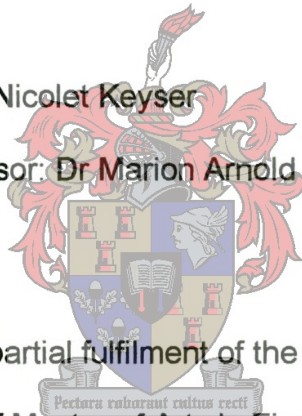


**The transition from an object-oriented to a systems-oriented approach
in art, leading to a redefinition of the concept of sculpture**

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Declaration

I the undersigned hereby declare that the work contained in this thesis is my own original work and has not previously in its entirety or in part been submitted at any university for a degree.

Signature

Date: 14 Feb 2000

ABSTRACT

In this thesis I look at the impact of technology on the concept of sculpture. However, I am more concerned with the principles behind technological change as influence, than looking at high-technology advances. A key issue that I address is the consideration of changes in society and art, and I ask the question, to what extent does three-dimensional art remain in any traditional sense 'sculpture'?

It is my objective to show these changes, indicated by the transition from an object-oriented to a systems-oriented approach in art leading to a redefinition of the concept of sculpture. Although I deal with my practical work as a separate part in the thesis, there is a close integration and mutual objectives between the practical and theoretical components.

The transition occurring in sculpture can directly be traced to the technological advances in society. Scientific knowledge in any period of history reflects the way people understand their world, thus affecting human perceptions of the natural world and in turn influencing artistic creation. In Chapter One, attention is given in general to some of these scientific discoveries, for example the shift from classical science to an organismic approach with its focus on the interconnectedness of all things. Also of importance is the beginning of Chaos Theory, introducing the element of chance.

In Chapter Two, more specific changes in the concept of art and sculpture are dealt with. Referring to some important predecessors earlier in the 20th century. I look at art becoming an interactive system, and find the interrelationship between sculpture and architecture useful in illustrating this, because of the foregrounding of the concept of space.

In Chapter Three, I examine the different way that artists deal with the issues of urbanity, for example, the Minimalists putting emphasis on the idea of sculpture as an infinitely malleable category. Shifting definitions of urbanity were responses to specific new conditions in the environment, for example, as

seen in the changing features of the city. Chapter Four deals with contemporary artists' response to these conditions, starting with examples of an object-oriented approach to sculpture, moving step by step towards a different systems-oriented approach.

To conclude, I speculate on all the possibilities that the virtual environments that modern computers allow us to create may for the first time open up. We are at the beginning of a new century full of promise to artists in all fields.

ABSTRAK

In hierdie tesis kyk ek na die impak van tegnologie op die konsep van beeldhou. Maar, ek is egter meer geïntereseerd in die invloed van die beginsels agter tegnologiese verandering as in die gebruik van uiters gevorderde tegnologiese instrumente. 'n Belangrike aspek vir my is die wyse waarop die veranderinge in die samelewing afgedruk word op kuns. Derhalwe vra ek tot watter mate drie-dimensionele kuns op enige tradisionele wyse steed as 'beeldhou' beskou kan word?

Dit is my doelwit om hierdie veranderinge uit te wys, soos gesien kan word in die transformasie vanaf 'n objek-gerigte benadering na 'n sisteem-gerigte benadering tot die konsep van beeldhou. Hoewel ek die praktiese werk as 'n aparte deel van die tesis hanteer, is daar 'n nabye integrasie met gemeenskaplike doelwitte tussen die praktiese en teoretiese komponente.

Die transformasie in beeldhou kan direk verbind word met die tegnologiese vooruitgang in die samelewing. Wetenskaplike kennis van enige tydperk, is 'n indikasie van die wyse waarop die mense hul omgewing verstaan. Dus affekteer dit mense se persepsie van die natuur, en in reaksie die persepsie van die kunstenaar. In hoofstuk een, word aandag gegee in die algemeen aan sommige van hierdie wetenskaplike ontdekkings, byvoorbeeld die skuif vanaf klassieke wetenskap na 'n organismiese benadering met sy fokus op die integrasie van alle dinge. Ook belangrik is die ontstaan van Chaos Teorie wat klem plaas op die onvoorspelbaarheid van dinge.

In hoofstuk twee kyk ek na meer spesifieke veranderinge in die konsep van kuns in die algemeen, asook beeldbou. Daar word terugverwys na sommige belangrike kunstenaars aan die begin van die 20ste eeu. Klem word geplaas op kuns as interaktiewe sisteem, en ek vind die interverhouding tussen beeldhou en argitektuur as 'n belangrike voorbeeld, as gevolg van die benadering tot die konsep van ruimte.

Hoofstuk drie ondersoek die verskeie wyses waarop beeldhouers kyk na kwessies soos verstedeliking, byvoorbeeld die Minimaliste met hul beklemtoning van die idee van beeldhou as manipuleerbare kategorie. Al hierdie veranderinge is 'n reaksie op spesifieke nuwe kondisies binne die samelewing, byvoorbeeld soos gesien in die veranderende kenmerke van stede. Hoofstuk vier deel dan spesifiek met hedendaagse beeldhouers se reaksie op hierdie kondisies, met die doel om voorbeelde te bespreek van van 'n objek-gerigte benadering tot beeldhou asook 'n sisteem-gerigte benadering tot beeldhou.

Om af te sluit, spekuleer ek oor al die nuwe moontlikhede wat 'virtuele realiteit', daar gestel deur die moderne rekenaars, aan beeldhou kan bied. Ons staan aan die begin van 'n nuwe eeu vol potensiaal vir kunstenaars op alle gebiede.

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INTRODUCTION

Scientific knowledge in any period of history reflects the way the people of that time understand their world. It also defines the range of possibilities and limitations of their potential for technological as well as philosophical developments. In the same sense, the art of any period also points to the self-understanding of a particular society and its individuals. Since the origin of the physical sciences their objective was to give an exact picture of the material world, and scientists were convinced that the universe would be predictable if all the data could be gathered and calculated. However, more and more uncertainties came into view and Quantum physics demonstrated that there could be no absolute knowledge. Also neither the Newtonian nor the Einsteinian universes could guarantee certainty.

Coinciding with scientific discoveries, the modernist movement in art was influenced by scientific objectivity and invention, and artists thought that constant progress would lead to a bright technological future. Modernism searched for purity, predictability, and the clarity of an ordered world. Like science, modern art was experimental and concerned with the invention of new forms, for example, the Impressionists were influenced by the science of optics, and the Cubists by dynamic geometry and Einsteinian relativity. The Futurists embraced all the industrial developments with their mechanisation. Pop artists looked to the processes and products of mass production and the consumer society, while the Minimalists dealt with the methods and materials of the industrial world.

The high point of modernism coincided with the time of scientific achievements in the area of space exploration and the lunar landing and there was an optimistic belief in human progress.

However, with the rise of Post Modernism, it was apparent that despite all the scientific progress and advances in computer technology, real life defies precise predictions. There was a realisation that the whole is more than the sum of its parts, and instead of total prediction, room had to be left for the element of chance. Modernist optimism was no longer valid. Technology had led to numerous disasters like the pollution of the earth's atmosphere and was unable to deal with the consequences of overpopulation. Both scientists and artists have had to learn to live with the chaos that surrounds us, and any order that is perceived becomes not a part of things out there but a mental construct that an individual mind may impose upon it. Any attempt to present the whole or totality would be logically impossible.

It is of specific concern to me the way the artist, as sculptor, intervenes and responds to a technologically changed environment, characterised by fragmentation and complexity - not necessarily through the use of state of the art technology, but rather by examining the principles behind technological change. Also relevant is the way these changes impact on the concept of sculpture, leading to a redefinition and a shift from an object-oriented approach to a systems-oriented approach, with the emphasis on presentation rather than representation. However it need to be emphasised that this shift is only one thread of the late 20th century's response to a commodity saturated society.

I find the interrelationship between sculpture and architecture useful in illustrating this shift, because of the foregrounding of the concept of space – being indicative of the shifting definitions of urbanity. Sculpture has become more than an adjunct to the experience of architecture and artists have to come to grips with new ways of understanding space.

In examining the different ways that artists deal with the issues of urbanity, I look at the movement of Minimalism and the way it enters into the Post

Modern realm of art. It is also of value to look at contemporary sculptors working in a Minimalist way, but with the use of installation, to illustrate this change (1). Installation demonstrates a certain spatial sensibility, and is an indication of how we interact with bodies and objects, both near and far, around us. What became important in this sculpture was the relation between people, and between people and their environment as the process behind the creation of the work. Hence, it becomes increasingly meaningless to categorise sculpture: of importance is the way it is read as an experienced reality, as well as through the imaginative experience of the viewer.

Shifting definitions of urbanity were responses to specific new conditions in the environment, for example, as seen in the changing features of the city, and in turn lead to the emergence of new forms of subjectivity. I look at the city as subject to laws of its own even though people are trying to impose their laws and order onto it. The abandonment of the old deterministic science that associated cause to effect, and the emergence of a new scientific view asserting that insight and not prediction must be the goal of science, went some way to explain why complex systems, like the city, were entirely unpredictable and chaotic. This implies that any attempt to represent the city, or the world in totality is virtually impossible, but is an issue that invites consideration of systems as conceptual structures capable of providing expressive potential.

In this thesis I want to look specifically at sculpture and the changes it underwent in the past century as a result of technological influences. Much of the confusion that surrounded sculpture stemmed from viewing it as an elitist activity, rather than it being closely related to the technological forces of modern society. Jack Burnham (1978:2) suggests that instead of a stylistic emphasis, one should reveal sculpture as the result of a “coherent metamorphic forces: impetus generated by psychic and intellectual authority increasingly invested in science and technology.” This authority has changed

in philosophical emphasis from decade to decade. Science and technology are only one influence in a large spectrum of influences, leading to the redefining of art in general, and more specifically the concept of sculpture.

CHAPTER ONE

A century of revolutions

The revolution of Modern art has frequently been compared to the changes that took place in Italy during the Renaissance. Just as artists of that time rejected medieval ideas regarding painting, sculpture and architecture, the artists at the beginning of the 20th century broke with rules followed by their predecessors. Like the Renaissance artists, artists of the 20th century expressed new needs in accord with the knowledge of the period, establishing a progressively different figurative system. In short they changed thought patterns and sensibilities. Ferrier (1989:10) states: "All the change and activity in this century has created such furor that sociologists and aestheticians on all sides speak of a crisis of figurative values..."

Several questions arise regarding the foundations of Modern sculpture: What are the intellectual and physical origins of modern abstraction? What are the formal foundations of Modern sculpture? What forces lead to rapid stylistic changes in Modern sculpture? Where have these forces shifted and why? Does sculpture conform to a pattern that gives us an indication of its future? How do we categorise sculpture?

In viewing the relationship between art and technology and the forms of its emergence in certain ideological contexts, one should remember that 20th century sculpture was a highly transitional process, where many important shifts in scientific thinking paralleled important changes in the art world. According to Burnham (1978:vii), when searching for the prime controlling forces of Modern sculpture we find its origin in the philosophy of rationalism and materialism and he states: "The development of Modern sculpture parallels the intellectual framework produced by a scientific culture."

Burnham (1978:viii) is influenced by the writings of the 19th century German architect Gottfried Semper who viewed art as “the result of purpose, material and technique.” His philosophy was that art is a clear reflection of economical, technical and social relationships that form any society. Thirty years later, the Viennese art historian Alois Riegl challenged Semper’s view, arguing that art should not be entirely interpreted in the light of material conditions. This was the beginning of an artistic revolution and the theory that art stems from the ideal instead of material sources became the mode of German aesthetics, namely to present the spiritual – artistic motivation of man.

In the late 19th/early 20th century two approaches to art existed: the drive toward the abstract, and toward naturalistic creation. Although there was an academic justification of Modern sculpture on physical terms, there was a lack of attention to the material development accompanying the growth of abstract sculpture. At the turn of the 19th century spiritual forces were dominant in the shaping of art, however gradually it became clear that the “spiritual aspirations are bound to the scientific – technical impulse”, but many artists still resisted identification with materialism (Burnham 1978:ix).

Naturalistic art’s principle goal is to produce the visible world with the maximum amount of similarity, notably by means of perspective. It gives an objective vision of beings and things. The realism of the 19th century academy was an idea of reality, implying that the reality of things is known ahead of experience. Technology influenced 19th century art by turning it into a systematic craft following rules, whereas it influenced 20th century art most strongly by the principles behind it.

Scientific thinking at the beginning of the 20th century underwent a paradigmatic shift, when classical physics was replaced by atomic theory with the establishment of Quantum theory in 1900 and the theory of Relativity in 1905 (2). Subsequent discoveries made it necessary to reassess the concept

of the 'natural world'. The exact sciences soon discovered that naturalism's vision was untrue both in the infinitely great dimension and in the infinitely small. This in turn led to the indeterminism of matter and the rise of a new form of spirituality. It is very important to see a link between the developments in science influencing our perception of nature, and in turn artistic perception.

Instead of the *how* we are shown the *why* of everything. One significant artist in this regard is Wassily Kandinsky who in 1910 became the first artist to create an abstract image. He stated: "For me the splitting of the atom was as if the whole world had split, and suddenly thick walls crumbled" (Kandinsky in Ferrier 1989:7). Others for example, Marcel Duchamp, were equally affected by the mathematical speculation of infinite space. Architecture was soon to follow, and a particular manifestation of Modern art was born.

The shift from classical physics was a very important event, because it indicated a shift in the main focus of physics from dynamics to thermodynamics, the first non-classical science, and time suddenly became a central concern (3). The Newtonian system with its classical science arose at a time when feudalism in Western Europe was crumbling. The model of the universe proposed by classical scientists was applied analogously to new fields, not only because of its scientific power or 'rightness', but also because an emergent industrial society based on revolutionary principles provided a particular receptive environment for it. Machine civilisation, in search for an explanation of itself in the cosmic order of things, seized upon the Newtonian model.

