- ILL. 7. Gerrit (Thomas) Rietveld (1818-1964)
The Red and Blue Chair (c.1925 version), 1925
paint on five-plywood, beach, 86.6 x 65.9 x 82 cm, (34 1/8 x 25 1/2 x 32 1/4 in.)
Collection: Centraal Museum Utrecht
Reproduced from Küper, Marijke and Zijl, Idav. Gerrit Rietveld: The Complete Works. Utrecht: Centraal Museum Utrecht, 1992. p. 74.
- ILL. 8. Caspar David Friedrich (1774-1840)
Window and Garden. 1806-1811
graphite pencil and sepia ink on paper, 39.8 x 30.5 cm. (15 1/4 x 12 in.)
Collection: The Hermitage Museum.
Reproduced from Hofmann, Werner. Caspar David Friedrich. London and New York: Thames and Hudson, 2000. p. 114.
- ILL. 9. Kazuo Nakamura
Bridges, 1958
pen and ink on paper, 71.2 x 86.2 cm. (28 x 33 7/8 in.)
Collection: Robert McLaughlin Gallery
Reproduced from Bell, Andrew. "The Art of Kazuo Nakamura." Canadian Art. 16.3 (1959) p. 170.
- ILL. 10. Vredeman de Vries
Perspective Projection of an Interior,
Illustration from Vredeman de Vries's Perspective
Reproduced from Kemp, Martin. The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat. New Haven and London: Yale University Press, 1990. p. 110.
- ILL. 11. Vredeman de Vries
Perspective View of an Italianate Palace Courtyard with Figures,
from Vredeman de Vries's Perspective.
Reproduced from Kemp, Martin. The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat. New Haven and London: Yale University Press, 1990. p. 111.

- ILL. 12. Leon Battista Alberti (1404-1472)
Diagram of Alberti's method for the perspective projection of a circle on the floor plane.
Reproduced from Kemp, Martin. The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat. New Haven and London: Yale University Press, 1990. p. 23.
- ILL. 13. Kazuo Nakamura
Number Structure and Fractals, 1983
oil on canvas, 71.1 x 101.6 cm. (28 x 40 in.)
Collection: National Gallery of Canada, Ottawa
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa: Robert McLaughlin Gallery, 2001. p. 108.
- ILL. 14. Kazuo Nakamura
Strawberry Farm, c.1941
pencil and watercolour on paper, 21.6 x 29.2 cm. (8 1/2 x 11 1/2 in.)
Collection: the artist
Reproduced from Kanbara, Bryce, ed. Tashme²: Early Works of Kazuo Nakamura. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre. 2001. p. i.
- ILL. 15. Kazuo Nakamura
Blue and Green, 1953
oil on canvas, 25.6 x 38 cm. (10 1/16 x 15 in.)
Collection: Robert McLaughlin Gallery, Oshawa, Ontario
Reproduced from a postcard published by the Women's Committee of The Robert McLaughlin Gallery, Oshawa, Ontario.
- ILL. 16. Kazuo Nakamura
Suspension, 1956
oil on canvas, 120.1 x 91.3 cm. (47 1/4 x 36 5/8 in.)
Collection: Robert McLaughlin Gallery, Oshawa, Ontario
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 101.
- ILL. 17. Kazuo Nakamura
Block Structure, 1956
oil on canvas, 123.8 x 92.7 cm. (43 3/4 x 36 3/8 in.)
Collection: not given
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa: Robert McLaughlin Gallery, 2001. p. 97.
- ILL. 18. Kazuo Nakamura
Structures, 1956
oil on canvas, 123.8 x 92.7 cm. (48 3/4 x 36 3/8 in.)
Collection: the artist.
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa: Robert McLaughlin Gallery, 2001. p. 99.

- ILL. 19. Kazuo Nakamura
Spring, 1957
oil on canvas, 73.7 x 78.7 cm. (29 x 31 in.)
Collection: Mr. and Mrs. Henri Kolin
Reproduced in Duval, Paul. Four Decades: The Canadian Group of Painters and Their Contemporaries - 1930-1970. Toronto: Clarke Irwin, 1972. p. 144.
- ILL. 20. Kazuo Nakamura
Cycle, 1957
oil on canvas, 71.1 x 81.6 cm. (28 x 43 in.)
Collection: Robert McLaughlin gallery
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 100.
- ILL. 21. Kazuo Nakamura
Topological Series 1, 1968
oil on canvas, dimensions not available
Collection: not available
Reproduced from digital photograph in artist's file, AGO.
- ILL. 22. Kazuo Nakamura
Polygonal Forms, 1980
graphite on wove paper, 38.1 x 53.3 cm. (15 x 21 in.)
Collection: National Gallery of Canada, Ottawa
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 47.
- ILL. 23. Kazuo Nakamura
Untitled Drawing 2, c.1900
oil on canvas, 27.9 x 21.6 cm. (11 x 8.5 in.)
Collection: the artist
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa: Robert McLaughlin Gallery, 2001. p. 67.
- ILL. 24. Jock Macdonald
Untitled Modality, date unknown
medium unknown, dimensions unknown
Collection: unknown
Reproduced in Zemans, Joyce. Jock MacDonald: The Inner Landscape: A Retrospective Exhibition. Toronto: Art Gallery of Ontario, 1981. p. 90.
- ILL. 25. Kazuo Nakamura
First Frost, Vancouver, 1941
graphite pencil and watercolour on paper, 21.6 x 29.2 cm. (8 1/2 x 11 1/2 in.)
Collection: the artist
Reproduced from Kanbara, Bryce, ed. Tashme²: Early Works of Kazuo Nakamura. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre. 2001. p.1.
- ILL. 26a. Photograph of Tashme Internment Camp, Hope, British Columbia, c. 1942-44.
Reproduced from www.hopechamber.bc.ca. Website for the city of Hope, British Columbia.

- ILL. 26b. Photograph of Tashme Internment Camp, Hope, British Columbia, c. 1942-44.
Reproduced from www.hopechamber.bc.ca. Website for the city of Hope, British Columbia.
- ILL. 26c. Photograph of Tashme Internment Camp, Hope, British Columbia, c. 1942-44.
Reproduced from www.hopechamber.bc.ca. Website for the city of Hope, British Columbia.
- ILL. 27. Kazuo Nakamura
July 1944, 1944
pencil and watercolour on paper, 16.9 x 27.3 cm. (6 5/8 x 10 3/4 in.)
Collection: the artist
Reproduced from Kanbara, Bryce, ed. Tashme²; Early Works of Kazuo Nakamura. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre. 2001. p. 2
- ILL. 28. Kazuo Nakamura
Tashme at Dusk, 1944
oil on board, 34.6 x 53 cm. (13 5/8 x 20 7/8 in.) (image)
Collection: estate of Kazuo Nakamura
Reproduced from Kanbara, Bryce, ed. Tashme²; Early Works of Kazuo Nakamura. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre, 2001. p. 4
- ILL. 29. Kazuo Nakamura
March 18/44, 1944
gouache on card, 27.5 x 35.6 cm. (11 x 14 in.) (support)
Collection: estate of Kazuo Nakamura
Reproduced from Kanbara, Bryce, ed. Tashme²; Early Works of Kazuo Nakamura. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre. 2001. p. 5
- ILL. 30. Kazuo Nakamura
Forest. 1953
oil on canvas, 48 x 60.9 cm. (19 x 23 5/8 in.)
Collection: The Robert McLaughlin Gallery
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa: Robert McLaughlin Gallery, 2001. p. 87.
- ILL. 31. Paul Cézanne (1839-1906)
Chestnut Trees at Jas de Bouffan, 1885-87.
oil on canvas, 70.5 x 89.7 cm. (27 3/4 x 35 3/8 in.)
Collection: Frick Museum, New York
Reproduced from Kent, Rockwell, ed. World Famous Paintings. New York: Wise, 1939. p. 52.
- ILL. 32. Grant Wood (1891-1942)
Fall Plowing, 1931.
oil on canvas, 76 x 103.5cm. (30 x 40 3/4 in.)
Collection: Marshall Field Collection, New York
Reproduced from Kent, Rockwell, ed. World Famous Paintings. New York: Wise, 1939. plate 100.

- ILL. 33. Johannes Itten (1888-1967)
Colour Sphere from "Utopia" (from Itten's Bauhaus course on colour physics), 1921.
 no medium or dimensions given
 Collection: Mrs. Annaliese Itten, Zurich
 Reproduced from Bayer, Herbert. Bauhaus; 50 Years. London: Royal Academy of Arts, 1968. p. 265.
- ILL. 34. Johannes Itten
Horizontal-Vertical-Diagonal, 1955
 oil on canvas, 100 x 72 cm. (39 1/4 X 28 3/8 in.)
 Collection: not available
 Reproduced from Rotzler, von Willy. Johannes Itten: Werke und Schriften. Zürich: Orell Füssli Verlag. 1972. p. 174.
- ILL. 35. Peter Howarth
Farmlands, no date given
 watercolour on paper, dimensions not given
 Collection: Toronto Board of Education
 Reproduced from Sisler, Rebecca. Art For Enlightenment: A History of Art in Toronto Schools. Toronto: Fitzhenry & Whiteside, 1993.
- ILL. 36. Virginia Luz (1911-)
Sun on the Harbour. Barachois de Mal Baie, 1957
 watercolour on paper, 50.7 x 60.5 cm. (20 x 23 7/8 in.)
 Collection: Art Department, Central Technical High-School
 Reproduced from Sisler, Rebecca. Art For Enlightenment: A History of Art in Toronto Schools. Toronto: Fitzhenry & Whiteside, 1993. p. 198.
- ILL. 37. Paul Klee (1879-1940)
Autumn Place, 1921
 watercolour on paper, 33 x 22.5 cm. (13 x 8 7/8 in.)
 Collection: not available
 Reproduced from Bayer, Herbert. Bauhaus; 50 Years. London: Royal Academy of Arts, 1968. p. 44.
- ILL. 38. Kazuo Nakamura
Buildings, 1954
 pen and ink on paper, 35.5 x 51.8 cm. (14 3/8 x 20 3/8 in.)
 Collection: Art Gallery of Ontario
 Reproduced in Berton, Pierre, ed. Great Canadian Paintings: A Century of Art. Toronto: The Canadian Centennial Publishing Company, 1966. p. 67.
- ILL. 39. Peter Howarth
Lake Fringe, Northern Ontario, no date
 watercolour on paper, 48.8 x 86.3 cm. (19 1/4 x 34 in.)
 Collection: not available
 Reproduced from Sisler, Rebecca. Art for Enlightenment: A History of Art in Toronto Schools. Toronto: Fitzhenry & Whiteside, 1993. p. 98.

- ILL. 40. Doris McCarthy (1910-)
Loon Lake, Haliburton, 1952
 watercolour on paper, 44.2 x 62.7 cm. (17 3/8 x 24 5/8 in.)
 Collection: Malvern Collegiate, Toronto.
 Reproduced from Sisler, Rebecca. Art For Enlightenment: A History of Art in Toronto Schools. Toronto: Fitzhenry & Whiteside, 1993. p. 100.
- ILL. 41. Kazuo Nakamura
Landscape, 1952
 watercolour and pen and ink on paper, 38.1 x 53.3 cm. (15 x 21 in.)
 Collection: Art Gallery of Ontario
- ILL. 42. Kazuo Nakamura
Molecular Drops, 1955
 watercolour on card, 36.5 x 51.4 cm. (14 3/8 x 20 1/4 in.) (support)
 Collection: the artist
 Reproduced from 20th Biennial International Watercolor Exhibition. Brooklyn, New York: Brooklyn Museum, no date given. no pagination.
- ILL. 43. Jackson Pollock (1912-1956)
Autumn Rhythm: Number 30, 1950
 oil on canvas, 266.7 x 525.8 cm (105 x 167 in.)
 Collection: The Metropolitan Museum of Art, New York
 Reproduced from Lewison, Jeremy. Interpreting Pollock. London: Tate Gallery Publishing. p. 50.
- ILL. 44. Jock Macdonald
From A Riviera River, 1955
 watercolour on paper, 42.7 x 32.5 cm. (16 3/4 x 12 13/16 in.)
 Collection: Art Gallery of Ontario
 Reproduced from Zemans, Joyce. Jock Macdonald: The Inner Landscape; A Retrospective Exhibition. Toronto: Art Gallery of Ontario, 1981. p. 180.
- ILL. 45. Jock Macdonald
White Bark, 1954
 oil on canvas, 102.9 x 81.3 cm. (40 1/2 x 32 in.)
 Collection: Barbara E. Macdonald
 Reproduced from Pollock R. Ann. Jock Macdonald: Retrospective Exhibition. Ottawa: National Gallery of Canada, 1968. p. 50.
- ILL. 46. Jock Macdonald
Twilight Forms, 1954
 oil on canvas, 80 x 100 cm. (31 1/2 x 39 3/8 in.)
 Collection: private
 Reproduced from Zemans, Joyce. Jock Macdonald: The Inner Landscape; A Retrospective Exhibition. Toronto: Art Gallery of Ontario, 1981. p. 170.

- ILL. 47. Jock Macdonald
The White Bird, 1952
 watercolour on paper, 37.3 x 48 cm. (14 5/8 x 18 7/8 in.)
 Collection: Art Gallery of Ontario
 Reproduced from Zemans, Joyce. Jock MacDonald: The Inner Landscape; A Retrospective Exhibition. Toronto: Art Gallery of Ontario, 1981. p. 169.
- ILL. 48. Jock Macdonald
Jardin (Riviera Garden), 1955
 oil on canvas, 80 x 101.6 cm. (31 1/2 x 39 5/8 in.)
 Collection: private
 Reproduced from Zemans, Joyce. Jock MacDonald: The Inner Landscape; A Retrospective Exhibition. Toronto: Art Gallery of Ontario, 1981. p. 186.
- ILL. 49. Nakamura, Kazuo
Inner View, 1954
 oil on canvas, 62.5 x 80.3 cm. (24 5/8 x 31 1/2 in.)
 Collection: the artist
 Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 93.
- ILL. 50. Photograph of Kazuo Nakamura holding June 1957 edition of Scientific American.
 Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery. 2002. p. 7.
- ILL. 51. Illustration for "Elementary Particles; An Account of the Abstract Theoretical Ideas which Physicists Use to Help Them Understand the Material World," Gell-Mann, Murray and E. P. Rosenbaum. Scientific American. July 1957. Vol. 197 No. 1. p. 73.
- ILL. 52. Nakamura, Kazuo
Core Structure, 1961
 oil on canvas, 81.9 x 106.8 cm. (32 1/4 x 42 in.)
 Collection: Art Gallery of Hamilton
 Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 99.
- ILL. 53. Kazuo Nakamura
Number Structure, 1980
 graphite on paper, 38.1 x 53.3 cm. (15 x 21 in.)
 Collection: National Gallery of Canada, Ottawa
 Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 44.
- ILL. 54. Illustration for advertisement for Du Pont. (*Photograph* courtesy Industrial X-ray Corporation, New Hyde Park, N.Y., and *Drawing*: Douglas Aircraft Company, Santa Monica, California. Illustrations for Du Pont Advertisement). Scientific American. June 1957. Vol. 186, No. 6. p. 17.