The Newtonian model pictured a world in which every event was determined by initial conditions that were determinable with precision. It emphasised stability, order, uniformity and equilibrium. It concerned itself mostly with closed systems and linear relationships in which small inputs uniformly yielded small results.

According to classical physics the basic processes of nature were considered to be deterministic and reversible. Processes involving randomness or irreversibility were considered only exceptions. It was a world in which chance played no part. The acceptance of this mechanistic view coincided with factory civilisation: The Age of the Machine enthusiastically embraced scientific theories that picture the entire universe as a machine. This view of the world led to the idea that given enough facts, we could not merely predict the future, but retrodict the past.

The image of a simple, uniform, mechanical universe not only shaped the development of science, it also spilled over to many other fields including the arts. However such a view could not hold, because we live in an ever-changing world. Toffler (in Prigogine 1984:xiii), in the foreword of *Order out of Chaos* states:

And the dramatic spread of the factory civilisation, with its vast clanking machines, its heroic engineering breakthroughs, the rise of the railroad, and new industries such as steel, textile and auto, seemed mere to confirm the image of the universe as an engineer's 'Tinkertoy'. Today, however the Age of the Machine is screeching to a halt, if ages can screech – and ours certainly seems to. And the decline of the industrial age forces us to confront the painful limitations of the machine model of reality.

For a long time this mechanistic worldview dominated Western science. However, behind the scenes, for more than four centuries there has been an ongoing struggle for supremacy within Western science between two very different approaches to nature and human culture. The first, already discussed, “mechanistic, reductionist, hierarchical approach, posited on prediction and control, and the organismic, holistic, co-operative, collectivist, relativistic approach, posited on the unity in diversity of all things” (Lucas 1993:335).

But mechanism reached its own limits and failed both practically and conceptually to deal with the complexities of nature and human culture. It is arguably responsible for many of the environmental and economic crises facing humanity at the end of the 20th century. A new scientific philosophy of nature emerged – a philosophy that has more in common with the organismic approach than it does with the mechanistic. Modern physics discovered that nature is a dynamic system: in other words, everything in it is affected by everything else, and it is constantly changing.

Thus a central focus of this approach is on the empirically demonstrable interconnectedness of all things, encompassing both human activities and natural processes. The old certainties of unrestricted prediction and control are grounded on false assumptions. Nature can no longer be studied idealistically, as if everything could be broken down to a fixed number of parts. It was realised that nature should be studied as a changing set of relationships, rather than as a set of fixed phenomena, holistically rather than in separate categories.

The myth of an order beneath nature's careless appearance, emphasised by classical science, changed during the 1960's when a group of researchers discovered that although things in nature may start off together, different fates await each of them, because of the fact that nature is a dynamic system. They called it Chaos Theory. Another important role player in this discovery was Ludwig Von Bertalanfy who popularised the idea with his general systems theory in the late 1960's. Chaos Theory shows us that we never have sufficient accurate information about the way a system starts off, to accurately predict where it will end up. There is recognition that "God does play dice" (Lucas 1993:335) and that chaos and uncertainty provide the matrix within which new forms of order are constantly being created (4). This conclusion had a definite influence on the perception of artists.



W.B. Yates (1967:211), one of the great modern poets wrote in *The Second Coming*: "Things fall apart; the centre cannot hold." Nature's dynamic character makes it chaotic, unpredictable and constantly changing. Chaos Theory pictures nature as an ever-changing flow, where no single variable exists in isolation.

Organicism has re-emerged in the evolution of process-oriented fields. This shift marks a profound transition in science's understanding of nature and culture. The shift is towards process-oriented science and is a sign of the emergence of a new and highly sophisticated form of organicism. One unifying principle that emerged from this shift is the interdependence of all phenomena and the fundamental role that chaos plays in the spontaneous creation of more complex forms of order. Most importantly, there is a recognition that individual perception does not passively mirror an objective reality 'out there', for example as seen in the naturalistic approach to art, but instead is a process by which organisms actively create the world of experience.

We now understand that we live in a pluralistic world. Our vision of nature is undergoing a radical change toward the radical, the temporal and the complex. Each period of science has led to some model of nature: for classical science it was the clock, for 19th century science the period of the Industrial Revolution, but today we are heading to a new synthesis, a new naturalism, directly influencing sculptural concepts and procedures. Prigogine and Stengers (1984:22) argue that: "...our role is not to lament the past, it is to discover in the midst of the extraordinary diversity of science some unifying thread."

Science and technology tell us most of what we know about the world, and also constantly alter our relationship to ourselves and to our surroundings. Technological developments have affected materials, processes and concepts, as well as influencing society in a dramatic way. To many people the 19th century seemed a golden age of advancement, yet the Industrial Revolution was only the start of a series of events that has created problems that we are unable to solve. It changed the lifestyles of people living in urban centres throughout Europe, Britain and the United States at the end of the 19th century and led to considerable shifts in our perception of reality.

Through the development of the steam engine and the growing factory system, a new narrative for human history was established. Newly invented machines meant economic growth; investment in the new industrial companies led to the growth of the stock exchanges but small investors often lost their savings. Capitalism leads to the exploitation of human beings in industry and the degradation of the natural environment.

In order to eliminate the scarcity of supplies, mass production established itself, and everything was directed towards profitable production through technological means. Gerald Holton (1986:279) argues that:

No one would maintain that, in the past, science technology and social advance were completely separate from one another in every case but by and large, the barriers between them were thought to be reasonably clear. Even in the period leading to the industrial age of today, they were considered at most semipermeable, with science and technology acting unilaterally on the social process. More and more since World War II, the realisation has been spreading that the fates of science, technology and society are linked in a much more complex and multilateral way.

Art does not exist in isolation, and being closely linked to society could not be unaffected. Periodically throughout the development of 20th century art and aesthetics, the relationship of technology to representation emerges as a pre-eminent concern. The idea of progress has strongly influenced modern artistic production for art, like all social activities, cannot help expressing the common basis of social life.

Technology and the enormous industrial expansion that it has fostered influenced the way we do and perceive things. But what remains to be answered is the extent to which these forces of modernisation affect our human perceptions and in turn influence artistic creation. Viewing the effects of science and technology on art, specifically sculpture, leads me to a key issue that I will be addressing, namely: when considering changes in society and art, to what extent does three-dimensional art remain in any traditional sense 'sculpture'? Traditionally it is an art of solid form, mass and 'spatial occupancy', but what would be the correct description at the end of the 20th century?

CHAPTER TWO

Towards an interactive art system

The Industrial Revolution was only the start of an endless series of events and changes, and the technological developments that followed had an immense effect on architecture and sculpture. New technologies yielded new materials and processes opening up many new possibilities, for example ferroconcrete, structural steel, pre-fabricated units, glass and laminated wood have taken their place alongside bricks and mortar. Sculptors discovered the use of the welding torch to replace the traditional hammer, chisel and metal-casting methods. Sophisticated metal alloys, Plexiglas, polyester resins, neon tubes and plastics have superseded the older marble and bronze materials.

Architecture and city planning changed and so did the relationship of sculpture to building and exterior spaces. With the growth of cities, modern architects were faced with new challenges in constructing facilities ranging from airline terminals, suspension bridges, and low-cost public housing to entirely new capital cities such as Brasilia and Canberra. With the steel-and-glass office buildings and urban-planning projects of the industrialised society, 20th century architects have been called upon to build bold new daring designs.

The machine assisted sculptors to make work, and as a sculptural form, it was an exciting source for sculptures. Often the most modern developments have ancient antecedents, and such is the case with mobile sculpture. Automata or mobile sculptures are early examples of systems functioning as primitive operating mechanisms. The robot has been the collective obsession of a technological population dreaming of its own replacement. Though graceful, there was something aesthetically clumsy in the automatic manikins of the

18th century. Yet the contemporary merging of sculpture with automata “is recognition that sculpture had to become deformed, mutilated, encased, and rendered sensually repellent before it could rightfully be called a machine” (Burnham 1986:15).

The early 20th century, before World War I, saw the beginning of Futurism, with Italian artists driven by their fascination with the motion, force, speed and strength of the machine. The Futurists wanted to destroy the museums and other intellectual institutions in order to make way for their particular vision of the future. They declared: “A roaring motorcar, which runs like a machine gun, is more beautiful than the winged Victory of Samothrace” (Fleming 1991:537). Theirs was an idealistic and simplistic vision of a state ruled by a mechanical superhuman mind, in which the people would be reduced to cogs in the wheel of a fully mechanised society, and they projected an art for a fast-moving, machine-propelled age.

Futurism was influential mainly for its formation of the ‘mechanical style’. By taking ideas from both the Cubists and the Futurists, Fernand Léger developed a style in which precise and neat parts all fit into an appointed place. It drew its inspiration directly from the industrial developments in the city, for example, as seen in Léger’s painting, *The City* (1919), (fig. 1).

Fleming (1991:583) states:

Léger loved crankshafts, cylinder blocks, and pistons...His is a world without sentiment, populated by robots whose parts are pure geometrical shapes. Human forms are introduced only for their ‘plastic value’ and remain ‘purposely Inexpressive’.

During and after World War I, the Surrealists examined the way the unconscious related to machines. Max Ernst conceived of the machine visibly, rather than functionally, endowing it with human attributes, and declared: “She contained all the insignia of machine essence: cogs and

wheels, pendula, pistons, motors, electrical valves” (Ernst in Reichard 1987:368).

Francis Picabia’s work, for example, *Amorous Parade* (1917) (fig. 2) serves as another example. Picabia stated: “The machine has become more than a mere adjunct of life. It is really a part of human life... In seeking forms through which to interpret ideas or by which to expose human characteristics I have come at length upon the form which appears most brilliantly plastic and symbolic...the machinery of the modern world” (Picabia in Reichard 1987:368).

The Constructivists, in turn, turned their attention to the many new modern materials, being directly influenced by the technological developments in architecture as a result of the Industrial Revolution. Coinciding with the effects of post World War II, a general dematerialisation in art occurred, leading to a shift in values carrying Modern sculpture away from its original stability. There was an emphasis on extension as opposed to containment, and dynamism instead of mass. Because of the fact that systems move, or are in some way dynamic, formalist art gave way to kinetic art.

During the 1950’s, Kineticism and the kinetic movement were founded from which Frank Popper discerned three strands: Optical art, machines and mobiles, and lightkinetics. This in turn occurred as a result of the scientific discovery of electric power first produced by nuclear energy in 1951, indicating the gradual completion of the Industrial Revolution with the movement from the mechanical into the electronic age. Kinetic devices, powered by motors and programmed by computers, now bring actual motion to sculptural compositions, while formerly action could be implied only through muscular tension, a bodily stance, or directional orientation.

However, in my opinion, the best of early kinetic art is a modification of static formalist sculpture, for example, the motorised 'junk sculpture' of Jean Tinguely (fig. 3) and the work of George Riky. The machine provided the form that contained the essential meaning of the work – a machine made of machine parts. But, with the change in the relation of technology to art at the end of the 20th century, the emphasis has shifted. The contemporary machine does not lend itself to an imaginative depiction, because it is totally functional – contemporary artists use machines not for what they are but for their performance. Burnham (1986:15) states:

The machine's strict formalism in action is seen dominating the evolution of kinetic art, and one can't but help to see the limitations of the classical machine 'wedded' to sculpture.

Marcel Duchamp however managed to reach beyond formalism because he succeeded in establishing an interaction in his work that involves both the spectator and the environment. He was interested in the duality of perception – the subjective response of the viewer occurring in relation to the watched object, for example, in the work *Rotoreliefs* (1935), (fig. 4). Duchamp's interest in optical machines and perceptual experiments, starting with his first ready-made of a bicycle wheel on a stool (1913), influenced the concept of this work.

Rotoreliefs consists of a series of discs turning on a turntable that awaken the spectator's consciousness of the principle of time in art. The movement created by the discs deals with the issue of perception and suggests a certain illusion of infinity, which in turn involves the spectator. Duchamp contemplated the object, in this case a disc with a spiral design giving the illusion of kinetic movement, but the knowledge of the subject as spectator also played an integral part (5). This is also evident in the earlier works *Rotative Glass Plates* (1920) and *Rotary Demisphere* (1925), (fig. 5, 6).

One specific function of Modern art has been to show that the material characteristics of forms are not the only thing of importance, but equally significant is the relation between people, and between people and their environment. This indicated a shift in emphasis, from the idea of an artwork functioning in isolation – as an object to be viewed in the round - towards a consideration of the involvement of the viewer as a part of the work itself, and is also attributable to Duchamp's radical influence.

Technological influences on society inevitably changed societal values, which in turn lead to new artistic values. A shift can be noted during the 1960's with the progress of electronic technology when, according to the terminology of Burnham (1978:263), a *systems-aesthetic* emerged. Theories relating to the electronic and computer technologies at the time had a big influence on art practices and the process of dematerialisation that started with the Post World War II evolved further. The term 'dematerialised works' indicated the use of non-precious impermanent materials that suggested transience, for example, plastics, video, acrylics and technologies employing synthesisers, computers and electronics.

Many artists of the 1960's and 1970's dematerialised their creations so that motion and light became the substance of the work of art. In this kinetic art, sophisticated engineering and computer technology came into play, surpassing the primitive motorised works of Marcel Duchamp earlier in the century. Now with advancing electronic technology, light, action and sound can be combined in time-space creations that are variously referred to as kinetic, serially programmed, or luministic art.

Perishable and moving energy-controlled sculptures possess uncertain qualities as objects because they move away from the naturalistic values of the sculpted object. This impermanence is directly related to the industrial trend towards a systematised environment where the object becomes a

replaceable component in an interlocking system of production and need fulfilment (thus of capitalism). The diminishing of the status of the object signalled the end of an era, putting three-dimensional art on course to make it unrelated both physically and materially to the functions of all past sculpture.