- ILL. 55. Kazuo Nakamura
Spatial Concept 4, 1970
oil on canvas, 94.0 x 121.9 cm. (37 x 48 in.)
Collection: n.a.
Reproduced from Woods, Kay. Kazuo Nakamura. Oshawa, Ontario: Robert McLaughlin Gallery, 1974. n.p.
- ILL. 56. Simpson-Middleman
Cygnus, c.June 1957
Simpson-Middleman
Illustration for an advertisement for The Boeing Company. Scientific American.
June, 1957. p. 149.
medium and dimensions not given
Collection: n. a. (possibly Scientific American)
Reproduced from Scientific American, June 1957. Vol. 186, No. 6. p. 149.
- ILL. 57. Kazuo Nakamura
Two Horizons, 1958-62
oil on canvas, 103.5 x 123.2 cm. (40 3/4 x 48 1/2 in.)
Collection: the artist
Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature.
Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 103.
- ILL. 58. Kazuo Nakamura
Time and Space 2, 1973
oil on canvas, 88.9 x 127 cm. (35 x 50 in.)
Collection: not available
- ILL. 59. Kazuo Nakamura
Spatial Concept 2, 1969
oil on canvas, 94 x 121.9 cm. (37 x 48 in.)
Collection:
Reproduced in from Woods, Kay. Kazuo Nakamura. Oshawa, Ontario: Robert McLaughlin Gallery, 1974. n. p.
- ILL. 60. Kazuo Nakamura
Structure, 1967 (left)
77.4 x 19.1 x 19.1 cm. (30 1/2 x 7 1/2 x 7 1/2 in.)
Structure 66, 1967
76 x 22.9 x 22.9 cm. (30 1/2 x 9 x 9 1/2 in.)
Structure 66B, 1967
77 x 22.9 x 22.9 cm. (30 1/2 x 9 x 9 1/2 in.)
cast concrete
Collection: not available
Reproduced from Cameron, Dorothy. Sculpture '67. Ottawa and Toronto. National Gallery of Canada and Art Gallery of Ontario. n p.

- ILL. 61. Kazuo Nakamura
Structure, 1962
 oil on canvas, 34.6 x 57 cm. (14 3/8 x 22 1/2 in.)
 Collection: private, Toronto
 Reproduced from Burnett, David and Schiff, Marilyn. Contemporary Canadian Art.
 Edmonton, Alberta: Hurtig Publishers, and Toronto: Art Gallery of Ontario. 1983.
 p. 51.
- ILL. 62. Martin Drölling (1752-1817)
Kitchen Interior, 1815
 oil on canvas, dimensions not given
 Collection: The Louvre, Paris
 Reproduced from Eitner, Lorenz. "The Open Window and the Storm-Tossed Boat:
 An Essay in the Iconography of Romanticism." Art Bulletin. 37 (1955). pp. 281-
 292. p. 291.
- ILL. 63. Gabriël Metsu (1629-1667)
Gentleman Writing a Letter, c.1662-1665
 oil on canvas, 52.8 x 40.2 cm (20 3/4 x 15 7/8 in.)
 Collection: National Gallery of Ireland
 Reproduced from Kiers, Judijke and Tissink, Fieke. The Golden Age of Dutch Art:
 Painting, Sculpture, Decorative Art. London and New York: Thames and Hudson,
 2000. p. 204.
- ILL. 64. Caspar David Friedrich
View from the Artist's Studio (left-hand window), 1805-06
 graphite pencil and sepia ink on paper, 31.4 x 23.5 cm. (12 3/8 x 9 1/4 in.)
 Collection of the Österreichische Gallery im Belvedere, Vienna
 Reproduced from Hofmann, Werner. Caspar David Friedrich. London and New
 York: Thames and Hudson, 2000. p. 114.
- ILL. 65. Caspar David Friedrich
View from the Artist's Studio (right-hand window), 1805-06
 graphite pencil and sepia ink on paper, 31.4 x 23.5 cm. (12 1/2 x 9 in.)
 Collection of the Österreichische Gallery im Belvedere, Vienna
 Reproduced in Hofmann, Werner. Caspar David Friedrich. London and New York:
 Thames and Hudson, 2000. p. 116.
- ILL. 66. Caspar David Friedrich
Woman at the Window, 1818
 oil on canvas, 44 x 37 cm. (17 1/8 x 14 5/8 in.)
 Collection: The Hermitage Museum
 Reproduced from Hofmann, Werner. Caspar David Friedrich. London and New
 York: Thames and Hudson, 2000. p. 115.
- ILL. 67. Moritz (Ludwig) von Schwind (1804-1871)
Morning, c. 1860
 oil on canvas, 34.8 x 41.9 cm. (13 1/8 x 16 1/2 in.)
 Collection: Schack-Galerie, Munich
 Reproduced from Hofmann, Werner. Caspar David Friedrich. London and New
 York: Thames and Hudson, 2000. p. 257.

- ILL. 68. Georg Friedrich Kersting (1785-1847)
Friedrich's Studio, 1811
 oil on canvas, 108 x 70 cm. (42 1/2 x 66 7/8 in.)
 Collection: National Gallery, Berlin
 Reproduced from Hofmann, Werner. Caspar David Friedrich. London and New York: Thames and Hudson, 2000. p. 103.
- ILL. 69. Carl Gustav Carus (1798-1869)
Studio Window in the Moonlight, c. 1826
 oil on canvas, 28.5 x 21.5 cm. (11 1/4 x 8 1/2 in.)
 Collection: Karlsruhe, Staatliche Kunsthalle
 Reproduced from Benz, Richard und Schneiber, Arthur B. *Die Kunft der Deutschen Romantif*. München: R. Piper and Co. Verlag. 1939. plate 20.
- ILL. 70. Adolfe Menzel (1815-1905)
Balcany Room, 1845.
 oil on canvas, 58 x 47 cm. (22 7/8 x 18 1/2 in.)
 Collection: National Gallery, Berlin
 Reproduced from Kaiser, Konrad. Menzel. Munich: Verlag F. Buckmann KG. Munich, 1975.
- ILL. 71. Odilon Redon (1840-1916)
Behind the Grating (or, *The Secret*), 1880
 charcoal on paper, 34.5 x 36 cm. (13 5/8 x 14 1/4 in.)
 Collection: not available
 Reproduced from Druick, Douglas W. Odilon Redon: The Prince of Dreams, 1840-1916. New York: Harry N. Abrams, and Chicago: The Art Institute of Chicago, 1994. p. 154.
- ILL. 72. Robert Delaunay (1885-1941)
The Window on the City No. 3, 1911-1912.
 oil on canvas, 113.7 x 130.8 cm. (44 3/4 x 51 1/2 in.)
 Collection: Solomon R. Guggenheim Museum, New York
 Reproduced in Rosenthal, Paul. Visions of Paris: Robert Delaunay's Series, New York: Guggenheim Museum, 1998. plate 21.
- ILL. 73. Robert Delaunay
Window on the City, 1914.
 oil on canvas, 24.8 x 20 cm. (9 1/4 x 7 7/8 in.)
 Collection: Solomon R. Guggenheim Museum, New York
 Reproduced in Rosenthal, Paul. Visions of Paris: Robert Delaunay's Series, New York: Guggenheim Museum, 1998. plate 59.
- ILL. 74. Paul Klee
Composition with Windows (Composition with a B'), 1919
 oil over pen and India ink, varnished, on cardboard, 50.4 x 38.3 cm. (20 x 15 in.)
 Collection: Paul Klee Foundation, Kunstmuseum, Bern
 Reproduced from Lanchner, Carolyn. Paul Klee. New York: Museum of Modern Art, 1987. p. 153.

- ILL. 75. Frederick Horseman Varley (1881-1969)
The Open Window, c. 1933
 oil on canvas, 102.9 x 87 cm (40 1/2 x 34 1/4 in.)
 Collection: Hart House, University of Toronto
 Reproduced from Varley, Peter. Frederick H. Varley. Toronto: Key Porter Books, 1983. p. 115.
- ILL. 76. Frederick Horseman Varley
Mirror of Thought, 1937
 oil on canvas, 50.7 x 60.9 cm (20 x 24 in.)
 Collection: Art Gallery of Greater Victoria
 Reproduced from Varley, Peter. Frederick H. Varley. Toronto: Key Porter Books, 1983. p. 141.
- ILL. 77. Kazuo Nakamura
Hillside, 1956
 oil on Masonite, 61 x 78.7 cm. (24 x 31 in.)
 Collection: National Gallery of Canada
 Reproduced from Reproduced from Bell, Andrew. "The Art of Kazuo Nakamura." Canadian Art. 16.3 (1959) p. 173.
- ILL. 78. M(auritis) C(ornelis) Escher (1898-1972)
Square Limit, 1964
 woodcut on paper, no dimensions given
 Collection: not given
 Reproduced from Lochner, J. L. Ed. The World of M. C. Escher. New York: Harry N. Abrams, 1971. p. 118.
- ILL. 79. M. C. Escher
 untitled drawing toward *Square Limit*, c.1964.
 graphite pencil on graph paper, no dimensions given
 Collection: not given
 Reproduced from Lochner, J. L. M. C. Escher; His Life and Complete Graphic Works. New York: Harry N. Abrams, 1982. p. 119.
- ILL. 80. M. C. Escher
 untitled drawing toward *Square Limit*, c.1964.
 graphite pencil and watercolour on graph paper, no dimensions given
 Collection: not given
 reproduced from Lochner, J. L. M. C. Escher; His Life and Complete Graphic Works. New York: Harry N. Abrams, 1982. p. 119.
- ILL. 81. Kazuo Nakamura
Untitled Drawing I, no date (possibly c. 1983)
 graphite pencil on paper, dimensions not given
 Collection: estate of Kazuo Nakamura
 Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature. Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 73.

- ILL. 82. Kazuo Nakamura
M-Square, Evolving Pattern, 1986-96
 graphite pencil on appear, 38.1 x 53.3 cm. (15 x 21 in.)
 Collection: William McCutheon
 Reproduced from Holubizky, Ihor, ed. Kazuo Nakamura: The Method of Nature.
 Oshawa, Ontario: Robert McLaughlin Gallery, 2001. p. 56.
- ILL. 83. Froth of irregular soap bubbles showing a cellular structure analogous to that of metals. These bubbles were blown between parallel glass plates and are essentially two-dimensional. Natural size. Reproduced from Kepes, Gyorgy, ed. Structure in Art and Science. New York: George Braziller, 1965. p. 32.
- ILL. 84. Pattern of craze lines on a glazed ceramic surface. Magnification x 1.5. Reproduced from Kepes, Gyorgy, ed. Structure in Art and Science. New York: George Braziller, 1965. p. 33.
- ILL. 85. Pattern of ridges formed by a crack moving in a crystal of a brittle compound of copper and magnesium, Cu₂ Mg. The crack proceeded from the top to the bottom of the figure. Magnification x 300. (*Photo Courtesy Duane Mizer, Dow Metal Products Company*). Reproduced from Kepes, Gyorgy, ed. Structure in Art and Science. New York: George Braziller, 1965. p. 38.
- ILL. 86. Anonymous
King Tuthmosis III Seated on a Throne, c.1460 BC.
 wooden board with line drawing overlaid with a grid for transfer to a larger scale, gesso and possibly graphite on board, height 36.4 x 30.2 cm. (14 1/2 x 11 7/8 in.)
 Collection: British Museum, London, no. 5601
 Reproduced in Aldred, Cyril. Egyptian Art in the Days of the Pharaohs, 3100 - 320 BC. London and New York: Thames and Hudson. 1980. p. 14.

APPENDIX ONE

Kazuo Nakamura's Published Writing

Please note that I have not corrected the grammar in any of Nakamura's statements.

The science of art is at its most interesting stage. Through history, in man's search of knowledge, new thoughts such as Copernicus' theory of the solar system, Darwin's theory of evolution, etc., have caused controversy. Art and its theory at present is a very controversial dilemma due to lack of adequate basic theory. The standard thought of visual perception based on perspective vision can also become a doubt, as it is based on the visual illusion that parallel lines meet at the horizon; in physical existence, it does not.

To analyse art is as complex as science analysing universal structures and evolution which are based on a certain logic and order.

Art is not just emotional vision but more of man's concept of equation of his environment and thoughts.

In the history of art, all civilisation and its developing period must be relative to the universal scientific and philosophic concept of its time (or the scientific and philosophic concept may be relative to art.)

Every developing phase and facet of science must produce some form of art. atomic / molecular / cellular / inorganic and organic / mental and mechanical / planetary / solar system / galaxial / the universe.

Art is relative with man's expanding and exploratory vision into inner and outer space and to its products; thus development of art and its perception must have a certain order and cycle and its vision can be based on such as the . . .

- > scientific, philosophic and psychological concept of its time
- > man and nature concept
- > horizon and space concept
- > optical finite and infinite illusion
- > inner and outer topology illusion
- > expansion / compression of time / motion
- > vision point / distance / time-motion

In recent years my work has become more analytical and since 1966 it is based on my theory of developing order in art phases:

1st tier: two dimensional perception concept - flat, latter period (to about 1400 A.D.)

2nd tier: three dimensional perception concept - perspective and isometric period (1400-1870 A.D.)

3rd tier: four dimensional perception concept - cabinet, flat, octagonal, circle, concave-convex, mobius and wave period (1870 to present)

As all things are made of atomic structure and motion, all shapes are based on atomic (or molecular) structure and motion. Bases of shapes are geometrical form; therefore, the evolution or cycle of man's environment must be based on the cycle of geometric forms.

Artist's Statement

Kazuo Nakamura, exhibition catalogue, pp. 6-7
The Robert McLaughlin Gallery, 1974

Sculpture is a man's job, more so than painting, because it is physically harder work. Intellectually, it is no more demanding; and as an art form it is superior only because of its permanence. Still, hard work interests me; and I like the idea of leaving something behind.

My concern in sculpture, as in my structural paintings, is with the atomic particles moving perpetually in space. Where unnatural perfection is static, natural imperfection implies motion. My tower-structures are imperfect. Their surfaces of natural concrete retain the imperfections (and hence, the motion) of the medium itself, which polishing would destroy. They move in space with the rhythm of slight asymmetry, like a constant, subtle shifting of the component strips or blocks. Such simple geometric forms, bare of all "period" decoration, are always timeless in essence. Although for me these structures seem to project our own time toward a future of stacked-tower environments, for other people they may evoke relics of an ancient past. In either case, I am obviously working with structural echoes of architecture. Since 1958, I have alternated angular open-cage forms with blocky constructions: even in painting I use a block stroke. And though I work "small", I try to achieve, through correct proportion, an architectural command of space.

The contribution of the artist is to extend visual knowledge as a way of understanding our universe. I, as an artist, am never wholly isolated from anyone else, from the labourer or the scientist. We are all, each in his own way, making a new society, or a part of that society. On the other hand, since some perception and foresight beyond the norm is a necessary attribute of the functioning artist, I must admit to a certain sense of unavoidable "apartness".

In any period of art there is always an accepted mainstream and an outer fringe, not yet accepted, that tries new ideas. And then, in time, that outer fringe becomes the influence of another mainstream. Although I am as much concerned with the future, with what is going to happen, as with the present, when I am actually painting or making a sculpture I just try to work out my own ideas, with no conscious thought of a breakthrough. If I am truly inventive, I will inevitably work on that outer fringe, where every real artist yearns to be . . . although most of us today are not quite sure just how we should place ourselves.

portion of a taped interview with Dorothy Cameron
Sculpture '67, exhibition catalogue
National Gallery of Canada, 1967

In the history of Canadian art, the contributions made by Japanese Canadians is a recent development. As with most settlers, the severe socioeconomic hardships of the early years of Japanese immigration produced very few people with the inclination or ambition to enter the fine arts.

One of the few Isseis to study art was Densaku F. Kondo, who immigrated to Canada in 1911 at age twelve. In 1918 he adventurously came to Toronto (then an almost unknown destination with the Japanese) to study painting at the Ontario College of Art. He exhibited with the Ontario Society of Artists and later visited Paris and London.

In 1925, a painter from Japan on his way to Paris visited Vancouver for three months - he held an exhibition and helped to organise an Issei art club, giving lessons to about eight members. This art club held occasional exhibitions and two members later went to Paris and became professional painters in Japan.

By 1930 a few Nisei began studying art in Vancouver but during this period there were more Nisei with ambition in other areas of intellectual pursuit - Samuel I. Hayakawa, renowned semanticist and now a senator in the United States Congress; Shuichi Kusaka, physicist, a gold medalist at U.B.C., who later moved and published theoretical papers in the United States. Therefore, it seems the pursuit of art was taken by Nisei born in the mid-1920's and from 1950 onward there came an outburst of artists in the field of painting, sculpture, printmaking, pottery, architecture, landscape and graphic design. Some of these with national stature and inclusion in international exhibitions are painters Tanabe, Kiyooka, Nakamura; sculptor Kubota; printmaker Ouchi and architects Kinoshita and Moriyama.

This Centennial exhibition (limited to Japanese Canadian artists living in Ontario) represents the diverse direction pursued by Nisei and Sansei (third generation), as well as new immigrant artists - some already with stature and many exhibitions behind them. The direction pursued is mostly contemporary mainstream with a few in traditional Eastern influences and it shows the confidence that they will continue to contribute to aesthetic culture in Canada.

Introduction by Kazuo Nakamura
The Japanese Canadian Centennial Art Exhibition
November 7, 1977 to July 31, 1978

During the Sixties, the development of one aspect of abstract art was based on the perception and exploration of polygonal, polyhedral and basic geometrical forms. I believe that to explore beyond that concept requires the perception of the linkage of form to number structure. This structure formation through number sequences, series and tables gives universal key and order to form and design.

For Canadian painters, the main building block is based on the impact and awareness of western cultural flow - its diversified abstract perception and concept of development in art, philosophy and science through the ages.

For Canadian painters of Japanese parentage, it means some awareness of eastern flow, in particular the development of nature concept and sophistication of natural design. These may have some impact on our thinking.

But today the dominant flow in art and science is universal. So it definitely will be hard to differentiate the influence of background in our international art development.

Artist's Statement
Shikata Ga Nai
exhibition catalogue
1987

APPENDIX TWO

Kazuo Nakamura Interviews:

Please note that I have not corrected the errors of spelling and grammar in the text of the transcriptions of these interviews.

LETTER INTERVIEW CONDUCTED BY LEONARD SCHLICHTING:

- LS: What events of your early life relate directly to your becoming an artist?
- KN: In my earliest years, I had some interest in painting but no ambition to become a painter. In my twenties, I decided to study art to enter the commercial field, but after graduation I thought painting might be of more interest.
- LS: How much contact did you have with the members of Painters Eleven?
- KN: During the 1950's, I think we met about half a dozen times a year - mostly in meetings to plan Painters Eleven exhibition.
- LS: Did anyone member of this group have any direct influence on your work?
- KN: No.
- LS: Was any particular art activity in New York central to your development as a painter?
- KN: None.
- LS: When did you first begin to develop a theory of art?
- KN: From the beginning I was inquisitive about the evolution of art. I started to develop theory in art from mid or later 1950's as I thought abstract artists (original) must be perceiving intellectually of their new environment and thoughts, and not based on just so-called feelings.
- LS: J. Russell Harper in his book, *Painting in Canada: A History*, speaks of an "eastern feeling" in your work. Could you comment on this?
- KN: If there is any Eastern feeling in my work, it may be my use of mono colour, which is also quite common now in many contemporary painters.
- LS: Was your earlier work, for example, *Forest*, 1953, more representative of the "emotional vision" of which you speak?
- KN: Possibly yes.
- LS: Was your more recent work, for example, *Spatial Evolution*, 1968, linked to any particular development in Science?
- KN: It may be closest to physics - atomic and molecular polygonal structures. As explorations in art and science runs parallel to each other, every exploratory artist may be exploring and extending the boundary of some areas of the universe.
- LS: Your series of pictures depicting monolithic structures set against empty landscapes (eg. *Suspension*, 1965), are very consciously structured in a formal sense, yet they seem emotive in a surreal way. Were you commenting on the struggle of artists during this time to break free of the standard thought of visual perception based on perspective.
- KN: This painting may be in some way surreal, depicting man's clustered urbanisation and alienation: form structure if based on atomic structure may be suspension in space. Also it does tries to question what is perspective.
- LS: Did the painting, *Structural Movement*, 1956, come before or after *Suspension*, 1956.
- KN: As a painting *Structural Movement*, 1956 was painted earlier, but both series began in early 1950's.

LS: Does anyone painting come closest to the expression of an idea? If so, why?
KN: At the moment excluding my new work, the painting, *Spatial Concept, Geometry*, 1968, comes closest to my present thought, that is polygonal and number theory as the structure base and structural mechanism of forms.

March 20, 1978
Library, Winnipeg Art Gallery
Winnipeg, Manitoba

INTERVIEW CONDUCTED BY JOAN MURRAY:

JM: When you were forming Painters Eleven, it meant to you a way of exhibiting. Did it mean anything more than that?
KN: I at that time I don't think that it was anything more than that. At least for me. I had just started to paint then. I don't think we had any ulterior motive.
JM: Sometimes Jack Bush talked about a power play, you have got to have a power play. He talked about the group almost as though it were a football team. Did you ever feel that was what was going on, that it was sort of like a football team, that if you made the right moves things would go well?
KN: Of course as a group you accept the part because if you're working as an individual it means that there is less response but as a group it meant response. As he said more of a power play.
JM: Did you ever have the feeling that it was like a football team?
KN: No, I don't think so because we always thought as individual painters who tried to exhibit as a group so I don't think so.
JM: Sometimes Ronald said that Jock Macdonald was the coach.
KN: I think that Jock Macdonald did have quite a bit of influence on Bill Ronald because in the first place he was his teacher and then later after he left school he might have had some influence but I can't say beyond that.
JM: In the Group was there ever an event that you can recall when York Wilson was considered for inclusion in the Group?
KN: No, not as far as I know.
JM: Was there ever comment about any other people who could be members?
KN: In the making I don't think it ever occurred to have more people included because we felt eleven was enough.
JM: And the figure eleven was set by Harold Town wasn't it?
KN: You mean the Painters Eleven?
JM: The choice of eleven people was Harold Town's choice wasn't it, that there weren't twelve.
KN: Of that I'm not sure. For me at least I was invited to become a part of that group.
JM: Who phoned you, do you remember?
KN: I can't recall, it may possibly have been Bill Ronald.
JM: Your work was always different from that of the others. Everyone recalls that you were your own man and that it was really different. It developed in a different way and that was totally different. How would you feel about that for yourself if you were to characterise the difference?
KN: It's a case of saying the difference between Nicholson and say Southern [Graham Sutherland?]. At least the majority of the members were abstract expressionists rather than geometrical. I was more geometrical. I think that's the difference.

JM: Within the Group, your role was that of peacemaker. Were you conscious of that? You were sort of the Oriental sage. You never spoke very much but when you did speak you said words that everyone remembered.

KN: No, I don't think so.

JM: They remember them even today. They remember you making peace among the quarrellers.

KN: I'm not the type who makes enemies. I think it comes from my father, be a friend to anyone or everyone.

JM: Within the group did you feel that anyone was the leader. For instance Jack Bush was the treasurer and he managed things. For Tom Hodgson, he admired Oscar Cahén. There were inter-relationships within the group. Was there anyone for you that had this role?

KN: I think the one that said the most might be Harold Town, Jack Bush and Bill Ronald.

JM: In this period Harold Town tells me that he influenced Oscar Cahén and that it was not the other way around. Can you remember anything about this? Is it possible that this was true? Many people have written that Oscar Cahén's colour influenced Harold Town?

KN: That I can't say because I don't know enough. In 1953, I was only two years out of school then and I didn't know anything about what they were doing say during the 1940s, or at least the late 1940s.

JM: In Alexandra Lukes diary she recalls that she hung a show with you at the Park Gallery. I was reading it over last night and I noticed that you hung a show together, one of the Painters Eleven shows.

KN: I can't recall. I remember that Harold Town was one of that group that hung the show, possibly she might have felt.

JM: Yes, it was in her diary that she had helped. Sometimes I wonder about Alexandra Luke, it seems that she's been very much neglected.

KN: Yes. Of course she was in Oshawa then and the distance might have prevented that.

JM: At one of the meetings she records in her diary that a lot of the painters hadn't had a one man or woman show and that's why they discussed bringing up Clement Greenberg. This she all records in her diary. Jack Bush said Alexandra Luke or Margaret McLaughlin is the one who hasn't had a show. She didn't have that chance and they kind of hoped Clement Greenberg, that his presence might make a difference. Can you remember anything about Greenberg?

KN: I first met him at Jack Bush's house because he had a party for him and his wife then. I think it must have been the next day he took a tour around visiting our studios. I can't recall what he said about my paintings. Of course he might have mentioned, it's a bit different, but I'm not sure if he had much response to my paintings.

JM: He wrote a letter unpublished that's in an unpublished archive. He wrote a letter to Jock Macdonald which I have about your work. He had looked and had seen it. I just wondered if you had any memory. Within the Group was there anyone who was particularly interesting to yourself? I just wondered if there was someone I'm not trying to trap you.

KN: Of course I like Jack Bush, and his free flow type of painting, and I don't think that he changed much from say twenty years ago or even thirty years ago because he had always that free flow in his technique.

JM: Yes. Tom Hodgson felt that he had been trained as an illustrator and that that weakened him. He felt that he had to get away from that background in illustration and advertising. Do you feel that that weakened him?

KN: No, I don't think so. In my opinion a lot of the painters were illustrators or painted based on their commissions.

JM: Dennis Reid feels in his book that you were in fact ahead of the entire Group in the concerns you showed for infinite space and monochrome and these things, things that really became a concern of painting say five to ten years later. How do you feel about that yourself, did you feel you were ahead especially when five years passed and then you saw everyone doing it? I remember Dennis Reid said you were ahead of your time and probably the leader right now.

KN: It's the first time I've heard that comment because I thought they didn't like my painting.

JM: The National Gallery because they haven't been around in several years is that it?

KN: I don't think I had much response from most art critics and writers at least at that time.

JM: Sometimes certain adjectives were used to describe your work. One was "exquisite" and one was "delicate". Do these really suit your work? If you were to use adjectives to describe it what adjectives would you use?

KN: I guess the best word would be geometrical, then quite hard edge.

JM: How did you feel about the meetings yourself? Did you find them exciting or helpful in your own work? That is did it change anything in your own work to meet with these people?

KN: No, I don't think so. It was a case of planning the exhibition that was the only motive.

JM: Can you remember back to the period of time when Paul Duval was called in to the Park Gallery show and Bill Ronald resigned over it?

KN: No, I can't recall.

JM: What did you think of Hortense Gordon's work, was it of any interest to you at all?

KN: Looking back now I find her work quite interesting. It seems to have quite a bit of Hans Hofmann influence but I find it quite interesting compared to what I thought of her work twenty years ago.

JM: For some of the painters it seemed to mean the best work they've ever done. For instance in the case of Tom Hodgson this period and the years which followed seemed to have meant his strongest work compared to what he's doing today. Would you feel that was true?

KN: No, I don't think so. I think he's doing more original work today than say twenty years ago.

JM: Was there anyone that was better than they are now?

KN: Bill Ronald might have peaked during the 1960s but of course he may have another peak a couple of years from now.

JM: When you went to New York to the Riverside Museum show. Can you remember anything about that? Did you like the American painters you showed with? Tom Hodgson felt that they were weak. How did you feel? He felt that they weren't good.

KN: No I didn't have much of an opinion on their painting. Of course it was based on one painting from each painter whereas for us they had three paintings from each of us so possibly it might have looked stronger.

JM: One of the critics said, the Canadian painters are more personally expressive, New York Times and related you and Hortense Gordon together, geometric ideas. When you went to school [in Toronto] you studied with Charles Goldhamer and he has some very distinct memories of your work and how different it was. Did you learn anything at that school, at Central Tech?. Did you feel that you had gained anything there? Was any teacher interesting to you?

KN: As far as the school goes it's a case of learning to draw. I think that was the main thing, I'm not sure what the word would be but

JM: Who taught you to draw? Was it Robert Ross or was it Charlie? I don't know because Charlie didn't say he taught you to draw but Robert Ross was there. Was it Robert Ross, he was very good?

KN: As far as drawing I think it comes from all teachers because it's a case of whether you're drawing from a still life or from a life study. It's a case of being there to learn how to draw.

JM: Everyone notes that your work has something Japanese about it or Oriental at least. Were you actually thinking of Oriental art when you were working?

KN: No.

JM: Was it ingrown?

KN: I think it must be ingrown.

JM: Your father or mother weren't artists were they?

KN: No. My uncle was an amateur painter.

JM: In Canada?

KN: Yes, he was an amateur painter.

JM: Had he shown you how to do any work?

KN: No, nothing, but possibly he used to take art magazines and I used to flip through it. That might have had some influence.