Together with the change of materials, there occurred a social change that led to a challenge with regard to the functional instead of the monumental character of the environment. Before the Industrial Revolution, architecture was monumental. Fairfield Porter (1979:63) states: "Art made thingishness coherent, logical and objective, in a single building or facade..." But the technological changes in architecture and city planning influenced the relationship of sculpture to building and exterior spaces.

The concept of 'man' could not stay unaffected by the changes: 'man' changed from an object to be viewed in the round, to operating within a context. Humankind is interior and subjective, and it is difficult for artists to try to express this with three-dimensional objects. This, together with the perception of being subordinate to the environment, presented new challenges to sculptors, specifically in considering concepts of space.

With the transition from an industrial society, based on heavy inputs of energy, capital and labour, to a post-industrial, high technology society, it is not surprising that new scientific world models should appear. New social structures evolved in industrial societies in the latter part of the 20th century, pointing the way to the emergence of a new form of society starting in the USA. The main principle of this social structure was the centrality of theoretical knowledge as a source of innovation for society, leading to the creation of a new intellectual technology.

Also characteristic is the shift from a goods - producing to that of a service - providing economy, in other words a shift from an *object - oriented* to a *systems - oriented* society. There is an integration of artist, object and the aesthetic experience as functional activity.

In the past our technologically conceived artefacts structured living patterns, but we have moved from an object-oriented to a systems-oriented world. Today we need to recognise the interconnectedness of all things, where change occurs from the 'way' things are done and not from 'things' anymore (Burnham 1978:262).

Objects were always the means by which people participated in systematic social activities, but there has been a gradual shift of emphasis from the object to systems, which make the object useful primarily as an economic instrument. The object has lost its independent status in technological society and became one of many means by which a systems-oriented culture functions at increasing levels of complexity and efficiency. Society became totally dependent on certain forces, for example, the electrical power and communication system operating within the city.

This displaced the working class from the role assigned to them by the Marxists, namely being the historic agents of change in society, and in turn, promoted the pre-eminence of a professional and technical class. There is also an emphasis on certain features, for example, the search of young people for a world beyond materialism, looking for new values.

Art is now viewed as an integrated part of life, indicating a denial of the uniqueness of art, and the importance of institutions, like museums, that used to perpetuate this, is questioned. Transitions between major paradigms may best express the state of art, and one can easily find reasons for it in technological shifts. Power has played an important part in the modern

industrial society with its emphasis on capital and efficiency. Materialistic societal values inevitably influence the way the artist works, for example, the process, functionalism, perceptual integration of elements in the aesthetic situation and artistic creation as a co-operative enterprise become important.

In viewing the impact of technological shifts on society, and its manifestations in art, we see a definite connection between technology, society and art. According to the systems-aesthetic approach, all living situations must be treated in the context of a systems hierarchy of values. This implies that in evaluating systems the artist is a perspectivist, considering goals, boundaries, structure, input, output and related activity inside and outside the system. My objective is to look at the application of these new criteria, not necessarily through the use of high technology by artists, but rather through the use of the principles behind technology.

Where the object almost always has a fixed shape and boundaries, the consistency of the system may be altered in time and space. The importance of the object in sculpture is inevitably diminishing, with the emphasis put on sculpture operating as a system, where process takes presidency over the end product.

It is evident that the object has a certain capacity to endure that the system perhaps never will possess. This fact plays an important part in considering the changes affecting the categorisation of sculpture. It raises the question - how do we define where the object leaves off and the system begins? In the past sculpture was viewed as a stationary object occupying physical form and space, whereas the system diminishes the importance of the object, and allows it to assume a more lifelike activity.

Looking closer at the system, one finds that it consists of mutually dependent components, and may assume such characteristics as selforganization, growth, internal and external mobility, sensibility, input, output, kinetically sustained equilibrium and eventual death. There is a definite connection between the characteristics of the system and the direction that sculpture is moving into, for example, the lack of endurance and the eventual death of the system influenced the use of perishable materials in sculpture.

The advantages of the system are flexibility of use, adaptability and the capacity to react. Systems that seem to operate more for their own sake have gradually alienated and replaced earlier direct contact between people. According to Jaques Ellul (in Burnham 1978:12)

The modern network of artificial systems remains the most sophisticated form of materialism. These systems are created through the notion of man as the master of the environment, dominating known forms of energy and matter. This means that the system transcends the object through intellectual domination of the environment.

The systems-approach goes beyond a concern with staged environments and happenings. It deals with the larger problems of boundary concepts. Conceptual focuses rather than material limits define the system and this means that any situation, either in or outside the context of art, may be judged as a system. Information takes priority over history and geographical location, and, in such a handling of materials, the process takes priority over end results. This emphasis on process and information is, in turn, related to the centrality of theoretical information in the post-industrial society.

This shift towards cross-disciplinary, post-geographic and often participatory work signals the start of an opportunity not only to continue breaking down the boundaries between disciplines, but also to challenge whole notions of sight,

space and authorship. In a systems context, invisible parts share equal importance with things seen. It is important to note that the systems-aesthetic approach doesn't present one technical solution, but attacks problems on a multileveled, interdisciplinary basis and is therefore a valid approach to use. This is evident in the work of many artists that are influenced by all the technological advancements.

All these changes emphasise that the context of art is fluid. The components of systems have no higher meaning or value, and derive their meaning only through their context. Therefore one can not regard a fragment of an art system as a work of art in itself. Through examining some shifts regarding the concept of art, specifically sculpture during the 20th century, it becomes clear that the needs of truth to materials have changed, leading to a shift of emphasis on the interconnectedness of all things. Nearing the end of an age in which the visual object played an important part, in retrospect it can be looked upon as only a start in the process of transformation towards a new interdisciplinary art system without boundaries.

Already, as a means of description, the term 'sculpture' has lost its identity. It now needs to be defined as a broad term for all three-dimensional construction, installations, site-specific enterprises and co-operative enterprises moving into the digital era. It is an infinitely malleable category. At the end of the 20th century, artists find themselves at a turning point in the history of civilisation, a point at which categories, including those of art, will have to be rethought and read in new ways. The end of linear thinking and the generalisation of multimedia have led to complexity and the end of narration in art. Without transition we are flung from 'representation' to 'presentation', from 'appearance' to 'apparition'.

This means that what is to be fixed is no longer a gesture, the object or the image but rather the transformation process, which must be drawn upon as it flows back and forth. The status of the artist changes from the position of observer to that of acting agent whose actions transform our perception of civilisation. What is important is the dynamic of how things emerge, and this in particular is the meaning induced by artists who maintain an interactive practice.

In the next chapter I will look specifically at the interconnectedness of sculpture and architecture as disciplines, where there exists a definite borrowing of concepts and ideas. I find this relationship useful in supporting my argument regarding need for the redefinition of the category of sculpture. Through this relationship it becomes clear that there is a definite change in sculpture's relationship with the viewer, and more specifically the space of the viewer. Furthermore sculpture is no longer tied to a specific geographic location such as a building, but moves towards a post-geographic 'location'.

CHAPTER THREE

Shifting definitions of urbanity: a response to specific new conditions in the city

Many changes in our perception of and relationship to the world proceed from the change in our concept of space. With technological developments we are confronted with new ways of grasping space. These changes require specific systems of representation. In the previous chapter it became clear that a new aesthetic established itself with the transition from a monumental towards a functional environment, with the emphasis placed on the notion of relationship and interaction, rather than on the concept of the object. The horizon of this aesthetic lies beyond the visible.

New forms of subjectivity do not emerge in a vacuum, but are the result of shifting definitions of urbanity and specific responses to new conditions in the city. Therefore, in order to form a better understanding of the changes occurring in architecture and its relation to sculpture, it is important to see a link with the concept of the city and the way it constantly changes through the impact of technological developments. In my opinion the city must be understood as some kind of natural process. By natural process, I imply that the city operates according to its own set of laws, even though people are trying to impose their laws onto it. I will look at the way it functions, or fails to function, as the result of a humanly devised system, and at the different ways that artists respond and intervene.

Jeffrey (1996:13) states:

One problem with the city, regarding any kind of constructive interaction with it, is that it has been increasingly regarded as subject to immanent laws of its own – almost if it were part of nature and thus inevitable in its growth and decline. We may be involved as participants, but only to the extent that any micro-organism is part of an ecosystem... If the city itself as an autonomous element is at issue, rather than our individual selves in formation, and if it is understood as some kind of natural process, we must think of ourselves as keeping a distance, as observers, analysts, mediated beings.

Therefore in looking closer at certain perceptions regarding nature, as well as at the way nature functions, we form a better understanding of the way the city operates. If chaos captures the essence of nature then we need to ask ourselves what does that say about the world in which we live? Human civilisation can be seen as an attempt to impose order upon the chaos of existence, for example, that the appeal of architecture is simply its existence as structured alternative within the chaos of the contemporary city.

In the mid-20th century, cities were viewed as clearly organised, simply ordered, and thus predictable, capable of being designed and planned in such a way that the quality of life of their residents could be directly improved by manipulating their physical form. This idealistic view was widely held throughout architectural circles and the social sciences. It was founded on the belief that the social world and its representation in physical artefacts such as cities were coherent and understandable in the same way that the physical world had been understood since the Enlightenment. The success of physics in providing an intellectual foundation for material technologies and the triumph of rationality through the application of the scientific method could be directed to the social world, it was argued.

A conscious and deliberate attempt at social engineering, which has dominated Western societies for the last years, was the result. However the limitations of the approach eventually came to light. According to Michael Batty and Paul Longley (1997:74) in the article, 'The Fractal City': "Our understanding of systems in the small does not add up in any measure to our understanding in the large... The whole is more than the sum of the parts and physics as a basis for everything has been widely discredited." They argue that the limits imposed by the theories of incompleteness, uncertainty, and complexity have destroyed any hope of complete understanding. Systems everywhere are simply too complex to be reduced to the limits of conventional science and in the social world, as in nature, prediction is logically impossible.

Cities demonstrate all the features of this crisis of rationality. Attempts at building mathematical models of their structure were unable to yield realistic predictions. They proved incapable of dealing with any kind of future, which embodied creative development, surprise or novelty, now largely regarded as the seeds of social change.

Stephen Marcus (in Allen 1996:28) reminds us that: "the city is ceasing to be readable." In this essay he contrasts the description of the city given in the novels of Saul Bellow and of Thomas Pynchon. He writes: "The modern city has gone out of control... it has lost the signifying potencies and structural coherence that it once seemed to possess" (Marcus in Allen 1996:28). According to Marcus it is impossible to give a coherent account of such an incoherent city as New York or Chicago as Bellow does. With Pynchon, on the other hand, this coherence begins to fall apart. Pynchon writes about decisive moments in the aftermath of the breakdown of order: Post-1945 Berlin, London during the Blitz, or Los Angeles in the 1970's:

In order to see the contemporary urban world clearly, we must be able to see past the fiction of continuity, the fiction of cause and effect, the fiction of humanised history endowed with reason... The whole has become again destabilised, obscure, baseless, mystified – and most efforts of understanding or constructing a whole are in themselves part of mystification (Pynchon in Allen 1996:29).

The massive explosions of population and the emergence of world or global cities were not anticipated. Likewise, the impact of information and communication technologies and the rise of the Network City could not be predicted, while at more local scales the development of edge cities and the collapse of the public transport systems inside Western cities have only been explicable in hindsight. In short, conventional science was unable to predict the emergence of new kinds of cities.

Batty and Longley (1997:74) comment:

It is little surprise that the public and even the planners turned against the ideologies which produced such abhorrent results in our cities in the name of efficiency and equity. The general response to these dilemmas has been the retreat into post modernism. New urban theory is based on understanding cities in terms of their superficial structure through a kaleidoscope of social and physical complexity that clearly marks the intractability of the late 20th century city.

The avant-garde has all but abandoned the search for order in cities in traditional scientific terms, which associated cause to effect, but amidst the ruins of this old science, a new science is emerging. As I discussed earlier, over the last twenty years, the view has been gaining ground that insight not prediction must be the goal of science. The fact that simple systems were manifested with a level of complexity that was completely unknown went some way to explain why more complex systems, like the city, which were often build from simpler elements, were entirely unpredictable, in fact even chaotic.

It is impossible to know the position of the system and therefore impossible to make any form of prediction in the precise terms that Newtonian science demands. Chaotic systems are thus very different from those that science has worked with for the last two hundred years. There are many aspects of this new science, which can be used to generate insight into the growth and structure of cities.

This in turn raises the question, how then, would an artist intervene? Any attempt to represent the city, or in general, the world's totality is out of the question, even though it is the whole that is at issue. I agree with Jeffrey (1996:13) arguing that:

Totalities, however, are very attractive to those forced to live in among contingencies, and their wholeness can always be signalled by the judicious use of parts. But whatever the whole metropolis represents can only be surmised, and that way lies confusion. In an ideal world, we regret and deplore confusion, for it implies that we are out of control – but art's tolerance of ideal worlds is not to be counted on.

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In the 1960's Minimalism was one of several movements that were influenced directly by all the industrial and technological developments of the time (6). A strange circular route has been traced whereby artists in an effort to rethink some of the limits of their disciplines, turned towards architecture. The implication behind Minimal art was the reduction of sculpture to its irreducible minimum – a form, outline or shape, and it completed a process of formal innovation begun with Abstract Expressionism.

Allen (1996:25) comments:

Composition by parts – the assemblage of faceted planes and fragmented figures, the lingering shadow of Cubist revolution – was jettisoned in favour of a new sense of the whole: complex wholes ordered not by conventional relations of hierarchy, symmetry or balance, but instead by serial orders, non-relational composition and unified formal Gestalts.

Minimalism sought to defamiliarise the object, but not by taking the object out of its context or by the use of distorted or fragmented shapes. Instead, it represented known forms in unfamiliar scales, materials or positions, for example, the sculpture of Isamu Noguchi, *Cube* 1968, (fig. 7) and that of Tony Smith, *Die*, a six-foot steel cube painted matt black. "When asked why he did not make it larger, Smith responded that he was not 'making a monument'. Asked why he did not make it smaller, his response was that he was not 'making an object'" (Smith in Allen 1996:25).

Minimal artists were more concerned with the way their pieces created, enhanced, or blended into their architectural or urban environment than with the autonomy of their sculptural works as isolated objects. Their productions do not sit on a pedestal; instead they rest on the floor, stand against the wall, are suspended from the ceiling, or occupy a whole room. They also take to

the out-of-doors where they merge with the surrounding architectural space and become part of the total environment.

This was closely linked to another important contribution of Minimalism, the establishment of a new relation of viewer and art object. Attention was shifted away from the object to emphasise the space of the viewer, the situation of viewing and the duration of perception. This is why Minimalism's reductive forms – cubes, cylinders, grids or planes – should not be seen as a return to stable, formal values, or to ideal conceptual frameworks. According to Minimalism's view of the world, the capacity of perception to de-centre form is stronger than the capacity of ideal forms to ground perception. It is far from being symbolic language recalling essentialist values; rather Minimalist geometry aspires to be without content, with its meaning given in perception. This radical insistence on the immediacy of perception moves sculpture away from idealism.

It becomes clear that there is a definite connection with the industrial developments in civilisation at the time. The meaning of a Minimalist work, "is produced in the experience of the world, not in the hypothetically pure and prior space of intentionality" (Foster in Allen 1996:25). Repetition and the simple forms of Minimalism are linked to seriality and to the protocols of industrial production, rather than to the timeless and the universal.

Minimalism worked against a separation between the principles of painting and sculpture. This cross-disciplinary 'borrowing' also inevitably lead back to the complicated question of its relationship to architecture. For Robert Morris, a key artist/writer of the 1960's, Minimalist work is distinguished by the emphasis on the process of its making - this characteristic being related to the systematised and functional character of the environment. It is worth observing how many of the procedures of Minimalist making belong to architecture.

With Minimalism, the sculptural object assumed architectural scales within an architectural space. More significantly, these objects were often realised by familiar architectural means, that is to say, fabricated according to measured drawings. Like architects, they project their schemes on a huge scale for public sites and must await patrons with the capital to finance such enterprises. For example, before Ronald Bladen could arrange for his massive *X* (fig. 8), to be constructed in steel, he had it built in plywood for exhibition at New York's Metropolitan Museum. The distance between the idea and execution that marks the work of an architect is here taken over by sculptural practice, which can definitely not be viewed anymore as an elitist activity.

Distance, distraction and duration all characterise the viewer's relationship to buildings. Michael Fried (in Allen 1996:26) in 'Art and Objecthood' (1965), scrutinising the tendency to borrow across disciplinary boundaries, comments on the assertion that the experience of contemporary post-urban space tends to trivialise the experience of the artwork. He asks: "If turnpikes, airstrips and drill grounds are not works of art, what are they?" The answer is that these are works of architecture if we admit that there exists a large and important category of spaces or artefacts that are architecture but not necessarily buildings. The basis of Fried's critique on Minimalist works is that they are too close to architecture – insufficiently distinguishable from everyday objects and spaces that frame our day to day lives.

But today at the end of the 20th century it is exactly this notion that is characteristic of most art and sculpture. We do not draw lines of separation anymore and the category of sculpture can include almost anything. Of necessity architecture operates between and around other disciplines and its boundaries cannot be fixed with any certainty.

Therefore an alternative formulation can be what lies between the arts is architecture. To refer back to Minimalism in its earlier art-world context is also to mark out the limits of Minimalism as a project in contemporary architecture. Because Minimalism worked against function, context and recognisability, its architectural utility will always be limited. Minimalism, which developed in series, but rarely in fields, is powerless to offer models for the city or for urban agglomeration, because it still needs the frame of the gallery to work against.

In the *Cultural Logic of the Late Capitalist Museum* (1990), Rosalind Krauss has pointed out a kind of reprogramming of Minimalism underway today:

The lived perspective of the old Minimalist subject – which promised an instant of bodily plenitude in compensation for the loss of authentic experience in the face of the commodification of advanced industrial culture – is dissolved into the very currents of serialisation, banalisation and reification that Minimalism originally set itself against (Krauss in Allen 1996:29).

According to Krauss, this shift whereby Minimalism enters into the space of Post Modernism, is already inherent in Minimalism's 'original' project. Post Modernism is a controversial term, defining the character of experimental tendencies in Western arts and architecture since the 1940's or 1950's, and particularly more recent developments associated with a post-industrial society, marked by a high-tech frame of reference. The term is a paradox because it suggests that Modernism is decisively over and that a new artistic era has succeeded, but it also implies that successor movements are dependent on it, as well as in the same degree revolt against it.

Post Modernism arose from a broad acceptance of Modernism and its avant-garde aspirations as the dominant 20th century tradition, hence centralising the avant-garde but requiring advance beyond its conventions. This gave the contemporary post-1945 artist a pluri-cultural range of styles, techniques and

technologies, but also created uncertainty and indeterminacy about their use and authority. Merged forms, happenings, multimedia arts and crossovers of High and Pop arts from late 1950's on can generally be seen as Post Modern. However it is best to be seen as a complex map of late 20th century directions, rather than a clear-cut aesthetic and philosophical ideology.

At the end of the 1970's many artists were dissatisfied with the exclusive attitude of the avant-garde and seemed to be seeking ways to extend the art audience without compromising their work. It could be argued that '70s, as distinct from '60s, art is characterised more by this change in attitude toward the audience than by a change in form or content. The increase in the '70s of 'project', performance, film and video art, all of which have their origins in the '60s, is a reflection of this. The impermanence and specificity of these art forms brought about important shifts in emphasis, aesthetic and otherwise.

Krauss (in Allen 1996:23) wrote:

Over the last ten years, rather surprising things have come to be called sculpture: narrow corridors with TV monitors at ends; large photographs documenting country hikes; mirrors placed at strange angles in ordinary rooms; temporary lines cut into the floor of the desert. But the effect of such productions, and the critical apparatus around them, is to make the category of sculpture seem almost infinitely malleable.

This elasticity of categories has, in the end, something of the opposite to what was intended. The category of sculpture has now been forced to cover such heterogeneity that it is itself in danger of collapsing. Krauss contrasts the uncertainty of her present with the certainties of sculpture's historical conventions:

I submit that we know very well what sculpture is, and one of the things we know is that it is a historically bounded category and not a universal one. Conventionally understood, sculpture is linked to monumentality and shows a disposition for the figurative and the vertical. This logic of commemoration and recognisability persist in everyday critical language. When we call a building sculptural it signals a figurative aspect, and conversely when we call a piece of sculpture architectural it suggest the presence of tectonic forms. (Krauss in Allen 1996:23).

But does such a view still hold today at the end of the 20th century, for example, if I refer back to Le Corbusier for whom sculpture and architecture could comfortably co-exist as distinct categories, but with a shared formal vocabulary? At present the situation is much more complicated. It is precisely the mobility of the category of sculpture that makes it difficult to construct a useful relationship between architecture and sculpture. The boundaries of the category of 'sculpture' have been extended to include theatre, landscape, film, video and above all, architecture.

Artists have found different ways of constructing this relationship, for example, the enclosed pits, towers and sunken, circular pools of Mary Miss (fig. 9, 10) that appears to be fragments of architecture. All elements in Miss's work enforce her sense of space's physical reality and of its perceptual metamorphosis through the viewer's motion. 'Interior' is only one of the spaces she chooses to explore, just as what might be called 'architecture' is only one of her means. Works by artists such as Mary Miss and Alice Aycock evoke architectural space, either in the landscape or in the territory called public art.

Miss (in Foote 1980:27) states:

I feel that the boundaries of art can become less restricted while at the same time addressing the issues more directly. One of my interests in working in the environment is that it is possible to do work where the form and content are less confined: there are greater variety of locations, richer cross-references to existing structures, an extended viewer experience. It is important to me that in these outdoor sculptures the work is taken back to the context it comes from (direct references to the landscape, building techniques, vernacular structures), linking more directly with its original sources...

There are a number of sculptors for whom architecture and the space experienced in architecture, are both subject and theme. In Aycock's work, for example, *The Angels Continue Turning Part II* (1978) (fig. 11), spatial fantasy is bound to an architectural past. Her works are metaphors for the situations we know in architecture, as her references to myths, history and autobiography make clear. According to Linker (1980:20):

...in the past year or two, we've had 'architectural sculpture', 'architectural analogues', 'architectural fantasies', 'architectonic structures' ...A dissident voice calls it 'house art', but the underlying motive seems clear. In each case, there is an attempt to establish an artistic undertaking on building – or as a catalogue puts it, the ambiguous territory between architecture and sculpture.

But, things are not as simple as they may seem and a specific movement does not exist. What does exist are both many tendencies and many artists who explore these regions according to their specific objectives. Some are using architectural forms; others employ construction techniques, yet many are using these as well as other means to apply purely sculptural aims.

Linker (1980:20) comments:

That these motives may seem unfashionable in the post-modern age is one thing; that they may be distorted, abused and finally, buried beneath the architectural label is something else indeed. For if intersecting planes, right angles and sturdy structure connote to the contemporary viewer, architecture, the fact that they denote, demarcate and determine space in a manner consonant with the function of sculpture is swept away beneath the architectural reading. What emerges from the architectural uproar is that the element mediating sculpture and architecture – the realm of space – may be confused by arrogation to an erroneous category.

However, with all classifications there are certain sacrifices: what we gain is the use of a category for arrangement (architectural sculpture), what we lose is any sense of the specificity of objects or non-objects, and of the perceptual space they inhabit. There is a danger in the notion of a movement and the blurring of categorical boundaries, because we could end up focussing only on the interdisciplinary relation without bothering to keep in mind an equally necessary understanding of how art and architecture differ from each other. Linker (1980:25) states: "That necessity is accentuated by recent developments in sculpture. Both sculpture and architecture are 'acts of space'. Similarities and singularities coexist, and there must be a dialectical commingling to separate them. But interaction is not confluence."

This leads me to question if such a view still holds, if we look at the changes that architecture and sculpture, and in general the category of art underwent in the late 90's. I have to differ from Linker regarding the fact that there must be a definite separation between these two categories, because art in general reflects the characteristics of the environment, and in a highly systematised society, boundaries are not fixed with any certainty.

The changing concept of space is well exemplified in the work of the Dutch sculptor, Krijn de Koning, who works mostly in the installation mode (7). I find his work of value in illustrating the possibility of consolidarity between sculpture and architecture, because he concerns himself with establishing a close relationship. Paul Ardenne (1996:44) comments: "Krijn de Koning's works, imbricated constructions and sober structures in the Minimalist mode, seems to invest the galleries, museums and esplanades where they are displayed. They constitute mediations on the density of space and the body's special relationship to it."

De Koning's work gives an impression of a being closely related to the Minimalist tradition, if one considers only the simple forms and materials used by him. The pieces take the appearance of walls, cubes, arrangements of partitions and structures standing on the ground. The materials he mostly uses are wood, sometimes painted, and white plaster panels. But the first impression proves to be wrong if we see these sculptures for what they really are: they are not so much pure forms or objects that are an end in themselves, but rather works that interact with the site, simultaneously marking it and measuring it.

Of specific importance to my discussion is the way that de Koning succeeds in establishing not only an interaction between the categories of architecture and sculpture, but also between the principles and procedures characteristic of each. Since his first sculptures in 1990, de Koning has repeated the same method for every new work. Once the exhibition site is chosen, he analyses it, an approach requiring maquettes and a number of preliminary sketches.

Through this method, one can clearly see a connection with the procedures that used to belong only to architecture, as well as with the procedures followed by Minimalism. De Koning seeks to achieve a harmony and an intimate relationship between the work and the site, for example, through the

use of colour, as in the work *Sculpture Artcite* (1994), where bright yellow geometric plating opposes the gallery's whiteness. Another example is his *Artis Den Bosch* (1993), (fig. 12) a composition made of numerous painted, low cases lying on the ground that counteract an immense, low-ceilinged exhibition hall.

Sometimes he seeks to achieve a balance between the work and the installation site, for example in *Sculpture, Amsterdam W 193* (1993). It consists of a white double parallelepiped mounted on a pedestal, which acts to reorganise the space of the rectangular hall around it. The goal can also be to assert an aesthetic presence in a neutral environment, as in *Sculpture Taejon* (1993), located on the esplanade of a South Korean park, or in his many wall pieces. Another objective is the creation of an object that competes with the site, for example, in sculpture done for the Witte de With Museum in Rotterdam (1994), which repeats the architectural space around it like a kind of three-dimensional tracing. In each case the materials are very basic, drawing their power from their very simplicity.

It is clear that de Koning's methodology rests on four principles:

- 1) Occupation of a place which may or may not be a museum, but has a clear social function;
- 2) Reaction to the site's specific characteristics, to the expansion or contraction of its space;
- 3) Insertion of the piece in such a way as to neutralise the site's original architecture;
- 4) Creation of a balance that allows the viewer to confront a paradoxical aesthetic proposition that is simultaneously monumental and discreet (Ardenne 1996:45).

His work for the Sous-Sol gallery in Paris (1995), (fig. 13) consists of a synthesis of these principles. The artist entirely re-partitioned the gallery space by means of plaster panels. The material used is neutral and has no materiality other than in form. Of specific importance is the interaction de Koning established with the viewer, for example, in the layout of the work that

allows the public to walk freely through the corridors and openings made in the walls. This freedom of circulation allows the viewer to look at the work from complex perspectives.