JM: There was a painter named Kuniyoshi down in the States. Would he be of any interest to you at all. He wasn't a landscape painter so I guess not.

KN: No, he was more a figurative painter.

JM: So there really isn't anything that's parallel to your work in your own mind?

KN: Right now I can't recall, I would have to think about that.

JM: One of the works I thought I would use in the show is a work that was in the first show that was purchased by Charles McFadden and he gave us that work. Where would that have been? Was there a specific site? *Forest*, 1953. Was it a specific forest.

KN: No. Most of my nature and landscape paintings are quite general.

JM: That work is very small but in that year other people in the same Group were doing landscape subjects like William Ronald was doing trees with on it. Do you feel your work is related to that in any way?

KN: No, I don't think so.

JM: If I use the *Forest* subject from Charles and then I jump to *Block Structures* and *Suspension* for two very different moods and then *Infinite Waves* or *Cycle*, I haven't chosen which. Incidentally would you prefer *Cycle* to *Infinite Waves*, do you have any preference?

KN: *Infinite Waves* I think was my most extreme painting

JM: Yes, so I should keep that one in?

KN: Yes I like that one better.

JM: Better than *Cycle*? In the year when *Black Structure* and *Suspension* are done? Should I use both or should I just use one? Same year?

KN: To me it doesn't matter if there's space then I wouldn't mind having them both in.

JM: If I don't have space which one should I use?

KN: I think *Suspension*.

JM: What should I use from a later date. I have up to 1960 possibly even 1961 because the Group ended in 1960 but it kept on going for one more show. What would I use for a later date? I have one from 1953, two from 1956, and one from 1957. What would you like me to use from a later date in your work? I want a representative choice of your works.

KN: Yes, the 1960s.

JM: Not the 1960s so much as 1960.

KN: Yes late 1950s. I would have to go through my records to see what I did during that time.

JM: Meditate on it because that's important. I'd like to give the feeling of the Group over a period of time 1953-1960 and possibly one work from 1961. In the seven year period there was some changes in the Group as a group. One thing is the canvas got bigger. The second thing is the structure got looser. Everyone had been working small and tightly at the beginning and then it opened up. Were there any other changes that you observed the seven year period for the whole Group?

KN: By the end of the seven years they might have been better painters then when they began in 1953.

JM: Was Paul Klee ever someone that you meditated on? I always wondered just for myself.

KN: No, not Paul Klee.

JM: Who was interesting to you among artists, say in New York?

KN: No, not during the 1950s although one person I did liked was Ben Nicholson at that time and possibly he might have had some influence.

JM: Ray Mead had certainly looked closely at his work.

KN: Then Mondrian.

JM: Was there anyone in Canada who was interesting to you besides this group like Milne?

KN: For a question like this you have to decide [sic; she means divide?] it in two, one - some painters you like than the other is possibly another group that might have influenced you.

At The time I liked Stanley Cosgrove,

JM: The way you used the medium is different from the other painters, it's drier and quite frankly much more careful. In many cases it seems technically more careful. Can you describe how you made *Infinite Waves*?

KN: It that painting it's a case of gluing thread on the canvas and after that painting white all over and after that dries you put a tone to it and actually that's it, I think.

JM: When you were making *Forest*, what were you using then? That is oil?

KN: Yes.

JM: And *Block Structure* and *Suspension*, they are ...?

KN: They're oil.

JM: And *Infinite Waves*, is it oil too?

KN: Yes.

JM: So it was oil all the way. You never got into acrylics?

KN: No.

JM: Because that would be about 1957. In this group of artists was Bush the one you respected the most as a painter?

KN: Each painter had certain good points so I think you had to consider their good points.

JM: Tell me the good points of each. Cahén was a good colourist.

KN: Town of course was quite versatile. Yarwood and Tom Hodgson, I liked their characters, their personalities. Bill Ronald, I liked his aggressiveness and I think he's a character too.

JM: And Mead?

KN: Mead. I didn't see as often so I don't think I have any opinion about him.

JM: When did you feel Painters Eleven stopped? Jack Bush's diary records it as being 1960 but earlier than that Jock Macdonald had written to Maxwell Bates his pen pal in 1958 and he said, you know it's really finished. Do you have any feelings about when it ended or when it seemed to end?

KN: I thought after five years. I thought it wasn't

JM: The strength went out of it after five years?

KN: Yes.

JM: I know you were young and you didn't talk much with Alexandra Luke but many of the other artists recall her energy. Would that be your impression too?

KN: That could be a good word to explain her because she had raised a family then after raising a family she became a painter. It must have taken a lot of energy for her to paint.

JM: She was very ill for the last five years of her life and she was often exhausted. I wonder if that was your impression too?

KN: I never noticed that.

JM: One critic in 1958 said that your works were the understatement of any exhibition. Do you think they are related to your statements? You were always the quietest of the Group, the peacemaker as they recall it, the person who said the least. Would understatement be a good way to describe your work?

KN: No, I don't think so because a person could be quiet but that person could change the world. It's just like saying Einstein was a quiet person.

JM: Sometimes they say your work is subtle, art at its purist.

KN: That has a certain amount of truth to it.

JM: Among the Group was there anyone that you were particularly close to?

KN: As a friend I think I was closest to Tom Hodgson.

JM: I guess you were about the same age. No, you were younger but you maybe went to school with Tom?

KN: No. He graduated in 1943 and I graduated in 1951 so I never met him until the Group.

JM: Why would Tom be the one that you were closest to? I didn't know that.

KN: I think it's a certain personality, I think, that matches.

JM: He has a tremendous sense of humour.
 KN: Yes. I feel closest to him even now.
 JM: Of the whole Group?
 KN: Yes.
 JM: Less showy than say Town and probably a harder worker.
 KN: It might be because Town and Bill Ronald have much stronger characters.
 JM: He's probably more philosophically oriented, thoughtful anyway.
 KN: Yes he's quite thoughtful.
 JM: Certainly Ronald seemed to do a lot of his work spontaneously and intuitively, at least that's what he said.
 KN: I'm quite sure that he must have some philosophy behind his painting, because without any idea I don't think you'd have a worthwhile painting.
 JM: You remember how Tom respected Oscar Cahén and how thrilled he was about Oscar Cahén. He always admired him. How did you feel about Oscar Cahén and his position in the Group. I know he died young in terms of that Group but Tom just idolised him. I mean the person Tom most respected was Oscar Cahén.
 KN: To me I thought he was just another painter, bit I know that he was a good illustrator but at that time in Canada I think he was one of the most outstanding illustrators but as a painter I thought he was just another painter.
 JM: If you were to define your own work, would you feel that you were acting more as a scientist painter even then?
 KN: I think so. I feel as a painter I might be painting in let's say the field of physics.
 JM: You never discussed scientific developments with Jock Macdonald, I know you mentioned it.
 KN: No.
 JM: He was very interested in that and Dennis Burton remembers you handing him a Scientific American which directed his reading for twenty years. He then read it every time it came out.
 KN: I mentioned to him that Scientific American was more worthwhile than going through art magazines.
 JM: It had a tremendous impact on him. If you were to define art, how would you define it yourself? Would you try to define it, would you define it in terms of science?
 KN: I think it comes down to the same as scientific purpose. It's an exploration of the universe and I think that's the fundamental and from there you can more or less bring it down to different levels but basically I think it works exploring the universe.
 JM: Would you call your work non-objective or abstract? What would you call your work, non-representational?
 KN: I think within ten to twenty years all these works [does he mean words] will change.
 JM: I just wondered if you had some favourite word because Jock Macdonald felt very strongly about non-objective, not abstract, but non-objective work.
 KN: I think that non-objective becomes meaningless as we go along because we're always exploring nature or the universe so it has to be part of that universe.
 JM: Bill Ronald always likes to tell me that people who became members of Painters Eleven couldn't show anywhere else but I have found out from the other members that showed all right. They certainly did show with other places, it's a little bit exaggerated is it?
 KN: Especially at picture halls then picture halls later became kind of a second rate exhibition gallery but but during the early 1950s and latter part of the 1940s was the most experimental gallery.
 JM: Who were the writers that you respected at the time? There was Paul Duval. Was there anyone that you particularly thought was interesting.
 KN: Actually I don't care about art critics because I don't think history should be based on writing.

JM: I just wondered if there was somebody. Was there any painting by any other member of the Group in any of the shows that simply drove you crazy that you remembered and really admired because if so I would like to put it in this show?

KN: That has to be based on individual paintings, I guess rather than say a group of paintings coming from another painter.

JM: I know Ray Mead admired Bill Ronald.

KN: Yes.

JM: I just wondered if there was anything that you thought was just terrific.

KN: If you say you have about twenty paintings by Jack Bush, Harold Town, and Bill Ronald you could at least pick three or four that might be outstanding.

JM: I Just wondered if there was something you loved in particular and remembered and had meant something to you like *Central Black* or Oscar Cahén did a work called *Black Trophy*, Hodgson did *It Became Green*, something that seemed to represent them in particular. Nothing comes to mind. Sometimes people have very specific memories. Basically Painters Eleven was to you a way of exhibition.

KN: Yes.

JM: Ray Mead said it strengthened all the members.

KN: I'm not sure as a painter, but I'm quite sure that without Painters Eleven they'd be just as good or possibly even better painters.

JM: Without that Group?

KN: Yes.

JM: Do you think it could have had a detrimental effect on some of the people?

KN: I'm not sure about detrimental.

JM: But some of them would have been just as good you feel.

KN: Yes I think so.

JM: Just as firm and strong themselves, it had no effect. I was wondering because when groups form you wonder is the nature of the group if it is helpful or isn't helpful or what happens exactly. There was the Group of Seven where the same question could be asked. Did they get better because they were a group or did it mean anything? Did it matter at all that there was a group is the question that I'm really asking I guess?

JM: For exhibition purposes it was helpful. Of course as a painter possibly we matured more after we left or Painters Eleven split, especially Jack Bush and Bill Ronald on their own became much better painters.

June 12, 1979
Library, Robert McLaughlin Art Gallery
Oshawa, Ontario

APPENDIX THREE

Kazuo Nakamura Resumé to August 2003

- Born, October 13, 1926, Vancouver, British Columbia; died 9 April 2002, Toronto, Ontario
- Represented by Christopher Cutts Gallery, Toronto, Ontario

EDUCATION:

- 1947 - 1951 - Art Department, Central Technical High-School, Toronto, Ontario; attends Special Three-Year Program.
- c. 1944-1947 - Hamilton Technical High-School, Hamilton, Ontario; attends evening art classes.
- 1939-1942 - Vancouver Technical High-School, Vancouver, B.C.; studies design, drafting, sheet-metal working and mechanical drawing.

SOLO EXHIBITIONS:

- 2002 - small untitled memorial display, National Gallery of Canada.
- 2001 - November: Kazuo Nakamura; The Method of Nature. Robert McLaughlin Gallery, Oshawa. Exhibition travelled to:
 - The Confederation Centre Art Gallery and Museum. Charlottetown. Prince Edward Island.
 - Agnes Etherington Art Centre. Queen's University. Kingston.
 - Art Gallery of Hamilton. Hamilton.
 - Mendel Art Gallery. Saskatoon. Saskatchewan.
- June, Tashme Squared, Gendai Gallery, Japanese-Canadian Cultural Centre, Toronto.
- 1999 - Topology Paintings from the Sixties and Seventies. Christopher Cutts Gallery, Toronto.
- 1996 - Kazuo Nakamura. Christopher Cutts Gallery, Toronto.
- 1994 - Kazuo Nakamura. Christopher Cutts Gallery, Toronto.
- 1991 - Number Structure; Part One. Christopher Cutts Gallery, Toronto.
- 1984 - Kazuo Nakamura; 1954 to 1984. Moore Gallery, Hamilton.
- 1978 - The Japanese Canadian Centennial Art Exhibition. Japanese-Canadian Cultural Centre, Don Mills, Ontario.

- 1977 - Japanese Canadian Centennial Society. Ottawa, Ontario.
- 1974
-75 - Kazuo Nakamura Retrospective of 20 Years. Canadian Tour.
 - organized by the Robert McLaughlin Gallery.
 - Musee d'Art Contemporain, Montreal.
 - London Public Library Gallery, London.
 - Mount Saint Vincent University Art Gallery, Halifax.
 - Rodman Hall Art Center, Saint Catherines.
 - Agnes Etherington Art Center, Queen's University, Kingston.
- 1971 - New Paintings. The Jerrold Morris Gallery, Toronto, Ontario.
- 1970 - Kazuo Nakamura Retrospective. Hart House Gallery, University of Toronto
 - Waddington Galleries, Montreal.
 - The Jerrold Morris International Gallery, Toronto.
- 1967 - The Park Gallery, Toronto.
 - The Jerrold Morris Gallery, Toronto.
 - Waddington Galleries, Montreal.
- 1965 - The Jerrold Morris International Gallery, Toronto.
- 1962 - The Jerrold Morris International Gallery, Toronto.
- 1958 - Gallery of Contemporary Art, Toronto.
- 1956 - Gallery of Contemporary Art, Toronto.
 - Picture Loan Society, Toronto.
- 1955
-56 - Western Canada Circuit travelling exhibition.
 - Nakamura; Recent Works. Jerrold Morris Gallery, Toronto.
 - Picture Loan Society, Toronto.
- 1954 - Woodsworth House, Toronto.
- 1953 - Hart House Gallery, University of Toronto.
- 1952 - Picture Loan Society, Toronto.

GROUP EXHIBITIONS:

- 2003 - Plastic Universe. Ottawa Art Gallery.
- 2002 - Painters Eleven. Horsemen Gallery, Markham.
 - October. Painters 15. Shanghai and Guangdong, China, and Museum of Contemporary Art, Toronto, 2003. Curated by Toronto artist, David Urban
- 2001 - Canvas of War. Art Gallery of Ontario, Toronto.
 - Fear of Fear. Ottawa Art Gallery.

- 2000
-01 - Degrees of Abstraction, Sculptures and Works on Paper from the Firestone Art Collection. Ottawa City Hall, Ottawa.
- 1999 - Transliner. McMaster Museum of Art, McMaster University, Hamilton.
- Painters Eleven, Commemorative Exhibition. Drabinsky & Friedland Galleries, Toronto.
- Art Forum Berlin, Berlin.