According to Ardenne (1996:46), "the piece fits the architecture of the gallery like a garment fits the body," and thus escapes the status of a monument by becoming the logical continuation of the room. Here one can compare the difference in procedure followed by de Koning and, for example, the Minimalist artist, Tony Smith who deliberately plays around with the element of scale in his work, in order to achieve a shared objective.

The process of extension, followed by de Koning, is characteristic of site-specific work, which often deliberately 'contaminates' the environment. Here, however, the work seems perfectly integrated. "There is an osmosis between the content and the container" (Ardenne 1996:46). Most of de Koning's works take sculpture as a container, corresponding to the tendency to recycle sculpture as architecture – the movement of plasticians – in the 1980's that was generally considered to signify the death of sculpture as we know it. Sculpture itself was either considered as regressive (it was to be replaced by installations and environmental art) or used as an excuse for something else (like ready mades etc.).

However de Koning believed in sculpture as sculpture. His work has nothing to do with modelling a living space, for example as in the work of the conceptual artist, Joseph Beuys, *Plight* (1958 – 1985), (fig. 14) where the idea is to produce habitable art that is also a protective space. De Koning's use of the container-form is not intended to dominate sculpture by architecture but on the contrary, to affirm the possible solidarity between the two.

The essential element in this relationship, in the end, remains the body, both of the artist who conceives it and that of the viewer, as well as the interaction with the site. We see this in *Sculpture Beeld Galery Storm* (1992), an open piece with benches, built into a small gallery. The idea is not to dwell in the piece but rather to move through it, not to fix the body in the space of the sculpture, but to restore the body's space.

De Koning has a unique position with regard to site-specific work, which differs from the relationship to space usually embodied in this particular mode of art. He is against any hierarchization, for example where the site overdominates the work. I agree with Ardenne (1996:47) who argues that: "What matters in his work is above all the 're-proclamation' of sculpture as a procedure that on a chosen site consciously involves the equal participation of the place and the spectator." The structure demands nothing; it is where the visitor wanders. In contrast to the model pioneered by Daniel Buren, which views the artwork as a 'visual tool', for de Koning an artwork takes the measurement of the body and is structurally autonomous in appearance only. It is up to the viewer to contemplate and to take the initiative in relation to the work (8).

De Koning's work is part of various artworks based on the question of the experience of perception. With regard to this intention, Ardenne (1996:47) argues that:

De Koning envisions sculpture as a spatial referent, an organ for taking measurements and readings. One can say that he succeeds in utilising sculpture as a working of space and working material; a space that needs to be constantly re-examined, but restored to the body, that marker of spaces, for a far more intense relationship. He focuses on three-dimensional art as a metaphor for the relationship between the body and space, at a time when contemporary sculpture's concern with a whole range of propositions, (all considered more or less sculptural), is causing it to fragment and leading to the 'de facto' devaluation of sculpture as a genre.

Sculpture should be viewed within the context of the space it marks or occupies. The category of sculpture needs to be constantly re-examined, because in reflecting an ever-changing society there exists the need for new ways of grasping space, in turn, necessitating the application of new criteria.

This leads me to the exhibition, *Views of the Museum* (1996), held at the Museum of Contemporary art in Barcelona, where one specific intention was to establish those periods of being 'in between' things as themselves, integral to the experience of art and to the experience of the surrounding architecture. This intention corresponds directly to the specific new conditions in the city at the end of the 20th century.

As I mentioned earlier, new forms of subjectivity do not emerge in isolation, but are the result of shifting definitions of urbanity. If the city today is a dispersed field condition, a network of flows (of information, money or people) then the capacity of architecture to order or to signify flows needs to be rethought. Attention needs to be shifted to the interval, to the space between forms, which could be collective space. Allen (1996:28) argues that: "The formal syntax of 'one thing after another' is a more useful device to mediate the complexity of contemporary urban experience than the appeal to collage urbanisms..." This is illustrated in a statement by Rudolf Arnheim (1996:117) in the article, 'From Chaos to Wholeness':

We live in a time where every statement of fact seeming to confirm destruction is eagerly seized upon, not only by the popular culture but also by theorists. Whatever seems to show a dominance of shapelessness in our world and to deny the validity of order and understanding is welcomed, and the ability to define existing structures is questioned.

Architecture only reluctantly gives up its ambition to construct the whole. What is not so evident is how difficult it is to step back from the temptation to impose order on the incoherent, or to construct new myths around this incoherence. In the end, the appeal of architecture is simply its existence as an alternative to the chaos of the contemporary city.

Looking at the shifts regarding the concept of space, which in turn make new demands on the architecture of contemporary society, what would be the implication for sculpture at the end of the 20th century? Another question could be - what would be the most suitable description or redefinition of the category of sculpture? Would the term 'installation art' be the most applicable? In an article on the issue of installation art, Michael Archer speculates on the function of the museum or gallery, and specifically the new Museum of Contemporary Art in Barcelona. He (1996:8) asks:

How does one break a building in, accommodate oneself to it, ease its seams so that it fits more comfortably? For a building designed as a gallery this question has relevance not only to the people who use it, but also for the art it contains and shows. Just as the building ought not to relinquish its status as architecture, the art on view needs to assert itself as something to be looked at other than as a mere adjunct to the experience of the building.

Views of the Museum, an exhibition of fourteen installations, was an attempt to perform such an act of 'accommodation'. Most significantly, the invitation to the artists was to make use of the whole building and not just that portion set-aside for exhibitions. Many of the artists chose to alter the building in some way or other. The artist, Craig Wood, cut the silhouette of cartoon-like figures from the movable screens, exposing the mechanics behind the museum's potential for display, for example, the work *Pink shrugging monument* (1996), (fig. 15).

Richard Wilson physically punched a hole through a window and an exterior wall, for his work, *I-beam forklift* (1996), an actual forklift holding a pre-fabricated hut such as is used as a site office. "The rough, parallel channels gouged out of the plasterwork on one wall by Terry Smith were a little skewed from the vertical, as though the building had suffered an earthquake and been jarred out of true" (Archer 1996:8).

Rosie Leventon played on the illusions of perception; instead of punching a hole in the floor she built a false one from the access corridor into the large circular gallery on the first floor. A related impulse was to open the museum up and to 'disperse' it across the geography and history that contained it. Magdalena Jetelova ripped off several of the facade panels and distributed them around Barcelona. This impulse can be directly traced to a shift in the concept of sculpture influenced by a highly interactive environment.

Another participatory artist, Perejaume removed parts of a wall to a location some distance from the city, a live video link showing viewers its new position. Ignasi Aballí 'reconstructed' a trace of the residential block that was demolished to make way for the museum. He created five areas of emulsion or domestic wallpaper, one above the other, on the end wall of the ramp hall, suggesting the interior décor of a half-raised building.

What became important in this sculpture were the relations between people, and between people and their environment, marking a shift towards cross disciplinary, post-geographic and participatory work seen here.

Some artists played around with an imaginative rather than literal escape from the confines of the building, for example, Monserat Soto's floor-to-ceiling photographs, taken looking down isolated roads in central Spain. Archer (1996:8) asks the question whether the use of the word installation is

justifiable for photographs as in the work by Soto, stating: "I have unguardedly used the word installation to categorise the art on show."

Fortuyn, participating with O'Brien, took the show's title literally and photographed the museum from several apartments around it. A table and chair from each location placed in the gallery provided simple workstations at which visitors could sit and fit together a jigsaw puzzle of the view from their respective homes.

The use of space plays an important part in creating any work of art and, in the work of Richard Venlet we see the artist making use of inaccessible space. Venlet boxed in the cubic volume of a gallery using Perspex and wooden battens, and through one of the infill transparent walls one could see an inaccessible space in the middle of which sat a box. The shift in scale from museum to gallery to object bound together the physical, visual and imaginative aspects of the viewing experience.

It becomes clear that some of the artists, participating in *Views of the Museum*, still make use of the object in sculpture, but the objects do not comprise the entire work of art, but function within the context of something else. With regard to the work of Fortuyn, O'Brien and Richard Venlet, Archer (1996:9) states: "These last two, then, can be taken as installations, but perhaps in a way that relies on the least helpful meaning of the word." He raises the question why the other works can also be understood as installations and why this exhibition, of "brand new art in a brand new edifice, can share the term with activities otherwise devoted to the re-appropriation of marginalised light industrial spaces."

Agreeing with Archer, I would argue that there are grounds for saying that installation is the current condition of art. But, this is not to say that everything is installation, or that in order for art to demonstrate change it needs to be an installation. What is meant is that the use of the word has less and less to do with designating and classifying a kind of thing artists do that is distinct from painting and sculpture. Its use demonstrates instead the widespread assimilation of a certain spatial sensibility. Secondly, it is an indication of how we inhabit a space, which is always multiple – always spaces - and thirdly of how we interact with the bodies and objects, both near and far, around us.

But, on the other hand, it becomes increasingly meaningless to categorise art as installation, as though the term had some descriptive efficacy. Neither painting nor sculpture are, in the traditional sense, installation, but of importance is the way they are read through the experience of a reality. I partly agree with Archer (1996:9) that: "it would be better to think about not using the word any more at all, when buildings are able to act perfectly well as their own installations," but for some artists' work, the term still serves a function in demonstrating a certain spatial sensibility.

CHAPTER FOUR

The City – subject to immanent laws of its own

In viewing the city as a natural process, reference can be made to the exhibition, *Art & The City: A Dream of Urbanity*, originated by Pat Kaufman, Elizabeth-Jane Grose and John Stathatos and presented in London in 1997. I want to look at the work of three participating artists, Elisabeth-Jane Grose, Sylvia Libedinsky and Pat Kaufman (9).

The objective of the project was to call for an examination and re-interpretation of the city towards the end of the millennium, but more importantly, the artists that contributed to the project responded in the main to the concept of the Sublime as defined in the 18th century (10). According to this concept, the city - under those early modern terms of reference - was little more than a stage on which the histories of parties and people were enacted. Otherwise, it was a site for chance meetings – the existential reading of the life of encounters in the city, indicating the concept of the city as an autonomous element.

The artists deal with the difficulties of participating in a system humanly devised, yet to all intents and purposes out of control. In experiencing this reality, they ask how, and if cities have retained their magnetic qualities and attraction? John Stathatos (1996:7) argues that: "Humankind has always succeeded in simultaneously holding in mind two contradictory images of the city, whereby the unsatisfactory reality is sustained by the Platonic ideal of what a city should be. Every inhabitant of a city has a 'dream of urbanity', for without it life would be barely tolerable."

Elizabeth-Jane Grose responded to the project by commenting on ideas regarding the impact of technology on nature, a symptom of human's desire to control and manipulate. She presented her work with the objective of using the garden as a means of re-assessing our complex contemporary relationship with the natural. With regard to Grose's work, Maria Brewster (1995:iii) states:

At a time when Western world has few remaining wild places, we have become very nostalgic, even sentimental, about nature. Perhaps this begins to explain our enjoyment of the garden. We hanker for our own little piece of Eden, trying to return to something lost to us. Yet even here we desire perfection and control, coercing wayward nature into an ideal form which bears little resemblance to unmanaged landscape... Torn between the delight in the untamed and the urge to colonise its chaos, in the garden we are forced to consider the construct of nature and where we position ourselves within it.

For the project, Grose created the work entitled, *Park* (1997), (fig. 16) a sculptural installation made up of approximately 1500 translucent, pigmented resin casts of toy cars, laid out in imitation of the original bedding designs for the Italianate or Avenue Gardens of Regent Park in London. Designed by William Nestfield in 1861, their plans were rediscovered and restored in 1993.

The colours of the cast vehicles in *Park* correspond to the colours of the plants, which make up the bedding scheme and water features. Grose takes the Italianate Gardens as a starting point for thinking about contemporary ambivalence toward nature. Whilst it might be read as forewarning of environmental disaster, substituting each plant with a miniature car, *Park* seems to offer an alternative to the organic garden, hinting that a flower, observed, named, planted, pruned is as much a cultural product as a car.

Her premise is that nature is a cultural illusion, a fiction reinforced through environmental management – one could say, nature has been humanly altered and managed to the extent of becoming not a natural but an architectural system. Grose (1996:16) states: “I remember deploring the daily extinction of dozens of species of fauna and flora by the destruction of the rainforests. A more pragmatic friend, while agreeing it was very sad, believed we would make something to replace them. This idea has continued to fascinate me – man as Creator...”

Park combines two aspects of city life: the park as recreational area for city dwellers, and traffic, a main source of transport and tension in today’s urban environment. As earlier said, conventional science was unable to predict the emergence of new kinds of cities, characterised by overpopulation, and the collapse of the public transport systems inside Western cities is only one of the numerous consequences. Grose in turn proposes a ‘tongue in the cheek’ solution to ever-growing congestion and parking problems. There exists a precedent since, during public transport strikes in 1989 and 1990, the Royal Parks were used for commuter parking.

Grose is interested in negotiating the idea of the natural subject, and the original bedding designs for the Avenue Gardens (1861). The show kept viewers busy with estimating the numbers of the toy cars, thus succeeding in creating interactive viewer participation. However it would be easy for viewers to overlook the artist’s specific underlying intention: the promise of cataclysm. In this respect, Jeffrey (1996:14) states: “*Park* exemplifies that process of distraction whereby we displace difficult knowledge... it hosts the promise of cataclysm within its reassuring fabric of general knowledge.”

Grose’s deliberate manipulation and ordering of the miniature cars also plays on the issue of idealism and of the impossibility of breaking down the whole into ordered parts – of the impossibility of human civilisation imposing order

upon the chaos of existence. The world and the city do not work that way, because there is a constant interplay between order and chaos. This results in an idealisation, and we need to ask the question whether this idealisation is only possible in the realm of art. It is as though time has come to a standstill when viewing the precise layout and patterns of cars. Here again we see the diminishing of the status of the object, the miniature car, which functions as a symbol for something else, within a specific context, but that is still open to the free interpretation of the viewer.

One finds many similarities and shared issues in the work of Sylvia Libedinsky. *City in a Bottle* (1997), (fig. 17) is composed of glass jars filled with water and arranged at eye level. Each jar is lined with an acetate print of a ready-made urban photographic image. The levels and colours of the water vary according to the image and serves as a metaphor for the constant changing city. The images are fragments of cities – not of any one city, nor at any one time. This element of time plays an important role in the project, and one can compare Libedinsky's timeless cities to Grose's very specific allocation of time in her installation.

However, whereas the objects in Grose's work, the toy cars, have to be seen within a wider context, Libedinsky puts emphasis on the object, the glass jars, functioning as containers for the small urban environments. She is specifically concerned with dealing with the issue of the city within the confines of the object, which definitely has its limitations.

In *City in a Bottle*, what may at first appear as a random collage of impressions accumulates into a portrait of urban experience. Libedinsky makes allusions to a decaying world, but also to reconstruction – it is as though each jar serves as a piece of evidence to construct a picture of a past event.

There is a narrative sequence from jar to jar, but it remains intermittent, like the character of urban life. Few of the images contain figures. Nick Wadley (1996:28) states: "They carry a sense of place that is about people – about work, movement, commuting – but one from which people have largely disappeared like echoes of events, traces of an inhabited world; the anonymity of city life."

Water plays an important part in this work: the uncertain, illusionary character washes out part of the image. Her 'portrait' of the city comes as much from this illusory language as from the images themselves. Water enacts the roles of time and memory: refracting, inverting and obscuring. It contributes to a different scale of distortion, and the movement, shifts and changes of the image. According to Wadley (1996:28), "this difference touches an essential nerve of city experience – the contrast we know so well between the monolithic stability of architecture above our heads and the restless currents of life at street level."

In addition to introducing samples from everyday life, Libedinsky's *City in a Bottle*, also deals with the difficulty of giving shape and coherence to the empirical. Introduced as a series of fragments, the empirical can do no more than arbitrarily come to an end, and any such series must take this arbitrariness into account. This fragmentation in her work could also be indicative of an architect's view of the inability of architecture to construct the 'whole' or in other words, to impose order on the incoherent city life.

The work of Pat Kaufman, like Libedinsky, addresses and undermines the idea of totality on which the city depends. Her installation, *Safe as Houses* (1996), (fig. 18) is a pyramidal arrangement of a thousand handmade white Plaster of Paris miniature houses that are meant to be taken away by members of the audiences. At the point when all have been taken, the piece

is complete. A surveillance camera placed overhead surveys the scene, to check that each of the participants take one piece only. In this respect Kaufman (1996:46) states: "The fabric of the city as a dwelling place is dismantled according to instruction, its destruction assured by fair means or foul..."

Together with the failure of the city to operate according to its humanly devised structure, inevitably comes the insecurity of city life. Pat Kaufman explores and addresses this ambiguous insecurity, an issue that forms part of the 'fabric' of the city. Also part of her contribution to the project is the work *8x4* (1995), (fig. 19) in which Kaufman make reference to the standard unit size for building materials. This is a triptych made of such materials as steel, glass and wood, which absorbs and reflects light in different ways. Therefore, while each piece shares the same overall area, the amount of visual space they occupy varies.

Her motive is to create uncontextualised architectural shapes, reflecting the passage of time in three different ways, as they also reflect the viewers. Kaufman (1996:46) states: "They are very much like the surfaces of city life; their situation as surfaces, openings or barriers is unclear, and it is in fact hard to see them as objects." *8x4*, *Civitas* (1991) (fig. 20), *Contained I* (1991) (fig. 21) and *Meld* (1991) (fig. 22), each explores the experience of the city through the creation of fictional architectural shapes constructed through building materials.

Los Angeles artist, T. Kelly Mason investigates ideas pertaining to the perception of the city and specifically the movement through geographic space. He deals with the way we structure things, but also make reference to our own lives. In the exhibition, *High Points Drifter* (1995), (fig. 23) Mason investigates Nadar, who in the mid-19th century surveyed Paris from a hot air balloon, photographing the city from above, and making images of the Parisian cityscape. In the same way, he photographs different neighbourhoods in his city – Los Angeles – from a helicopter.

For his installation, Mason coupled the resulting colour photographs with a sculpture that represented that particular fragment of the city. Each sculpture was fabricated out of cast hydrostone bottles of all shapes and sizes, which in turn represented the buildings. In addition, each sculpture also came with a tape recording of the sound of the urban environment that emanated from the area where he photographed. All of the sculptures supported three plastic flowers; one flower represented where the audio was recorded, another where the helicopter was when the photograph was taken, and the third the position of the sun. Mason locates each sculpture with respect to the ocean – depicted as a long band of tin foil running along the base of the gallery's west wall. Sound fills up the space.

Jody Zellen (1995:68), who reviewed the exhibition, states that: "...we become the helicopter floating in a simulated urban landscape." In addition to the sculptures, Mason also presents three large drawings; abstract compositions loaded with symbols that make reference to utopian ideas of social planning, but the connections are somewhat ambiguous and the references obscure. The drawings appear as excavations seen from above, collages of text and image.

Mason's model city begins to map realities and represent a site of activity. Here the object is only a starting point in his investigations, and needs to be seen in conjunction with the entire exhibition – it becomes more than just a record or presentation of excavations, appearing as the complex map upon which we structure and record our lives. Mason is concerned with the viewers' relationship to the space they occupy, both in looking at the work of art, as well as imagining where that artwork exists in real space - that space is the city, the Los Angeles of today and not some utopian, idealised projection.

I see a definite connection between Mason's and that of contemporary South African artist, Stephen Hobbs (11). But, whereas Mason is concerned with the space of the viewer in looking at the work and imagining where it exists in real space, Hobbs is concerned with the actual physical intervention of the viewer and his work within the real space of the city.

Hobbs considers the ethos and life force of the city, but more specifically, Johannesburg. The totally contradictory city signage forms an important source for his constructions, installations and video work. In *Torque of the Town* (1999), Hobbs looks at the way the city as a system fails to operate efficiently. He makes use of a series of mixed media, photographic and video works.

I look at the city in a behaviourist kind of way. I'm not interested in the way cities work, but in the way they don't work, in the politics of space and abandonment. Modern cities are organised into grids, but within those grids, there's disorder. It's the phenomenon of the city I try to image (Hobbs 1998:6).

At the opening night of the exhibition, one was confronted with a scene of 'disjunctive strangeness'; because all the road markings in Bree Street, Cape Town had been painted out and on one side a parallel parking competition was taking place. Hobbs executed a series of interventions, blocking off a section of street and temporarily removing the road markings and signs, while an installed video camera surveyed the scene. As expected this resulted in chaos.

But what does all this mean? One could say that the artist comments on society's reliance on technology in maintaining order and efficiency. However, it would be easy to make a superficial reading of the show that actually had a well-constructed objective. Hobbs has a concise explanation of every aspect of his art. He comments on people's experience of the city, and the way they get competitive about it, for example, a thing like parallel parking. In that sense the parking competition is about superficial risk taking – it is important to him that the viewers see the absurdity of this competitiveness.

Each piece on the show formed an integral part of the overall effect. Hobbs placed a TV set in the centre of the small gallery space to replay the recorded intervention, and close to it was a huge graffiti, *Piss Figure* (1999), (fig. 24) repainted on the inside wall of the gallery space. Another work by Hobbs, *Erasing roadmarkings, cnrs Bezuidenhout and Jeppe Streets* (1999), (fig. 25) shows an aerial shot of the area in front of Newton Cultural Precinct, Johannesburg, from which the road markings have been digitally erased.

Hobbs (1999:2) states:

Yes you could think of that as the crux. I started with the idea of a signless city, the notion of an invisible city, and I wanted to realise this as a kind of visionary architecture, but on another level as an actual intervention in a real physical city. You'd look at the road markings as a form of territory marking, and a kind of canvas, and then there are these abstract gestural marks as opposed to signs of law and order. It is about the fact that cities are already proscribed, and then you go to where the proscription lies, and then you refine it through that intervention and create a multiplicity of meanings.

According to Hobbs it was important to actualise this in Cape Town, although the simulation in *Erasing Roadmarkings* was made in Johannesburg. He has an intense love/hate relationship with Johannesburg: "Jo' burg's hectic, because Jo' burg's got fuckall. It doesn't have any history – it's a hundred-years old and based on greed. There are no fictions in Jo' burg, not yet, unlike the multiple fictions in the Cape (Hobbs 1999:3).

Hobbs's *Postcard Panorama* (1999), (fig. 26) comments on the fictions and idealisations of tourism and landscape. Through cutting up postcards into rectangular strips and altering the strips into couples he juxtapose images of landscape and cityscape. Hobbs (1999:3) declares: "I wanted to get people to look at the predictable stuff, and leave them with the way I've made it look ugly... You're not looking at reality to begin with, so fuck you. All I want you to do is understand that these things are constructed." He wants people to think about what they are looking at, to make connections and to 'read between the signs' (*ZA@Play – Fine Art: Read between the signs 18/02/99*).

Another work, *Ponte Tower* (1999), (fig. 27) consists of a series of black and white shots, taken from the inside of Ponte Tower in Johannesburg. This forms part of the project, *54 Stories*, in which Hobbs looks at Ponte City, its architecture and the people living there, for example the gangsters and illegal immigrants.

He made an actual intervention by throwing a camera down the centre of Ponte Tower, and for the exhibition, displayed the resulting photographs next to the 8mm camera hanging from a parachute made out of a plastic carrier bag. Hobbs (1999:3) describes it as: "...suicide illustrated through a slinkydink of pictures popping out of a book... I threw a camera down the centre of Ponte, to simulate the eye of a suicide. In the gallery it's about getting people to do a bit of work between the surface of the book, which shows the high end point looking down into that space, then to look at the camera... and then to have a look at the film still."

Hobbs mostly make use of low-technology in his work, for example, the use of Super 8 to VHS to the web is an interesting technological path to take in the video of *Ponte Tower*. He comments as follow: "In terms of a basic evolution of technology I think this was a comfortable progression: low-tech – middle-tech – high-tech" (Hobbs in interview by Robert Weinek).

The use of space and time continuity in his work through photographic images, documenting place and space as a static fragment, and video, more as a moving fragment, plays an important part in this exhibition. He (1999:5) states: "Working between these two mediums affords me the scope to play with supposed 'evidence' of past, present, inside/outside experiences and memories." *Torque of the Town* illustrates this intersection between observation and lived experience.

Several connections can be drawn between Hobbs's work and that of the artists I previously discussed, although it is mostly exemplified in an entirely different way. For example, in the work, *City in a Bottle*, Sylvia Libedinsky also deals with the idea of fragments of experiences of city life. But whereas Libedinsky places emphasis on creating small representations of the urban environment, Hobbs instead is concerned with the presentation of people's experiences, as static or moving fragments, in interaction with the environment.

In considering all the different directions that artists take to achieve their objectives, it is clear that late 20th century sculpture as a means of description has lost its identity. At the end of the 20th century everything is surrounded in an air of uncertainty with no fixed boundaries. The urban environment is an integrated complexity and the object or image is no longer of ultimate importance, but rather the transformation process. In a system – dominated environment the dynamic way things emerge takes priority, inevitably influencing artistic practice in many ways.

Also, evident of the transformation process, is the changing role of architecture within the city. In a current of architectural speculation on the contemporary city over the course of the last two decades it has been realised that, perhaps the city as we know it is passing into history? In a discussion of the prospects for architectural design in the contemporary metropolis there is also a lot of speculation on the idea that today at the end of the 20th century, the architects are disappearing from discussion of the city and the projection of its future. This follows the idea that there is no longer the necessary connection between built form and development in a post-industrial society.

There exists a disjunction between the formulation of new urban projects by those who control capital and an architectural nostalgia for the historical modernist city. There is a lot of speculation on urban dysfunction and the disappearance of the traditional meanings of human work in a flux of information, leading to the demise of architecture in the city. According to Halik (1997:48):

The contemporary city is viewed as a manifestation of transition and as something that is in the midst of passing away into something beyond history, beyond architecture and beyond form. The city is a site of speculative adventure that spells the end of the objectives of modern architectural culture – architecture as form is exhausted.

Regarding this, historical reference can be made to the American architect, Frank Lloyd Wright who had foreseen this transition. He stated:

I think the city did its work long ago. The city is now a habit; we do not need it; it is in the way and we could get along very well without it if we were sufficiently intelligent... there is no room for architecture in the city. The car destroyed it; the telephone, telegraph, television, radio, all destroyed it because they are just as available in the country as in town... There is no advantage in the town any more for anything. The city is going, going, gone (Wright in Halik 1997:49).

However, this anti-urban sentiment must be regarded as an expression, which belong to the reformist mentality. The dissolution and chaos of the city became the stimulus for endless speculations on human futures. The contemporary line of urban crisis criticism still see scope for a criticism of destiny, but takes in mind the conditionality of the modern city, hoping for a step beyond. One cannot make light work of the problematic of the contemporary city.

In this sense, Halik (1997:50) states: "To revise the contemporary city... it is enough to depart in search of new horizons, to free oneself of history and form, to see the latter as simply baggage to be left behind by our current situation." The reformist mentality is then an effective history of the conundrum that faces contemporary architecture.

The condition of the contemporary city confirms and is proof of the post-historical tendencies of advanced capital. Social relations under late capitalism transform the city from a stable and permanent place of collective representation to an unreal site of unlimited exchange of images, technologies, information, etc.