- March - April. Re-View 1999. Ottawa Art Gallery.
- 1998 - Art Forum Berlin. Berlin.
- 1997 - Works on Paper. Christopher Cutts Gallery, Toronto.
- 1996 - Inaugural Exhibition. Christopher Cutts Gallery, Toronto.
- The OH CANADA Project. The Art Gallery of Ontario, Toronto.
- 1995 - The Glen and Barbara McInnes Family Collection: A Selection from the Collection. Carleton University Art Gallery, Carleton University, Ottawa.
- Chinese New Year Show. Christopher Cutts Gallery, Toronto.
- May 24 - June 30. Toronto File: Alfred Barr, and the Museum of Modern Art Collection. November 1961. Masters Thesis Exhibition. Art Gallery of York University, Toronto. Curated by Barbara Fischer and Ken Carpenter.
- 1994 - Painters Eleven, Mead Museum, Amherst College, Mass., U.S.A., and Anderson Gallery, Buffalo, New York.
- 1993 - The Christmas Show. Christopher Cutts Gallery, Toronto.
- Vintage Modernist Works on Paper. Christopher Cutts Gallery, Toronto.
- 1992
-93 - The 1950s - The Crisis of Abstraction in Canada. National Gallery of Canada.
- Achieving the Modern. Canadian Abstract Painting and Design in the 1950s. Winnipeg Art Gallery.
- 1992 - The White Show. Christopher Cutts Gallery, Toronto.
- Art Contemporain du Canada. Ader Tajan Gallery, Espace Chapon, Paris.
- 1991 - New Canadian Embassy Exhibition. Tokyo, Japan.
- Group 91. Christopher Cutts Gallery, Toronto.
- 1990 - Academicians Collect: Royal Canadian Academy of Arts, Academy House, Toronto.
- 75th Anniversary Exhibition, Art Department, Central Technical High-School, Toronto.
- 1989 - Christmas Exhibition. Christopher J. Cutts Fine Art Limited, Toronto.
- Seventy-Five Years (1914-1989). Art Gallery of Hamilton.
- 1988 - Inaugural Exhibition. National Gallery of Canada.
- Christmas Exhibition. Christopher J. Cutts Fine Art Limited, Toronto.
- The 1950s: Works on Paper: Circulating Exhibition; Art Gallery of Ontario.
- The Other Painting. Royal Canadian Gallery, Toronto.

- 1987 - The CIL Collection (exhibited in more than 200 locations since 1962), Quebec and the Maritimes.
- Shikata Ga Nai; Contemporary Art by Japanese-Canadian Artists. (besides Nakamura, other artists were Akira Yoshikawa, Heather Yamada, Tamio Wakayame, Takeo Tanabe, Aiko Suzuki, Louise Noguchi, Nobuo Kubota, Roy Kiyooka and Bryce Kanbara.)
 - July 24 - August 15, 1987. Hamilton Artists' Inc.
 - October 2-24, 1987, Forest City Gallery, London.
 - November 1-22, 1987, Ha'Ku Gallery, St. Catherines.
 - November 29 - January 3, 1988, Burlington Cultural Centre, Burlington.
 - July 16 - August 28, 1988, Macdonald Stewart Art Centre, Guelph.
 - February 17 - March 20, 1989, Sarnia Public Library and Art Gallery
- 1984 - Toronto Painters of the Sixties. Art Gallery of Ontario. Provincial Circulation
- Masterpieces of 20th Century Canadian Painting. West Palm Beach Gallery, Florida.
 - Wilfred Laurier University, Waterloo.
- 1983
- 85 - European Tour; Ontario Heritage Foundation's Firestone Collection. Plymouth and London England; Paris, France; Madrid Spain.
- 1979 - Twentieth Century Canadian Drawings. The Gallery / Stratford, Stratford.
- 1979
- 81 - Painters Eleven in Retrospect:
 - Robert McLaughlin Gallery, Oshawa.
 - The Gallery, Stratford.
 - Art Gallery of Windsor, Windsor.
 - London Regional Art Gallery, London.
 - Agnes Etherington Art Centre, Kingston.
 - Hart House Gallery, University of Toronto, Toronto.
 - Sir Williams Art Gallery, Concordia, University, Montreal.
 - Beaverbrook Art Gallery, Frederickton.
 - Art Gallery of Nova Scotia, Halifax.
 - The Saskatoon Gallery and Conservatory, Saskatoon.
 - Macdonald Stewart Art Center, University of Guelph.
- 1978
- 80 - A Canadian Survey. The Imperial Oil Collection, circulated by the Art Gallery of Ontario
 - The Japanese Canadian Centennial Art Exhibition in Ontario. travelling exhibition:
 - The MacDonald Gallery, Toronto, November 7 - December 4, 1977.
 - S.A.W. Gallery, Ottawa, December 15 - January 15, 1978.
 - Algoma Art Gallery, Sault Ste. Marie, March 4-20, 1978.
 - Kitchener-Waterloo Gallery, Kitchener-Waterloo, April 6-30, 1978.
 - Lindsay Gallery, Lindsay, May 15 - June 15, 1978.
 - Thames Centre. Chatham, July 1-31, 1978.
- 1977 - Artists' Greetings. Memorial University Art Gallery. St. John's, Newfoundland, December.
- 1975 - 50 Years of The Canadian Society of Painters in Watercolour 1925-1975, Art Gallery of Ontario.
- 1973 - Canada Council Art Bank Collection. Paris.

- 1972 - Toronto Painting: 1953-1965. National Gallery of Canada and Art Gallery of Ontario.
 - Guest Artist. Ontario Society of Artists 101st Exhibition.
 - Canada Council Art Bank Exhibition, Paris.
- 1971 - Painters Eleven: 1953-1960. Robert McLaughlin Gallery.
- 1970
 -71 - Loeb Collection, National Gallery of Canada, Canadian Tour.
- 1968 - Canadian Artists '68. Art Gallery of Ontario.
 - Seventh Biennial of Canadian Painting. National Gallery of Canada.
 - Directors' Choice, an Exhibition sponsored by the Canada Council, Circulated by the Confederation Art Gallery and Museum. Charlottetown.
 - Annual Winter Exhibition. Art Gallery of Hamilton.
- 1967 - Centennial Exhibition of Canadian Prints and Drawings, Australia
 - Sculpture '67. Toronto.
 - Centennial Exhibition of Quebec and Ontario Painter.
 - Canadian Art of Our Time. The Winnipeg Art Gallery.
 - Ontario Centennial Art.
 - Twenty Canadians, Douglas Gallery, Vancouver.
 - Canadian Paintings of the Sixties. circulating exhibition.
 - Centennial Exhibition: Some Artists Who Lived and Worked in Hamilton, Art Gallery of Hamilton. Oct. 26 - Nov. 26.
- 1965 - Cardiff Commonwealth Festival Exhibition. Cardiff, Wales, Great Britain.
 - Art and Engineering. Art Gallery of Ontario.
 - Through Canadian Eyes. Glenbow Museum, Calgary.
 - Focus on Drawing - Canada / Great Britain / Italy / Spain, The Women's Committee, Art Gallery of Ontario.
- 1964 - First Biennial of Drawings and Watercolours. National Gallery of Canada.
 - Four Painters and Sculptors. London Public Library and Art Museum.
 - World Show. Washington Square Gallery, New York City.
- 1963 - Recent Acquisitions. The Museum of Modern Art.
 - Contemporary Canadian Painting. Rochester Memorial Art Gallery.
 - 5th Biennial of Canadian Paintings. London.
 - Members' Loan Gallery Acquisitions. Albright-Knox Gallery.
 - 80th Annual Spring Exhibition, Montreal Museum of Fine Arts.
- 1962 - Canadian Painting. Polish Tour.
 - Contemporary Canadian Art. Nairobi, Kenya.
 - 19 Canadian Painters '62'. J.B. Speed Museum, Louisville.
 - Commonwealth Art. London, England.
 - International Seminar Exhibition. Farleigh Dickerson University, Madison, New Jersey.
 - Recent Acquisitions, Museum of Modern Art.
 - 1st Biennial, Winnipeg Art Gallery.
- 1961 - Second Paris Biennial. Musée d'art moderne, Paris.
 - Eight Ontario Painters, University of British Columbia and Western Canada Circuit.
 - Fourth Biennial Exhibition of Canadian Art. National Gallery of Canada.

- Summer. Sculpture Exhibition, Hart House Quadrangle, University of Toronto.
 - Summer. Toronto '61. New Design Gallery, Vancouver
 - December 2 - January 15, 1962. Painters Eleven. Kitchener-Waterloo Art Gallery.
- 1960
- 61 - Fifth International Hallmark Art Award Exhibition. New York and international tour.
- 1960
- Canadian Prints, Drawings and Watercolours. American Federation of Arts, USA. Tour
 - Nakamura and Town. The Montreal Museum of Fine Arts.
 - Canadian Art, Museo Nazionale de Arte Moderno, Instituto Nazionale de Bellas Artes, S.E.P. Mexico City.
 - April 8-30. Painters Eleven. Stable Gallery, Montreal, and the Montreal Museum of Fine Arts.
- 1959
- Museum Rath, Geneva.
 - October 31 - November 15. Painters Eleven with Ten Distinguished Artists from Quebec. Park Gallery, Toronto
 - October 17 - November 26. Points of View, London Regional Art Gallery.
 - September 4 - November 26. A Canadian Portfolio. Museum of Contemporary Art, Dallas.
- 1958
- 59 - September 5 - March 1, 1959. Painters Eleven 1958. National Gallery of Canada.
 - September 5-12. Winnipeg Art Gallery
 - September 26 - October 12. Fine Arts Gallery, University of British Columbia.
 - November 7-23. Calgary Allied Art Gallery, Calgary.
 - November 28 - December 28. Norman MacKenzie Art Gallery, Regina.
 - January 2-18, 1959. Edmonton Art Gallery, Edmonton, Alberta
 - February 13 - March 1. Agnes Etherington Arts Centre, Kingston.
 - March 6-22. Mount Allison School of Fine and Applied Art. Sackville, N.B.
 - Wallraf-Richartz Museum, Cologne, Germany.
 - Canadian Graphics and Drawings. Belgrade, Zagreb and Ljubljana, Yugoslavia.
 - 20th Biennial International Watercolour Exhibition. Brooklyn Museum.
 - Canadian Watercolours and Graphics Today. National Gallery of Canada.
 - 33rd Annual Exhibition, Canadian Society of Painters in Watercolour.
- 1958
- A Canadian Portfolio, Dallas Museum of Contemporary Art, Dallas.
 - First Inter-American Bieneale. Mexico City.
 - International Festival of Art. New York.
 - Contemporary Canadian Art. Central Museum, Utrecht & Groningen Museum, Holland.
 - Canadian Group of Painters. Toronto.
 - Winnipeg Show, Winnipeg Art Gallery.
 - May 30 - June 19. Painters Eleven. Alan Gallery, Hamilton.
 - May 3-23. Painters Eleven 1958. Museum of Fine Arts, Montreal.
- 1957
- c. December - Sketches and Finished Paintings. Art Gallery of Hamilton.
 - October 30 - November 16. Painters Eleven 1957. Park Gallery. Toronto
 - Four Man Exhibition. Art Gallery of Ontario.
 - Contemporary Canadian Painting. Australian Tour. Organized by the National Gallery of Canada.
 - 31st Annual Exhibition, Canadian Society of Painters in Watercolour, Toronto
 - Winnipeg Show, Winnipeg Art Gallery.

- 1956
-57 - Canadian Abstract Art. Smithsonian Museum tour, USA.
- 1956 - Fourth International Exhibition of Drawings and Engravings. Lugano Art Museum, Lugano, Switzerland. (Also shown were Leon Bellefleur, Bruno Bobak, Donald Jarvis).
- September 15 - October 30. Painters Eleven Exhibition. Arts and Letters Club, Toronto.
- Canadian Abstract Paintings. National Gallery of Canada, Ottawa.
- April 8 to May 20. 20th Annual Exhibition: Painters Eleven & American Abstract Artists' Exhibition. Riverside Museum, New York.
- Kazuo Nakamura and Jack Nichols. University of British Columbia Art Gallery.
- February 28 - March 7. Small Pictures by Painters Eleven. Roberts Gallery, Toronto
- 1955
-56 - December - May. Painters Eleven. Western Ontario Gallery Circuit
- December. St. Catharines.
- January, 1956. London.
- February 27 - March 4. Hart House, University of Toronto.
- March 22 - April 5. The McLaughlin Library
- April 6 - May 2. Willistead Gallery, Windsor.
- May 16 - ?. Art Gallery of Hamilton.
- 1955 - February 11-26. Painters Eleven. Roberts Gallery, Toronto
- First Biennial. The National Gallery of Canada.
- Canadian Art, Canadian National Exhibition, Toronto.
- 20th Biennial International Watercolour Exhibition, The Brooklyn Museum, Brooklyn.
- 1954 - February 13-27. Painters Eleven. Roberts Gallery, Toronto.
- late March - early April. Painters Eleven (same exhibition), Robertson Galleries, Ottawa
- Drawings and Prints: Cahen, Nakamura and Town. Eglinton Gallery, Toronto.
- Canadian Group of Painters.
- Drawings and Prints (Cahen, Nakamura and Town). Eglinton Gallery, Toronto.
- c.December. Painters Eleven. Y.M.C.A., Adelaide House, Oshawa.
- 1953 - 27th Annual Exhibition, Canadian Society of Painters in Watercolour
- October 19 - ? Abstracts at Home. Simpson's store, Toronto
- 1952 - Ontario Japanese-Canadian Cultural Centre Art Exhibit, Toronto. c. September 20.
- Canadian Society of Graphic Art.
- 1951 - 25th Annual Exhibition, Canadian Society of Painters in Watercolour. (where)
- 1950 - Unaffiliated Artists Exhibition, Toronto

INTERNATIONAL ART FAIRS:

- 2000 - Toronto International Art Fair, Toronto.
- 1999 - Art Forum Berlin, Berlin.

1998 - Art Forum Berlin, Berlin.

COMMISSIONS:

- Two Sculptures. Lester Pearson International Airport, Toronto.
- Mural Panel. Ontario Provincial Queen's Park Complex, Toronto.
- MacMillan Bloedel, Vancouver, B.C.

AWARDS:

- 2000 - Royal Canadian Academy of Art
- June, Honorary Fellow, Ontario College of Art and Design, Toronto.
- 1961 - Purchase Award, Fifth International Hallmark Art Award Exhibition. New York and international tour.
- 1956 - Prize, Fourth International Exhibition of Drawings and Engravings. Lugano Art Museum, Lugano, Switzerland. (Also shown were Leon Bellefleur, Bruno Bobak, Donald Jarvis)

PUBLIC COLLECTIONS:

Agnes Etherington Art Gallery.
Art Gallery of Greater Victoria.
Art Gallery of Ontario.
Art Gallery of Windsor.
British Museum.
Department of External Affairs
Embassy Of Japan, Ottawa.
Hamilton Art Gallery.
Hirshhorn Museum, Washington, D.C.
Kitchener-Waterloo Art Gallery.
McMichael Canadian Art Collection.
Mendel Art Gallery,
Musee d'art de Joliette, Joliette, Quebec
Musee du Quebec.
Museum of Modern Art, New York
New Brunswick Museum,
Ontario Centennial Collection, Toronto.
Rodman Hall Art Center, Saint Catherines.
Winnipeg Art Gallery.