But one must beware of overlooking the history underlying the constructs when seeking to describe, or find answers, to our contemporary urban conditions. Industrialisation and the chain of related sociological events, which are causally related to it, are understood as historical events that make up the historical culture of the modern city. But, as with everything, the moment of industrialisation is open to a free interpretation of the development of the urbanistic phenomena of the modern city, which today at the end of the 20th century is being taken over by the post-historical forces of late-modern urban economies.

What the future form of urban society might be is uncertain. Some argue that all places will be urbanised. Within this, there may be transitions to new forms of cities, which match radically new technologies, and continue opening up new possibilities in the arts. But whatever the future, developing relevant insights about urban form, maybe within a completely altered concept of architecture, in the new science of cities will be essential. We have moved towards a post-modern science of cities where the continuing challenge is to link social *process* to spatial and physical form. This follows the long retreat from physicalism into social theory but the new science and the rise of Post Modernism mark the beginning of the return.

The impact of these changes on 'sculpture' is an ongoing process, and like architecture, 'sculpture' is continuing its search for a way of expression beyond form.

CONCLUSION

Developments in new technologies, as well as the principles behind it, are pushing forward the boundaries in the Visual Arts in many ways and the end of the millennium is causing us to re-evaluate the human condition. Our relationship with the world will never be the same again, now that techniques such as digitisation, artificial intelligence and the communications revolution have thrust themselves into our lives. Many visual artists today are using digital processes to achieve their objectives and to explore the boundaries between the human element and the machine. The question of the status of the body, in a world where the artist spends increasing amounts of time in cyberspace, raises a number of responses, and inevitably there needs to be a re-examination of the concept of space.

The emergence of new technologies has provided the artist with new tools for expression, in turn creating opportunities for the development of new art forms. Computers, functioning as multimedia studios, provide a unique tool that expand the nature and process of artistic expression. Ronald Franken (1995:13), editor of *Digit Electronic Magazine*, regards the impact of technology on art as dramatic. He argues that multimedia means a new type of artwork created by enhancing audio-visual resources with interactivity, and expects that there is also going to be a change in the process of creation: "technology-based artists will have various specialists involved in their projects such as programmers and network experts... we will have new 'multiple' artists with people meeting in a network creating pieces of art together."

Most of these expectations have already become a reality in sculpture at the end of the 20th century, and this implies that authorship ownership and copyright will have new meanings in the digital age. In my opinion, the forming

of new multidisciplinary relationships is effectively opening up channels of communications not only in the arts, but also between the arts, sciences and industry.

Technology is also in a radical way changing the concept and image of institutions. Some artists no longer produce art for 'traditional' live audiences or viewers, but only for computer audiences who access their work directly via software and hardware. In this instance, the computer replaces the museum or stage as institution and becomes the medium itself. This raises the question: will we ultimately be creating for a mass market that is utilising computers, rather than maintaining the aesthetics of an art form?

Profound changes have taken place in the arts as a result of technological influences. But, as computer technology becomes increasingly widespread and affordable, many artists are asking "Now what?" For years, the challenge for electronic artists has often been the overcoming of technological barriers and the pioneering of new media. However today at the end of 20th century we find ourselves wrestling with the more perplexing questions of meaning, content, and social context. We need to ask is the medium still the message? How are computers shaping the languages of expression for our age? What can we say now that we could not say before? Do these media fundamentally change our vision of the world and ourselves? How are physical experience, even architecture and the concept of space, being redefined by the virtual? Many of these questions remain to be answered in the next millennium.

In retrospect, one of the most important scientific and philosophical developments of the last few decades has been the legitimisation of the idea that, for most complex systems, the whole is more than the sum of its parts. In the 20th century it has been recognised as fundamental since the work of Ludwig Von Bertalanfy (12), and the geodesic architectural designs of Buckminster Fuller (13) popularised the idea in the late 1960's.

But judged by their limited impact on actual scientific and philosophical practice, it is clear that the general systems theory of Bertalanfy and the synergetics of Fuller have faced many difficulties in penetrating orthodox intellectual practices and scientific conservatism. Another explanation could be that humanity was simply not equipped to deal with this kind of complexity.

But now at the end of the 20th century, the virtual environments that modern computers allow us to create, may for the first time open up the possibility of studying and understanding this complexity in systems. Virtual reality may also yield new insights into the future development of architecture. Despite the tremendous publicity that the discovery of chaos theory generated, as well as its influence on artistic developments, the use of computers to perform numerical simulations was just the beginning of the digital revolution. This important achievement was soon followed by other uses of virtual environments to study emergent properties in complex systems. Artificial life is the discipline where the most progress has been made.

Whereas, in the past, one would have approached the studying of systems by dissecting the whole into its individual components. De Landa (1995:357) argues:

The concept of the whole that is not shared by its constituent parts, has acquired a new currency in the age of digital simulations. The reason is that an emergent property defies analysis: if we perform a decomposition of a whole into parts, and we follow this operation by simply adding the parts back together, we will miss any properties that were more than the sum of the parts. The virtual environments that computers allow us to build can become the tools to perform the operation we need here, which is not analysis but synthesis. The discipline of artificial life serves as a good example of this approach, since its 'experiments' consist in unleashing populations of virtual animals into a simulated environment, where the emergent traits and behaviours that these populations generate can be studied over many generations.

Artificial life, using *synthesis* instead of *analysis*, does not separate the components, but forces them to *interact* with one another. Since synergistic properties will disappear the moment one separates the components, it follows that only a synthetic approach can yield useful intuitions. Virtual environments containing replicating entities may also be used to explore the future. We see this in the work of high-technology artists like Karl Simms or William Latham – using replicators to breed art forms that have not yet existed. In this case the virtual environments may generate not only new forms, but of specific interest to me, also insight into the general processes behind morphogenesis, or form generation. It is possible that it is these insights, more than the actual forms that are really of value in the use of replicators.

Almost every structure that surrounds and inspires us, for example cities, is the product of one or another process of form generation. For the artist to get a solid grip on the nature of these processes, for example, what lies underneath the shifting definitions of urbanity, may be as important as to be exposed to the actual forms that resulted from the processes. I agree with De Landa (1995:360) speculating that:

It is possible that one day we will all use virtual environments not as machines to automate the generation of form (thus in a way replacing human artists) but, on the contrary, as intuition synthesisers, as tools to amplify human artistic capabilities by giving artists a better grasp of the processes of natural and cultural morphogenesis.

New technologies implement uncountable changes and have changed the concept of sculpture in a permanent radical way. However, it still comes down to the fact that technology and its application, whether as state of the art tool, or source of inspiration is only as good as the individual using it.

APPENDIX

Discussion of practical work, 'Structures, Surfaces, Systems (2000)'

In the past we were somewhere quite different; somewhere smaller, centred. Now there is the grid. The grid expands relentlessly. Soaked in the digital flux of neon and the everyday light of office block and store, it carves through the mass of built forms. Centreless, it replicates itself, suggesting everything and nothing through its sense of endlessly becoming (Morrissey and Price 1996: 21).

Concepts in art and science have much more than historical precursors in common. They also share ways of seeing. For this reason, I believe science, technology and art have the potential to collaborate. This collaboration, evident in most contemporary art and sculpture, is of specific interest to me in the thesis as well as in my own art.

But, where do we draw the line between collaboration, appropriation and subversion? It is a question every artist has to ask himself in his or her search for an organic, interdisciplinary artistic language. The changes brought about by this relationship inevitably created the need for the redefinition of the category of sculpture. This was something I had to work through in my own work and I became aware of certain subconscious mindsets from the past that stand in the way of an unrestricted, evolving concept of sculpture.

My own work which I am exhibiting as *Structures, Surfaces, Systems* has evolved directly out of the written research, and I have been influenced by the idea that sculpture (as a genre) which formerly could be characterised as object-oriented can now be defined as systems-oriented. While the written text explores the transition from one approach to the other, my sculptural pieces are a personal investigation of what constitutes sculpture in a technological age, governed by radical changes in science, and facing the problems of human life in huge cities. However, I am more concerned with the

principles behind technological change, rather than using and exploring high-technology equipment as an artistic medium.

A key element in the exhibition *Structures, Surfaces, Systems* (2000), is my specific interest in the way humanly devised structuring and planning tries to impose order on the incoherent through technological means, functioning or failing to function in practice. I look at the grid as an organising structure, as well as considering the systems behind the structures and surfaces, capable of providing expressive potential.

Morrissey and Price (1996:21) make reference to eighteenth-century America, a newly emerging country that needed to structure its development. The architect, and third U.S. president, Thomas Jefferson, was assigned the task of designing the new country and obsessed with the grid, and the purity of its structure, he laid gridded paper over a map of America and designed it according to regularised form. With the European cityscape the grid emerged, but without such blatant imposition.

With the growth of populations and the inevitable rise of capitalism, society's emphasis shifted from religion as quantifier of order, towards a new social order and in turn a new urban order, built on exchange and easy consumption by commerce. In this new urban order the grid mediated space, creating coherent and efficient urban frameworks. It dictated form through the ease with which it allowed service networks to be laid in straight lines and roads in an ordered pattern.

Because of the grid, city blocks are easily split up into regular units. The grid-city grew to reflect the dominant force in society, until in turn it dominated urban form. Now after the end of the 20th century, the grid is everything and everything is flux, segmented yet complete. Without boundaries or centre, the grid can replicate itself endlessly; copying, multiplying, and expanding. The

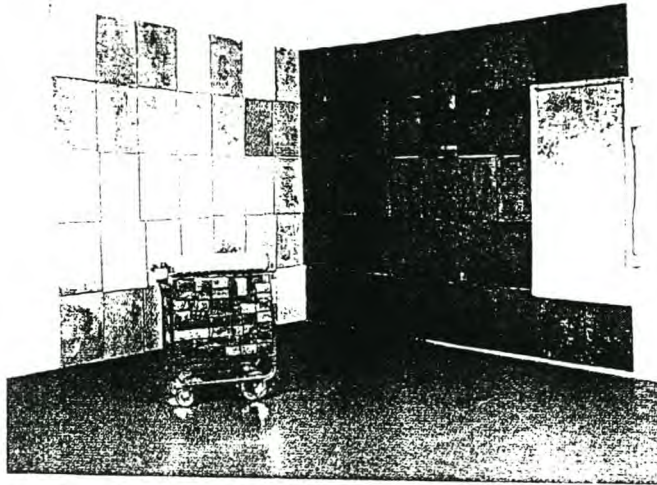
grid demarcates the facades of the buildings that line the streets, becoming the city's elevation as well as its plan.

Through its replication, its very uniformity, the idea of centrality and the subconscious reading of the cityscape which had evolved through history is lost. Within the web of arteries, feeding and serving the growing, unswerving needs of the city, neither orientation nor visual focus can denote greater importance of one form over another. The grid neutralises all competing as equals... The grid's relentless pursuit of neutrality... barrages the urban inhabitant with disordered chaos... To function in its chaos, we must see the city as faceless, neutral; the inner as real (Morrissey and Price 1996:22, 23).

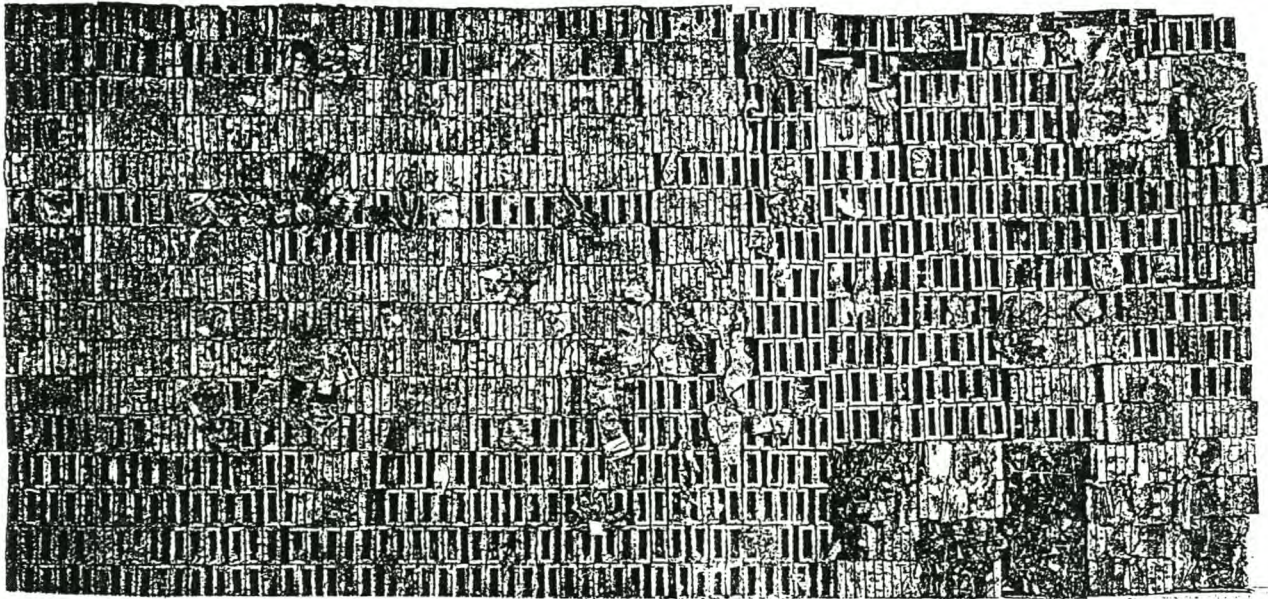
The grid, being indicative of deliberate human ordering provides a basic organising structure throughout my exhibition, as well forming an integral part of most of the works. Although working in an entirely different manner with mostly different objectives, I am influenced by the work of Leonardo Drew (Edwards 1997:20), specifically his exhibition *Navigating a sea of chaos* (1995), as well as by Pavel Krauss (Ebony 1995:20) in their manipulation of the grid as form.