Art Gallery of Hamilton.
Art Gallery of Ottawa.
Beaverbrook Art Gallery.
Canada Council Art Bank.
Edmonton Art Gallery.
Glenbow Museum, Calgary
Hart House, University of Toronto
Japan Canada Society, Tokyo, Japan.
London Regional Art Gallery.
Museum of Modern Art, Lugano, Switzerland
Musee d'art contemporain de Montreal.
Museum of Fine Arts, Montreal.
Musee Pierre Boucher,
National Gallery of Canada
Norman MacKenzie Art Gallery.
Robert McLaughlin Gallery.
Sarnia Art Gallery.
Vancouver Art Gallery.

UNIVERSITY COLLECTIONS:

Carleton University Art Gallery.
York University.

Concordia University.
Laurentian University, Sudbury.

University of British Columbia.
University of Guelph.
University of Toronto.

University of Western Ontario.
University Club of Montreal.

CORPORATE COLLECTIONS:

Cassels, Brock and Blackwell (Law Firm), Toronto.
Canadian Imperial Bank of Commerce, Montreal.
Canadian Industries Limited Collection, Montreal.
David Thompson Collection, Pittsburgh.
Toronto Dominion Bank Collection, Toronto.
Dominion Foundries and Steel Collection, Hamilton.
Helena Rubenstein Collection, New York.
James Richardson and Company, Winnipeg.
Philip Johnson Collection, Connecticut.
MacMillan Bloedel Collection, Vancouver.
Northern and Central Gas Collection, Toronto.
Pirelli Cables Centennial Collection, Montreal.
Readers' Digest Centennial Collection, Montreal.

CIL Collection, Montreal
Hallmark Collection, USA.
Canada Packers, Toronto.
Imperial Life Assurance, Toronto.
Imperial Oil Collection, Toronto.
Japan Canada Society, Tokyo, Japan.
Mitsui Canada, Toronto.
Rothmans of Canada Limited.
Montreal Trust Collection, Montreal.
John C. Parkin, Architects, Toronto.
Sumitomo Metals, Tokyo, Japan.
Swiss Bank Corporation (Canada).
Defasco Incorporated, Hamilton.

SELECTED PRIVATE COLLECTIONS:

Nora Dryburgh, Vancouver
Joseph Hirshorn, New York
Philip C. Johnson, New York
Harold Klunder, Ontario
John C. Parkin, Toronto
D. Thompson, Pittsburgh
Samuel Zacks, Toronto

ORGANISATIONS TO WHICH NAKAMURA BELONGED:

American Association for the Advancement of Science
Canadian Group of Painters
Canadian Society of Graphic Artists
Canadian Society of Painters in Watercolour
Ontario Society of Artists
Royal Canadian Academy of Art

PUBLISHED STATEMENTS:

Kazuo Nakamura. Exhibition Catalogue. curated by Kay Woods. "The Science of Art." Statement by Nakamura. Robert McLaughlin Gallery, 1974.

Sculpture '67. Selection from interview of Nakamura by Dorothy Cameron, curator. 1967.

Shikata Ga Nai. Exhibition Catalogue. 1988. coordinator, Bryce Kanbara. Statement by Nakamura.

The Japanese Canadian Centennial Art Exhibition in Ontario. "Introduction", by Nakamura. Japanese Canadian Centennial Society and the National Gallery of Canada. 1977-78.

ARTIST FILES:

Calgary Public Library, Calgary.
Information Services, Library Research Services, University of Calgary Library.
Stanley A. Milner Library, Edmonton Public Library.
Library, Edmonton Art Gallery.
Fine Arts Library, University of British Columbia.
Library, Vancouver Art Gallery.
Clara Lander Library, Winnipeg Art Gallery.
Fine Arts Department, Hamilton Public Library.
London Public Library.
Library and Archives, National Gallery of Canada.
Edward P. Taylor Research Library and Archive, Art Gallery of Ontario.
Library, Montreal Museum of Fine Arts.
Media Centre, Musee d'art contemporain de Montreal.

EXHIBITION REVIEWS AND ARTICLES:

- Anonymous. "Interest Aroused in Art Exhibit, Deadline Nears." The New Canadian (Toronto) 6 Sept. 1952.
- . "Toronto Picture Society to Show Nisei's Works." The New Canadian (Toronto) 1 Nov. 1952.
- . "Paintings by Nisei Being Exhibited Sunday." The New Canadian (Toronto) 19 Sept. 1953.
- . "Communications in Art." Saturday Night Magazine Vol. 60, no. 22, 5 March 1955.
- . "Kazuo Nakamura Exhibits with Canadian Group of Painters." The Continental. 26 Nov. 1954.
- . "Kazuo Nakamura: Recognised as Among Canada's Leading Painters." The New Canadian (Toronto) 18 Feb. 1956.
- . "Kazuo Nakamura and Jack Nichols at University of British Columbia Art Gallery." The Province (Vancouver) 24 March 1956.
- . "Toronto Artist Award Winner in Swiss Show." The Telegram (Toronto) 24 April 1956.

- . "L'Ouest, vu par un peintre de Toronto." La Presse (Montreal) 21 June 1956.
- . Untitled Review. Macleans Magazine (Toronto) 13 Oct. 1956.
- . "Achat d'une peinture d'un Canadien Japonais." La Presse (Montreal) 12 Nov. 1956.
- . "Record Sales at Art Show." The Telegram (Toronto) 12 Nov. 1956.
- . Untitled Review. Varsity (Toronto) 13 Dec. 1956.
- . "Nakamura Second Canadian Winner in Swiss International Exhibition." Weekend Magazine (Toronto) Vol. 7, No. 43, 1956 or 1957.
- . Weekend Magazine. (Toronto) Vol. 7, No. 43, 1957
- . "Nakamura et Hedrick." La Presse (Montreal) 4 Oct. 1957.
- . "One-Man Show By Nakamura Poetic, Abstract." The Globe and Mail (Toronto) 5 April 1958.
- . "'Painters Eleven' exhibit at l'Ecole des Beaux Arts." Le Presse (Montreal) 3 May 1958.
- . La Presse (Montreal) May 1958.
- . "Canadian Art for your Home." Canadian Homes and Gardens. Sept. 1959.
- . "Toronto Artists in N.Y. Exhibit." The Toronto Star 11 Oct. 1960.
- . "Toronto Artists' Work Included in Exhibition." Kingston Whig-Standard. 18 Oct. 1960.
- . Montreal Star 5 Nov. 1960.
- . "Painting - Kazuo Nakamura." Midnite News (Toronto) 15 June 1962. PAGES.
- . Globe and Mail (Toronto) 2 Oct. 1965.
- . "American Abstract Artists with Painters 11 of Canada." The Village Voice (New York) Vol. 1, No. 3, 16 May 1965.
- . Globe and Mail (Toronto) 12 Oct. 1968.
- . The Toronto Star 16 Oct. 1968.
- . "Retrospective." Montreal Gazette 29 June 1974.
- . "Nakamura Show." Hamilton Spectator 12 May 1984.
- . "Paintings Inspire Music." News of the Arts. Vol. 13 No. 5, 1985.
- Ayre, Robert. "The Sound and Fury of Painters Eleven." The Montreal Star 10 May 1958.

- . "Kazuo Nakamura; Within the Scientist, a Poet." Montreal Star 2 May 1970.
- Beale, Nancy. "Nakamura Uncovers Inner Structures in Life." Ottawa Citizen 24 Oct. 1993.
- Bell, Andrew. "Canadian Painting." The Studio (London, England) 1956.
- . "The Art of Kazuo Nakamura." Canadian Art Vol.16, No. 3. August 1959. p.168. pp. 168-173.
- Brown, Theodore, M. "19 Canadian Painters at the J. B. Speed Art Museum, Louisville, Kentucky."
- Carroll, Jock. "New Accent to Canadian Painting." Weekend Magazine (Toronto).
- Cragg, Margaret. "Abstract Art Keys Series of Rooms." The Globe and Mail (Toronto) 14 Oct. 1953.
- D. H. "Tashme Squared." Now Magazine, Toronto, June 28, July 4, 2001.
- Daley, T. M. "Painters Eleven." The Varsity (Toronto) 17 Feb. 1954.
- Dault, Gary Michael. "Kazuo Nakamura's Lucky Numbers." Globe and Mail (Toronto) 1998.
- . "Artist was Looking for the Grand Theory." Globe and Mail (Toronto) 26 April 2002.
- Duval, Paul. "Canadian Galleries Snub U.S. Artists." The Telegram (Toronto) 21 April 1956.
- . "Accent on art." The Telegram (Toronto) April, 1956.
- Elliott, George. "Nakamura: Painter on the Threshold." Canadian Art Vol. 11. No. 4. Summer. 1954. pp. 136-139.
- Fulford, Robert. "Artists in boom-town: young painters in Toronto." Canadian Art Vol. 14. No. 2 Winter 1957. pp. 68-71.
- . Canadian Art Vol. 8. No. 1. January and February 1961. pp. 34-35.
- . "Stamp of Approval." The Toronto Star 2 Feb. 1961.
- . "Japanese Spirit." Ottawa Citizen 14 April 1962.
- . "The New World of Pattern." Mayfair Magazine (Toronto). Feb. 1956.
- . Untitled Review. Toronto Daily Star 12 Dec. 1961.
- Glado Paul. "Kazuo Nakamura: An Artist Solves a Problem." Montreal Gazette 22 April 1967.
- Godley, Elizabeth. "Search for Identity Wears Many Faces; Japanese-Canadian Works Zero in on Personal Themes." The Vancouver Sun 11 April 1989.
- Gopnik, Blake. "Painters Eleven anniversary a mixed bag." Globe and Mail. (Toronto).

- Hanna, Dierdre, "Tashme Squared." NOW Magazine Online Edition (Toronto) Vol. 20 No. 43 June 28 - July 4, 2001. <http://www.nowtoronto.com>.
- Hale, Barry. "Still Knocking Them Out of the Park." The Canadian Gazette (Toronto) 27 Dec. 1975.
- Heine, William. "Points of View Make a Lively Show." Weekend Magazine (Toronto) Vol 8, No. 45, 8 Nov. 1958.
- Hicklin, Ralph. "Pick Nakamura for Paris Biennial." Globe and Mail (Toronto) 5 August 1961.
- Higa, Karin M. Untitled Review Art Journal (New York) Vol. 55. No. 3. Fall 1996. pp. 6-13.
- Hill, Richard William. "Tashme2: Early Works of Nakamura." Fuse (Toronto) Vol. 24, No. 2, Dec. 2001.
- Holubizky, Ihor. "Kazuo Nakamura; Christopher Cutts Gallery." Canadian Art Vol. 9, No. 4, Spring 1992. p. 78.
- Hume, Christopher. "Exhibit Makes Grasping the '50s a Bit Less Abstract." The Toronto Star 27 March 1993.
- , "Eleven who changed our cultural life." The Toronto Star 13 Feb. 1999.
- Kanbara, Bryce. "Tashme Squared, early works of Kaz Nakamura." Nikkei Voice (Toronto) May 2001.
- Kilbourn, Elizabeth. "Art and Artists." The Toronto Star 9 June 1962.
- L. C. "Display of Non-Objective Art Seen Offering Little to the Mind." The London Free Press, 10 Jan. 1956.
- MacDonald, Rose. "Artist Painted with Razor and String." The Telegram (Toronto) 28 Oct. 1954.
- Malcolmson, Harry. The Telegram (Toronto) 9 Oct. 1965.
- Mays, John Bentley. "Kazuo Nakamura at the Moore Gallery." The Globe and Mail (Toronto) 10 May 1984.
- McCarthy, Pearl. "Parade of Abstract Talent with Hodgson in the Lead." The Globe and Mail (Toronto) 17 Oct. 1953.
- , "To disagree harmoniously - Object of Painters Eleven." The Globe and Mail (Toronto) 13 Feb. 1954.
- , "Professionals Over-Fussy About Amateur Scene." The Globe and Mail (Toronto) 15 May 1954.
- , "New Setting for Contemporary Art." The Globe and Mail (Toronto) 12 Nov. 1957.

- , "Paste, Paper, Pigment in Watercolour Show." The Globe and Mail (Toronto) 6 Dec. 1958.
- McKay, A. F. "Painters Eleven Work on Display at Gallery." Regina Leader Post 29 Nov. 1958.
- McPherson, Hugh. "Can Toronto Overtake Montreal as an Art Centre?" Canadian Art Vol. 15. No. 4. Autumn 1958. pp. 262-269.
- Metcalfe, E. Bennett. "No Wonder Spectators are Bewildered - so are the Artists." The Province (Vancouver) 17 Aug. 1961.
- Metcalfe, Bennett. "Abstract Artists have Made their Point - Now What?" The Province (Vancouver) 23 April 1961.
- Milroy, Sarah. "Tashme Squared: Early Works of Kazuo Nakamura." The Globe and Mail (Toronto) 21 July 2001
- , "Adding and Subtracting with Nakamura." The Globe and Mail (Toronto) 24 Nov. 2001
- Repentigny, R. de. "Nakamura s'affirme, Smith se revele." La Presse (Montreal) 27 Sept. 1958.
- , "Le Groupe des Onze." Vie des Arts. (Montreal) Vol. 12, Autumn 1958.
- Ronald, William. "Abstracts at Home." Canadian Art Vol. 11, No. 2, Winter 1954. pp. 51-52.
- Russell, Paul. "Artist has Earned Enviably Reputation." The Toronto Star 10 Oct. 1970.
- Samuel, Margot. "Kazuo Nakamura in Retrospect." Art Magazine Toronto. 1974.
- Takeya, Daisuke. "The works of Kazuo Nakamura, one of the Founders of Painters Eleven." The New Canadian (Toronto) 26 April 2001.
- Taylor, Kate. "Large Ideas at Play in Nakamura's Numbers." The Globe and Mail (Toronto) 22 Nov. 1991.
- Thomson, Hugh. "Nakamura's Impressions in Modern Art Gallery." The Toronto Star 13 Nov. 1956.
- Torizuka, Sakura. "Kazuo Nakamura, a living treasure of Canadian art." The New Canadian (Toronto) 5 April 2001.
- , "Opening of Tashme Squared: The Early Works of Kazuo Nakamura Exhibit Draws Varied Crowds to Japanese Canadian Cultural C." The New Canadian (Toronto) 26 April 2001.
- The Editor. Canadian Art Vol. 18, No. 2 Summer 2001. p. 20.
- Thomas, Hugh. "Painters Eleven Show Modern Art." The Toronto Star (Toronto) 13 Feb. 1954.
- Tovell, Vincent. "Eleven Painters Start a War." Canadian Commentator (Toronto) Vol. 1, No. 11, Nov. 1957.
- Vorres, Ian. "Artists Illustrate and Explain Methods." The Hamilton Spectator 13 Dec. 1957.

EXHIBITION CATALOGUES:

- Browns, Jonathan, Fear of Fear. Ottawa Art Gallery. 2001
- Burnett, David Art Contemporain du Canada. Ader Tajan, Commissaires -Priseurs Associes, Paris, France. 1992
- Cutts, Christopher. Art Forum Berlin. Berlin, Germany. 1999.
- , Art Forum Berlin. Berlin, Germany. 1998.
- Duval, Paul. The Park Gallery Presents Painters Eleven 1957. The Park Gallery, Toronto. 1957
- Holubizky, Ihor Kazuo Nakamura: The Methods of Nature. The Robert McLaughlin Gallery, Oshawa, Ontario. November 2001
- Kanbara, Bryce Tashme Squared. Gendai Gallery, Japanese Canadian Cultural Centre, Toronto. June 2001.
- , Shikata ga nai; Contemporary Art by Japanese Canadians. Hamilton Artists' Inc., Hamilton, July, 1987.
- Leclerc, Denise. The Crisis of Abstraction in Canada: the 1950's. National Gallery of Canada, Ottawa. 1992.
- McKaskell, Robert Achieving the Modern: Canadian Abstract Painting and Design in the 1950s. Winnipeg Art Gallery. December 17, 1992 - February 28, 1993.
- Toff, Alan. Kazuo Nakamura Retrospective. Hart House, University of Toronto. Toronto, August, 1970.
- Woods, Kay. Kazuo Nakamura. Robert McLaughlin Art Gallery, Oshawa, Ontario. 1974.
- , Kazuo Nakamura, La musee d'art contemporain, Montreal, Quebec. 1974.

UNPUBLISHED MATERIAL:

- Kanbara, Bryce. Video interview at home of Nakamura. 1993.
- , Video interview with Nakamura at Gendai Gallery, Japanese Canadian Cultural Centre, Toronto. c.1993.
- Koh, Germaine. Acting Assistant Curator, Contemporary Art. "For the Collection of Contemporary Art." Ottawa: National Gallery of Canada. January, 1999. Nakamura Files.
- Leduc, Marie. "Legitimation of the Abstract: The Critical Response to Painters Eleven: 1953-1960." Major Research Paper, Department of Art History, Faculty of Fine Arts, York University, Toronto August 1992.

- Mcdonell, Marion (Kit Lort).
 "A Quiet Spirit: Cultural Identity Reflected in the Work of Japanese Canadian Artists." Masters Thesis, Department of Art History, Faculty of Fine Arts, York University, Toronto, 1991.
- MacKinnon, Marlene. "Kazuo Nakamura and his Painting, 'Untitled'", Major Research Paper. Department of Art History, Faculty of Fine Arts, York University, Toronto, 1970.
- Murray, Joan. Taped interviews with Nakamura. 1979. Archives, Robert McLaughlin Gallery.
- Schlichting, Leonard. Handwritten letter and list of questions with typed response from Nakamura. March 12, 1978. Archives. Winnipeg Art Gallery.
- Seline, Janice. Assistant Curator, Contemporary Art. "For the Collection of Contemporary Canadian Prints and Drawings." Ottawa: National Gallery of Canada. Feb. 13, 1995. Nakamura Files.
- Toff, Alan. Taped conversation with Nakamura in conjunction with solo exhibition at Hart House, University of Toronto. 1975.
- Tovell, Vincent. CBC Radio Review of American Abstract Artists exhibition. May 1956.
- Yamashita, Kim (Hiramori).
 "'Spacial Concept: Geometry' by Kazuo Nakamura." Department of Art History, Faculty of Fine Arts, York University, Toronto. no date.

APPENDIX FOUR

Chronology for Kazuo Nakamura

- 1877
- 1928 - Japanese immigration (the Issei, or the first generation away from Japan) arrived in Canada and settled mostly in or near Vancouver and Victoria and in smaller towns and villages along the Pacific Coast.
- 1895 - All Japanese settlers and their descendants are denied the vote in British Columbia. The Privy Council later upheld this law whereby naturalised or Canadian-born British subjects could be barred from voting in provincial elections and, in effect, denied other privileges and positions granted only to duly registered voters.
- 1907 - Anti-Asian riots took place in Vancouver. Japan, at Canada's insistence, agreed to limit male immigrants to 400 per year. Before this agreement, most Japanese immigrants were men; afterwards, most were women coming to join their husbands.
- 1925 - Nakamura's brother, Mikio (Micky), was born; he later became Vice-President and General Manager of Industrial Corporation, Toronto.
- 1926 - Kazuo Nakamura was born October 13, Vancouver, British Columbia.
- Nakamura's parents were Toichi Nakamura; he immigrated to Canada from Hiroshima at age 16, and Yoshiyo Uyemoto.
- the Nakamura family lived in the area of Main and Cordova, downtown Vancouver where his father owned and operated a Western-style restaurant. Later, when the restaurant failed, he worked as a baker and a clothes cleaner.
- 1927 - Nakamura's younger brother, Yukio, was born; he later studied Anthropology at the University of Toronto, and at the London School of Economics.
- 1928 - Canada established a quota of 150 Japanese immigrants per year, a quota that, in subsequent years, was seldom allowed to be filled.
- 1931 - Nakamura's first sister, Masako, was born; she became a bookkeeper.
- 1934 - Nakamura's second sister, Jane, was born; she became a grade school teacher and librarian.
- 1937 - The New Bauhaus opened in Chicago with Moholy-Nagy as director.
- 1939 - Influenced by his uncle, Shusaku Nakamura, who was an art lover and hobbyist artist, Kazuo Nakamura began painting with watercolours; he focused on city and country scenes not far from his home; he also began working from memory.
- 1940 - All Japanese immigration was halted by the federal Canadian government.

- 1940
-41 - Nakamura attended Vancouver Technical High School, where he studied drafting and design with Jock Macdonald, future member of Painters Eleven, along with Nakamura.
- Nakamura's younger brother Yukio studied art at the John Oliver High School; he taught Nakamura the rudiments of linear perspective.
- 1941 - December 7: Japanese attacked Pearl Harbour and Hong Kong; Canada declared war on Japan.
- 1942 - Various orders in council made under the War Measures Act required that all those of Japanese ancestry living within 100 miles of the Pacific Coast be removed from this "protected area." Some 21,000 people, three quarters of whom are Canadian citizens, were sent into internal exile, mostly to work-camps and detention-camps in the interior of British Columbia, and private farms in Alberta. They were allowed to retain only those personal goods that they could carry with them. The rest of their property was confiscated and sold at fire-sale prices, with a portion of the proceeds used by the government to pay for the costs of this massive relocation.
- October 15: Kazuo Nakamura, and his family were sent to an internment camp in the "town" of Tashme near town of Hope, in the interior of British Columbia; Nakamura worked clearing brush during the day, and attended high school classes in the evening. He painted in the evenings and on weekends.
NOTE: several sources, including Nakamura himself, claim that he was sent to Tashme Internment Camp in October 1942. However, according to the catalogue for the exhibition Tashme², he produced the painting *Night Class* in September 1942. The confusion is increased because on the chalk board depicted in the painting Nakamura wrote the date September 9, 1944.
- 1943 - Nakamura bought, by mail order, the art history picture book, World Famous Paintings. 1939, written by Rockwell Kent.
- 1944 - October 15, Tashme Internment camp was closed.
- November 25; the Nakamura family left Tashme for Hamilton, Ontario. They expected to be allowed to return to Vancouver when the war was over.
- Nakamura worked for Kraft Container Limited and continued in paint during his spare time.
- 1945 - August 6: most of the Japanese city of Hiroshima was destroyed by an atomic bomb, dropped by the United States Air Force; about 75,000 people killed or fatally injured. Nakamura lost his grandparents and an uncle and other relatives in the destruction of the city.
- After the defeat of Japan, Japanese-Canadians were required to choose between "repatriation" to war-ravaged Japan or another dispersal east of the Rocky Mountains. Most chose the second option. The Nakamura family decided to move to Toronto from Hamilton, but a city bylaw restrictions against Japanese-Canadians forced them to remain in Hamilton another two years.
- 1945
-46 - Nakamura attended a evening painting course at Hamilton Technical School.
- 1946 - A government proposal to deport 10,000 Japanese-Canadians to Japan elicits a massive public protest and is dropped.

- 1947 - the Nakamura family moved to Toronto from Hamilton, and Nakamura began working in a sheet-metal shop.
- 1948
-51 - Nakamura studied in the Art Department, Central Technical High School. Toronto; his instructors there were:
 Charles Goldhamer (Printmaking)
 Peter Howarth (Head of Department)
 Dawson Kennedy (Design),
 Virginia Luz (Illustration),
 Doris McCarthy (Painting and Art History),
 Donald Neddeau (Communication Arts),
 Robert Ross (Life Drawing),
 Jocelyn Taylor (Painting),
 Elizabeth Wyn Wood (or so George Elliott claims in "Nakamura - Painter on the Threshold", but she is not listed in 1990 CTS Alumni Exhibition catalogue)
 - Nakamura continued to produce his own drawings and watercolours on weekends.
- 1949 - Japanese-Canadians were allowed to return to the Pacific Coast and were given the right to vote in provincial and federal elections. The Nakamura family decided to remain in Toronto.
- 1950 - Unaffiliated Artists Show, Eaton's Department Store. Toronto.
 - Canadian Society of Painters in Watercolour annual exhibition: painting titled *Beach Statue* was accepted.
 - Canadian Society of Graphic Artists Annual exhibition: paintings titled *Distant Valley* and *Swamp Trees* were accepted.
 - Nakamura joined Canadian Society of Graphic Artists.
- 1951 - Nakamura made first sale to Art Gallery of Toronto, and to the National Gallery of Canada.
 - Nakamura graduated from CTS, Toronto.
 - Nakamura did some free-lance commercial art, but decided to begin painting full-time.
 - Nakamura joined the Canadian Society of Painters in Watercolour.
- 1952 - Canadian Abstract Exhibition, Y.W.C.A. Adelaide House. Oshawa. October. Sponsored by Southern Ontario Galleries. This exhibition included nine of the future Painters Eleven artists; Macdonald, Luke, Ronald, Bush, Cahen, Gordon, Hodgson, Mead, and Town as well as Nakamura
 - Mikio Nakamura became president of the Japanese Canadian Cultural Centre.
 - Ontario Japanese-Canadian Cultural Community Art Exhibit, Toronto. c. September 20.
 - November: Picture Loan Society, Toronto, Ontario.
 - Nakamura joined the Canadian Society of Graphic Arts Exhibition.
- 1953 - Watercolour Society Annual Exhibition.
 - Ontario Society of Artists Annual Exhibition.
 - Royal Canadian Academy Annual Exhibition. September.
 - Solo Exhibition. Hart House Gallery, University of Toronto. September.
 - Abstracts at Home Exhibition at Simpson's Department Store. October. Nakamura exhibited *Plowed Field*, *Morning Landscape*, *Summer Reflections* and *Green Firs*.

- forms Painters Eleven with ten other artists:

Jack Bush (1909-71)	age 44
Oscar Cahén (1916-1956)	age 37
Hortense M. Gordon (1887-1961)	age 66
Tom Hodgson (1924-)	age 29
Alexandra Luke (1897-1967)	age 56
Jock Macdonald (1897-1960)	age 56
Ray Mead (1921-)	age 32
William Ronald (1926-1998)	age 27
Harold Town (1924-1990)	age 29
Walter Yarwood (1917-1994)	age 36

1954 - Painters Eleven: First Group Show. Roberts Gallery, Toronto, Ontario, February 13-27, and Robertson Gallery, Ottawa. Late March - early April. Nakamura exhibited *Morning Mists and Forest*.

- Solo Exhibition at Wordsworth House, Toronto.
- Drawings and Prints: Cahen, Nakamura and Town. Eglinton Gallery, Toronto.

1955 - First Biennial. The National Gallery of Canada, Ottawa.
 - Winter: William Ronald moved to New York.
 - Painters Eleven Exhibition. Roberts Gallery. Toronto. February 11-26.
 - Y.W.C.A. (Adelaide House). Oshawa. March 5. Nakamura exhibited *Beyond*.

1955

-56 - Painters Eleven Exhibition. Organized by Western Ontario Gallery Circuit. Nakamura showed *Lakeside, Islands of Fog and Inner Movement*.
 - Saint Catherines Public Library Art Gallery. December - January.
 - London Public Library and Art Museum. January.
 - Hart House, University of Toronto. February 27 - March 4.
 - McLaughlin Public Library. Oshawa. March 22 - April 5.
 - Willistead Art Gallery of Windsor. April 6 - May 2.
 - Art Gallery of Hamilton. From May 16.

1956 - Small Pictures by Painters 11, Roberts Gallery, Toronto. February 27 - March 7.
 - 20th Annual Exhibition of American Abstract Artists with 'Painters Eleven' of Canada, Riverside Museum. New York. April 8 - May 1956. Nakamura exhibits *White Landscape and Suspension*.
 - Painters Eleven Small Originals. Pauline's Giftland. Oshawa. ca. May.
 - Painters Eleven. Arts & Letters Club. Toronto. September 15 - October 30.
 - Gallery of Contemporary Art, Toronto.
 - Oscar Cahen is killed in car accident.
 - Picture Loan Society, Toronto, Ontario;
 - Fourth International Exhibition of Drawings and Engravings. Museum of Modern Art, Lugano, Switzerland. Along with eight other artists, Nakamura won 800 Swiss francs).

1956

-57 - Canadian Abstract Art. Smithsonian Museum exhibition toured the USA.
 - Canadian Abstract Paintings. The National Gallery of Canada, Ottawa.
 - Painters Eleven & American Abstract Artists' Exhibition, Riverside Museum, New York.

- 1957
- Sketch and Finished Painting. Group Exhibition. Art Gallery of Hamilton.
 - Four-Man Exhibition. Art Gallery of Ontario, Toronto, Ontario.
 - Contemporary Canadian Painting. Australia.
 - Clement Greenberg visited members of Painters Eleven in their Toronto studios.
 - Painters Eleven 1957. Park Gallery. Toronto. October 31 - November 16. Nakamura exhibited *Cycle*, *Infinite Waves* and *Into Space*.
 - Ronald resigned from group because of a financial dispute.
- 1958
- Painters Eleven Exhibition, Musee des Beaux Arts, Montreal. May 3 - 23. Nakamura exhibited *Cycle*, *Power Station*, *Into Space* and *Unfinished Skyway*.
 - Painters Eleven Exhibition. The Alan Gallery. Hamilton. May 30 - June 19.
 - May: Painters Eleven with Ten Distinguished Artists from Quebec, Park Gallery, Toronto.
 - Points of View. Circulating exhibition. Nakamura exhibited *Into Horizon*.
 - London Public Library and Art Museum. October 17 - November 26.
 - Art Gallery of Hamilton. December.
 - Hart House. University of Toronto. January 5 - 25.
 - Willistead Art Gallery. Windsor. March.
 - this exhibition was the result of a controversy between traditional and abstract painters. The paintings were chosen and hung to represent the differing points of view.
 - Gallery of Contemporary Art, Toronto.
 - A Canadian Portfolio Exhibition. Dallas Museum for Contemporary Art. Texas. September 4 to November 2. Nakamura exhibits *Linear Towers*.
 - Five Painters Eleven Artists plus Borduas and Riopelle. Macdonald wrote about Painters Eleven in the catalogue.
 - Painters Eleven with Ten Distinguished Artists from Quebec. Park Gallery. Toronto. October 31 - November 15. Nakamura exhibited *321X*, *Central No. 1* and *Central No. 2*.
 - 1958-59 Painters Eleven. National Gallery of Canada. Ottawa. Circulating exhibition. Nakamura exhibited *Power Station*, *Cycle* and *Unfinished Skyway*.
 - The Winnipeg Art Gallery. September 5 - 21.
 - Fine Arts Gallery. University of British Columbia. Vancouver. September 21 - October 12.
 - Calgary Allied Arts Council. November 7 - 23.
 - The Norman Mackenzie Art Gallery, Regina College. November 28 - December 28.
 - The Edmonton Art Gallery. January 2 - 28, 1959.
 - Agnes Etherington Art Centre, Queen's University. Kingston. February 13 - March 1.
 - Mount Allison School of Fine and Applied Art. Sackville. March 6 - 22.
 - First Inter-American Biennial. Mexico City.
 - International Festival of Art. New York.
 - Contemporary Canadian Art. Central Museum, Utrecht & Groningen Museum, Utrecht, Holland.
- 1959
- Painters Eleven was disbanded as members began to go in different directions.
 - Museum Rath, Geneva, Switzerland.
 - Wallraf-Richartz Museum, Cologne, Germany.
 - Canadian Graphics and Drawings. Belgrade, Zagreb and Ljubljana, Yugoslavia.
 - 20th Biennial International watercolour Exhibition. Brooklyn Museum, New York.

- 1960 - Painters Eleven. The Stable Gallery. The Montreal Museum of Fine Arts. April 8 - 30. Nakamura exhibited *Broken Waves*, *Black Structure* and *Power Plants*.
 - December: Jock Macdonald dies in Toronto;
 - Painters Eleven Exhibition, Kitchener-Waterloo Art Gallery. Kitchener. December 2 - January 15, 1961. Nakamura exhibited *Interior Suspension*, *Field Waves* and *Black Structures*.
 - Canadian Prints, Drawings and Watercolours. American Federation of Arts, USA.
 - Nakamura and Town. The Montreal Museum of Fine Art, Montreal.
- 1961 - Fifth International Hallmark Art Award Exhibition. New York and international tour.
 - Second Biennial. Musee d'art Moderne, Paris.
 - Summer. Toronto '61. New Design Gallery, Vancouver. Besides Nakamura, the exhibition included Jack Bush, G. Scott, R. Varvarande, Gerald Gladstone, Gordon Raynor, Harold Town, Brian Hedrick, T. Wolfendon, T. Gibson, Joyce Wieland and Michael Snow.
- 1960s - Nakamura participated in volunteer organisational work on Research and Programme Committee prior to and after Japanese Canadian Cultural Centre construction.
- 1962 - Jerrold Morris International Gallery, Toronto.
 - Canadian Painting. Polish Tour.
 - Contemporary Canadian Art. Kenya, Africa.
 - Contemporary Canadian Art, Louisville, Kentucky.
 - Commonwealth Painting. London, England.
 - International Seminar Exhibition. Fairleigh Dickerson University, Madison, New Jersey.
 - Alfred Barr, Director of Museum of Modern Art, purchased three paintings; one for Museum of Modern Art, and others for private collectors.
- 1963 - Recent Acquisitions. The Museum of Modern Art, New York.
 - Contemporary Canadian Painting. Rochester Memorial Art Gallery, Rochester.
 - Canadian Paintings. London, England.
 - Members' Loan Gallery Acquisitions. Albright-Knox Gallery, Buffalo.
- 1964 - Nakamura visited Vancouver in August.
 - Nakamura attended the International Seminar Exhibition at Fairley Dickenson University in Newark, New Jersey.
 - First Biennial of Drawings and Watercolours. National Gallery of Canada.
 - Four Painters and Sculptors. London Regional Library and Art Museum, London.
 - World Show. Washington Square Gallery, New York.
- 1965 - Jerrold Morris International Gallery, Toronto.
 - Cardiff Commonwealth Festival Exhibition. Cardiff, Wales, Great Britain.
 - Art and Engineering. Art Gallery of Ontario.
- 1967 - Nakamura married Lillian Y. Kobayakawa; they will have two children: Elaine Yukae, born December 21, 1968, and Bryan Kazuto, born November 3, 1975.
 - Centennial Exhibition of Canadian Prints and Drawings. Australia.
 - Sculpture '67. Toronto, Ontario.
 - Centennial Exhibition of Quebec and Ontario Painters. Ontario.
 - Canadian Art of Our Time. The Winnipeg Art Gallery.
 - Ontario Centennial Art.
- 1968 - Nakamura's daughter, Elaine Yukae is born
 - Canadian Artist '68. Art Gallery of Ontario.

- 1967 - The Park Gallery, Toronto, Ontario.
 - Seventh Biennial of Canadian Painting. National Gallery of Canada.
- 1967
 -70 - Waddington Gallery, Montreal.
 - Morris Gallery, Toronto.
- 1970 - Hart House Gallery, University of Toronto.
 - Waddington Galleries, Montreal.
 - Morris Gallery, Toronto, Ontario.
 - The Loeb Collection; National Gallery of Canada, circulating exhibition:
 - Sir George Williams University, Montreal.
 - The National Gallery of Canada.
 - Winnipeg Art Gallery, Winnipeg.
 - University of British Columbia, Vancouver.
 - Mendel Art Gallery, Saskatoon.
 - The Art Gallery of Windsor, Windsor.
 - University of Sherbrooke, Sherbrooke, Quebec.
 - Beaverbrook Art Gallery, Fredericton.
- 1971 - Painters Eleven: 1953-1960. Robert McLaughlin Gallery, Oshawa.
- 1972 - Toronto Painting: 1953-1965, at National Gallery of Canada and Art Gallery of Ontario.
 - Guest Artist. Ontario Society of Artists 101st Exhibition.
- 1973 - Canada Council Art Bank Collection. Paris.
- 1974 - Canadian Tour.
 - Robert McLaughlin Gallery, Oshawa.
 - Musee d'Art Contemporain, Montreal.
 - London Public Library Gallery, London.
 - Mount Saint Vincent University Art Gallery, Halifax.
 - Rodman Hall Art Center, Saint Catherines, Ontario.
 - Agnes Etherington Art Center, Queen's University, Kingston.
 - Moore Gallery, Hamilton.
- 1975 - Nakamura's son, Bryan Kazuto, is born.
- 1976 - The Ontario Community Collects; A Survey of Canadian Painting from 1766 to the Present. Art Gallery of Ontario; the exhibition was circulated to:
 - The Sarnia Public Library and Art Gallery.
 - The Art Gallery of Windsor, Windsor.
 - St. Catherines and District Arts Council, Rodman Hall, St. Catherines.
 - London Public Art Gallery and Museum.
 - The Tom Thomson Memorial Gallery and Museum of Fine Art, Owen Sound.
 - Art Gallery of Hamilton, Hamilton.
 - The Robert McLaughlin Art Gallery, Oshawa.
 - The Gallery / Stratford, Stratford;
 - University of Guelph Art Gallery, Guelph.
 - The Kitchener - Waterloo Art Gallery, Kitchener - Waterloo.
 - Agnes Etherington Art Centre, Queen's University, Waterloo.

- 1977 - Japanese Canadian Centennial Society. Ottawa, Ontario.
- Artists' Greetings. Memorial University Art Gallery. December.
- 1978 - The Japanese Canadian Centennial Art Exhibition. Ontario.
- 1978
-80 - A Canadian Survey: The Imperial Oil Collection, circulated by the Art Gallery of Ontario.
- 1979 - Twentieth Century Canadian Drawings. The Gallery / Stratford, Ontario.
- 1979
-81 - Painters Eleven in Retrospect Exhibition; the exhibition was circulated to:
Robert McLaughlin Gallery, Oshawa.
The Gallery, Stratford.
Art Gallery of Windsor, Windsor.
London Regional Art Gallery, London.
Agnes Etherington Art Centre, Kingston.
Hart House Gallery, University of Toronto.
Sir George Williams Art Gallery, Concordia, University, Montreal.
Beaverbrook Art Gallery, Fredericton.
Art Gallery of Nova Scotia, Halifax.
The Saskatoon Gallery and Conservatory, Saskatoon.
Macdonald Stewart Art Center, University of Guelph, Guelph.
- 1983 - Japanese-Canadians petitioned, through the National Association of Japanese
Canadians, for an official apology and compensation, but the Liberal government
under Pierre Trudeau was opposed to offering either. Brian Mulroney, as the
opposition leader, criticised this decision and subsequently made a campaign
promise to negotiate a settlement, but after his 1984 election various federal
negotiators in his Conservative government found reasons for not agreeing to pay
any individual compensation.
- 1983
-84 - European Tour, Ontario Heritage Foundation's Firestone Collection, London, Paris,
Madrid.
- 1984 - Moore Gallery, Hamilton, Ontario.
- Toronto Painters of the Sixties. Art Gallery of Ontario.
- Masterpieces of 20th Century Canadian Painting. West Palm Beach Gallery, Florida.
- 1985 - Nakamura was elected member of the Royal Canadian Academy.
- 1986 - Nakamura visited Vancouver and Expo '86 with his family. With Lillian's brother, he
drove to Hope to visit the remains of Tashme, the "old camp," as Lillian described it in her
letter to me in August 2003.
- 1987 - Christopher Cutts met Nakamura and became his dealer.
- 1988 - Prime Minister Brian Mulroney formally apologised for the "past injustices" Japanese
Canadians had been forced to endure, and the Canadian government agreed to pay
\$21,000 each to the approximately 12,000 surviving Japanese-Canadians who were
dispossessed and interned during World War II. (Earlier in the year the

United States government had agreed to pay \$20,000 to each survivor of the American internment of Japanese-Americans).

- Inaugural Exhibition. National Gallery of Canada.

- Christmas Exhibition. Christopher J. Cutts Fine Art Limited, Toronto.

1989 - Christmas Exhibition. Christopher J. Cutts Fine Art Limited.

- Seventy-Five Years (1914-1989). Art Gallery of Hamilton.

late

1980s - Nakamura stopped painting in order to concentrate on his number structure drawings.

early

1990s - Nakamura and his family visited the Museum of Modern Art and the Cloisters Museum in New York City.

1990 - Academicians Collect. Royal Academy of Arts, Academy House, Toronto.

- 75th Anniversary Exhibition, Art Department, Central Technical High School, Toronto.

1991 - Number Structure. Christopher Cutts Gallery, Toronto.

- New Canadian Embassy, Tokyo, Japan.

- Group 91. Christopher Cutts Gallery, Toronto.

1992 - At the invitation of McMillan Bloedel Company, Nakamura visited the B.C. interior by helicopter. The resulting commissioned painting appeared on the company's annual report.

- The White Show. Christopher Cutts Gallery, Toronto.

- Art Contemporain du Canada. Ader Tajan, Espace Chapon, Paris.

1993 - The Christmas Show. Christopher Cutts Gallery, Toronto, Ontario.

1994 - Christopher Cutts Gallery, Toronto.

- Nakamura sold two drawings to the British Museum, London.

1995 - The Glen and Barbara McInnes Family Collection: A Selection from the Collection.

Carleton University Art Gallery, Carleton University, Ottawa.

- Chinese New Year Show, Christopher Cutts Gallery, Toronto.

1996 - Number Structures. Christopher Cutts Gallery, Toronto.

- Inaugural Exhibition. Christopher Cutts Gallery, Toronto.

late

1990 - Nakamura stopped drawing because of the symptoms of Lou Gehrig's disease.

According to Christopher Cutts, Nakamura complained that he was unable to draw straight lines anymore. According to Cutts, his last work in a solo exhibition at Christopher Cutts' gallery was a collage.

1997 - Works on Paper. Christopher Cutts Gallery. Toronto.

1999 - Transliner. McMaster Museum of Art. McMaster University, Hamilton, Ontario.

- Topology Paintings. Christopher Cutts Gallery. Toronto.

2000 - Degrees of Abstraction. Ottawa City Hall Art Gallery. Ottawa. December.

- Nakamura became a retired member of Royal Canadian Academy of Art.

- Nakamura was awarded title of Honorary Fellow, Ontario College of Art and Design.
- 2001 - Kanbara, Bryce. Tashme²: Early Works of Kazuo Nakamura. Exhibition Catalogue. Don Mills, Ontario: Gendai Gallery, Japanese Canadian Cultural Centre, 2001.
- Fear of Fear. Ottawa Art Gallery. Ottawa.
- Kazuo Nakamura: The Method of Nature. Retrospective exhibition, Robert McLaughlin Gallery, Oshawa. November 1 - January 6; exhibition travelled to:
 - The Confederation Centre Art Gallery and Museum. Charlottetown. Prince Edward Island. February 3 - March 34, 2002.
 - Agnes Etherington Art Centre. Queen's University. Kingston. April 21 - September 8.
 - Art Gallery of Hamilton. Hamilton. September 21 - December 1.
 - Mendel Art Gallery. Saskatoon. Saskatchewan. January 10 - March 9, 2003.
- Canvas of War, Art Gallery of Ontario. This is a travelling exhibition from the National Gallery; drawings by Nakamura from the Tashme Internment Camp were included only in the AGO showing of the exhibition.
- 2002 - April 9, Kazuo Nakamura died in Toronto, a victim of Lou Gehrig's Disease.
- Painters Eleven. Frederick Horseman Varley Gallery, Markham, Ontario.
- October. Painters 15. Shanghai and Guangdong, China, and Museum of Contemporary Art, Toronto. Curated by Toronto artist, David Urban.
- 2003 - Plastic Universe. Ottawa Art Gallery, Ottawa, Ontario.
- 2005? - An as yet untitled retrospective at the Art Gallery of Ontario.

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- my interviews with Kazuo Nakamura.
- newspaper and magazine exhibition reviews and articles.
- exhibition announcements and invitations.