Another artist that influenced me is the South African artist, Stephen Hobbs. He (1998:6) states:

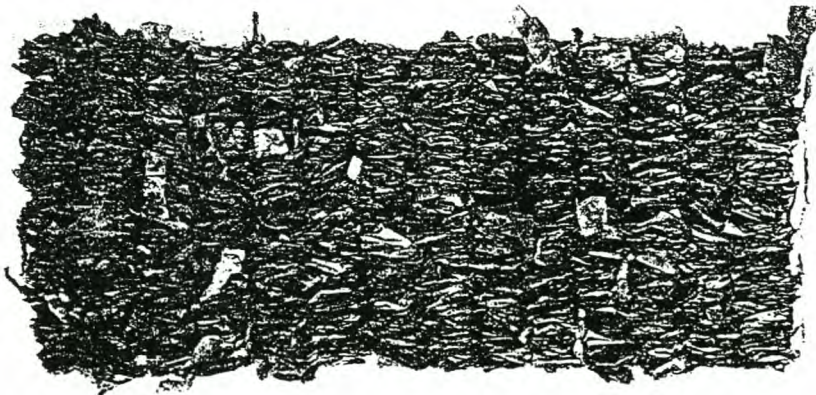
I look at the city in a behaviourist kind of way. I'm not interested in the way cities work, but in the way they don't work, in the politics of space and abandonment. Modern cities are organised into grids, but within those grids, there's disorder. It's the phenomenon of the city I try to image.



Pavel Krauss: Installation view of *Remains of the Present*, 1997
at Joyce Goldstein Gallery.



Leonardo Drew *Number 50*, 1995 – 96. Rust, cotton, fabric, and plastic, 50 x
200 inc.



Leonardo Drew *Number 34*, 1994 – 96. Cotton, fabric, rust, string, wood.

In considering the systems behind the structures and surfaces it is necessary to understand that, within a system everything is serially related to something else, and thus is interdependent. This idea of series and serial arrangement plays an important part in the exhibition. I wanted to portray the connections between the components that in turn make up the *whole*. It is important to realise that nothing is independent, but that everything is in some way related to something else. Everything is serial. Series are related one to another as to position, and the components of each series are related as to meaning. This serial characteristic is a basic phenomenon of the physical world.

Factors which account for serial arrangement are: limitation; the integration of discontinuity and continuity; proper order; graduation; numbering; the inner dynamism of the component elements; symmetrical or asymmetrical equilibrium; and the concept as a whole. All these concepts underpin my practical work.

Reference can be made in general to the movement of Minimalism, as well as more specifically to the work of Sol Lewitt and Donald Judd for whom serialisation was important as the formal means to explore and structure their work. I can also identify myself with Lewitt's use of drawing as a medium, for example drawing onto walls. Another, more contemporary, artist by whom I was influenced is Pat Kaufman, who works in a very minimal way with her precise and simplistic use of materials and architectonic forms, commenting on technological development and means.

My work, *Monuments* (1998) (Cat. No.1), an installation is made up of four small-scale architectonic clay structures and oxides. I looked to the medium of clay to draw attention to the notion of human creation, and ways in which creative people mould and structure architecture to ply their own means. It is my deliberate intention that the viewer should look down onto the sculpture to reinforce the idea of human manipulation and domination in their efforts to create order.

I feel myself at one with the statement made by Kate Linker (1980:20):

... we've had 'architectural sculpture,' 'architectural analogues,' 'architectural fantasies,' 'architectonic structures' and 'architecturally-based imagism.' A dissident voice calls it 'house art,' but the underlying motive seems clear. In each case there's an attempt to establish an artistic undertaking on building – the ambiguous territory between sculpture and architecture.

Another early work, *System Series: Number 1 (1998)* (Cat. No. 2) is an installation of fifteen drawings presented in a grid form, as well as painted wooden boxes with cabling. Moving away from the medium of clay, I started working with drawing and copying the drawn images with the intention of conveying the feeling of movement and the way surfaces overlap and repeat themselves as is evident in the contemporary urban cityscape.

The medium of drawing allows one to work things through and to show the planning process, something, which is more evident in the later work. I have drawn inspiration from the Minimalists since their methods are closely related to architectural practice. Moving away from the idea of a 'finished' sculptural object, Minimalists such as Lewitt allow the idea to become evident as process in highly structured geometric imagery.

Although the rest of the installation, the wooden boxes and cabling, are a part of this work, it should however not be seen as an isolated installation, but forms part of the entire exhibition. In fact, it is my specific intention that all the works presented here are closely related, and should be viewed as such.

System Series: Number 2, Unit 1 (1998/1999) (Cat. No. 3) consists of eight separate metal and Perspex panels. Although influenced by the precision and mechanical reproduction of a technologically advanced society, I also refer to a human element through the use of the medium of leather, a material that is used by many craftsmen. I am interested in the way precise and neat parts are designed to fit together, evident in the three metal panels, as well as

in the diagrams, making references to the process of planning. Also of importance is the fact that all that planning is no guarantee against the element of chance, introducing irregularity at any given time. The transparent and reflective qualities of Perspex also enabled me to create the idea of a layering of surfaces, the way one surface overlaps or repeat another. This as well as glass is a medium I use in other pieces such as *System Series: Number 1 (1998)* (Cat. No. 2) and *Unperforated highspeed (1999)* (Cat. No. 11).

System Series: Number 2, Unit 2 (1999) (Cat. No. 4), an installation of three lead and plaster of Paris panels, as well as seven clay panels is an extension of the previous work, although executed in an entirely different material. I played around in an abstract way with the idea of repetition, patterning and ordering, characteristic of coherent and efficient urban frameworks, and bringing in the human-made element through the manipulation of the material of lead.

As with *System Series: Number 1 (1998)*, the grid forms a basic part of the work *System Series: Number 3 (1999)* (Cat. No. 5). It is an installation comprised of different components: images silk-screened and drawn onto fabric, as well as accompanying symbolic structures in metal and Perspex of the images in three dimensions. My intention is to expose what lies beyond the surface, how things reappear, seemingly unchanged, however with slight changes in their patterning and order. In working with this idea I have been influenced by the concept of Chaos Theory, discussed in Chapter One, emphasising the idea that nature is a dynamic system and that chaos and uncertainty provide the matrix within which new forms of order are constantly being created.

This idea is also my objective in the work, *Untitled* (1998) (Cat. No. 7), as well as the work, *Traffic loop* (1999) (Cat. No. 8), two series of drawings. I wanted to draw attention to the, mostly unnoticed, endless operating mechanisms structuring our day to day lives, such as the urban frameworks with its gridded space, and the ease with which it allows service networks to be laid in straight lines and roads in an ordered pattern.

Throughout the thesis I explored the concept of the *whole*, and the scientific discovery and evidence that the whole is more than its comprising parts. Different artistic endeavours attempted to present this idea of totality, even if it seemed logically impossible, for example, as discussed in the project *Art & The City: A Dream of Urbanity*, specifically commenting on the idea to present the city as a whole. We saw this, for example, in the work of Elizabeth-Jane Grose, *Park* (1997), as well as in the work of Sylvia Libedinsky, *City in a Bottle* (1997). The work, *System Series: Number 4* (1999) (Cat. No. 6), nine metal panels, comments on, and deliberately makes reference to this idealisation.

The latest works are entitled, *Unperforated Highspeed* (1999) (Cat. No. 9), a series of four Perspex panels with etched copper plates bolted onto it, and *Equilibrium* (1999) (Cat. No.10), four metal, Perspex and copper panels. As with the *System Series*, it deals with the notion of seriality and repetition, a crucial characteristic required in order for operating systems to exist.

To conclude, it was not my intention in this exhibition to make beautiful objects to be viewed in the round, but rather, I want the viewer to get a glimpse on what lies beyond that, to think and to make his or her own connections between the works.

Notes

1. Installation as term came into being during the 1970's for an assemblage or environment, constructed within the gallery space specifically for a particular exhibition.
2. The theory of relativity deals with space, time and the uniform motion of frames of reference, relative to each other. It contains the idea of a space-time continuum and the notion that mass and energy are equivalent.
Quantum Theory is concerned with the behaviour of physical systems based on the idea that they can only possess certain properties such as angular momentum in discrete amounts (quanta).
3. At the beginning of the 19th century the first threat to Newtonianism came in sight: Fourier's development of the science of heat, the rival to Newton's science of gravity. The two descendants of the science of heat - the science of energy conversion and the science of heat engines - gave birth to the first 'non classical science, thermodynamics.
4. See Ian Stewart, *Does God Play Dice: The mathematics of Chaos* (New York: Basil Blackwell, 1989).
5. Reference can be made to Guy Debord who dealt with the problem of alienation as a condition of the environment. According to him, there are two levels of alienation: the necessary alienation, where the subject realises himself by losing himself and there is the dominant alienation, which he refers to as 'spatial alienation'. When spatial alienation occurs, the subject is transformed from both personal activity and time itself. The subject is transformed into a perpetual spectator within the realm of a pseudocyclical time. This post structural reading is valuable in the understanding of Duchamp's work (Morgan 1987:78).
6. Modern art had thrived on the conflict it generated and paradoxically its eventual acceptance by the public brought about its disintegration into fragmentary styles. The arts then entered a period of fragmentation as painters and sculptors sought to bring art back down to earth. In the 1960's when Minimalism dealt with very reductive forms of art, there were several other movements influenced by all the technological developments. Pop Art was a very object-orientated, urban response and one which

acknowledged popular culture. Its use of everyday objects and familiar subjects that came from comic strips, the supermarket, and junkyards, reflected consumer-society affluence and was a response to this commodity saturated society.

Pop Art has allowed no boundary to separate art from life, and so extensively did it offer easily recognisable subjects to which all could relate that art itself has entered the mass market and become merchandise for popular consumption. For example, the still lifes of Andy Warhol filled with endlessly repeated soup cans and Coke bottles arranged as on supermarket shelves, Roy Lichtenstein's comic-strip paintings, or the soft sculptures of Claus Oldenburg. It takes the known but aims to defamiliarise.

Another reaction to the urban changes was Conceptual Art. However in contradiction to Pop Art it illustrated impermanence, where the idea behind a work of art was more important than its realisation as an object, where process was greater than the product. The conceptualists questioned the nature of art as an object that can be bought, sold, or placed in a museum except temporarily. It came about as a reaction against the commercial art market and was an attempt to escape from the system whereby a work of art became a commodity. Conceptual art has produced human body works, for example the work of Joseph Beuys, earth works and works consisting of curious materials.

7. Krijn de Koning was born in 1963 and works mostly in Amsterdam.
8. The model pioneered by Daniel Buren claims that installation is concerned with raising consciousness about the ideological conditions of the showing of artworks in the age of the 'museographic society'.
9. *A Dream Of Urbanity* was developed alongside, and reflects, an exhibition and artists' project produced by the contributing artists, architects and designers in response to a brief calling for examination and re-interpretation of the city towards the end of the millennium. Elizabeth-Jane Grose and Pat Kaufman are two artists who live and work in London. Sylvia Libedinsky is an architect and designer who lives and work in London and California.
10. The concept of the Sublime relates to Edmund Burke's *Enquiry into the origins of the Sublime* (1856). It has to do with the idea that certain attributes of nature motivate feelings of fear, awe and exultation. Scale is an important factor, and this is often located in untamed wilderness.

11. Stephen Hobbs was born in Johannesburg in 1972. He graduated in 1993 with a BA (Fine Arts) from the University of Witwatersrand. Currently he is the Market Theatre Galleries Manager and also lectures part-time at the S A School of Film, Television and Dramatic Art.
Solo Exhibitions: 1996 *Grey Area*, *The Workers Library and Museum*, Johannesburg.
1994 *M23 70* Market Theatre Galleries.

12. See Ludwig Von Bertalanfy, *General Systems Theory* (New York: Brazillier, 1968).

13. See Buckminister Fuller, *Synergetics* (New York: Macmillan, 1975).

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Fig. 6 *System Series: Number 4*. 1999. Metal, painted. Nine units, 30 cm x 35 cm.

Fig. 7 *Untitled*. 1998. Ink on paper. Three units, 172 cm x 42 cm.

Fig. 8a *Traffic loop*. 1999. Installation. Ink on paper. Nine units, 40 cm x 60 cm. Paint and found plastic balls.

Fig. 8b *Traffic loop*. 1999. Close-up

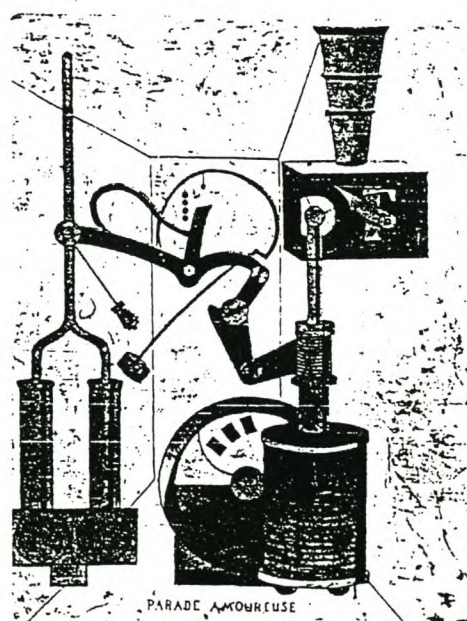
Fig. 9 Pre - study for *Unperforated Highspeed*. 1999. Perspex, copper. Three units, 20 cm x 80 cm.

Fig. 10 *Equilibrium*. 1999. Painted metal, copper and Perspex. Four units, 30 cm x 40 cm.



Above: Fig. 1 Fernand Léger. *The City*. 1919. Oil on canvas, 2.31 x 69m.

Below: Fig. 2 Francis Picabia. *Amorous Parade*. 1917. Oil on cardboard, 38 x 29.5 inc.



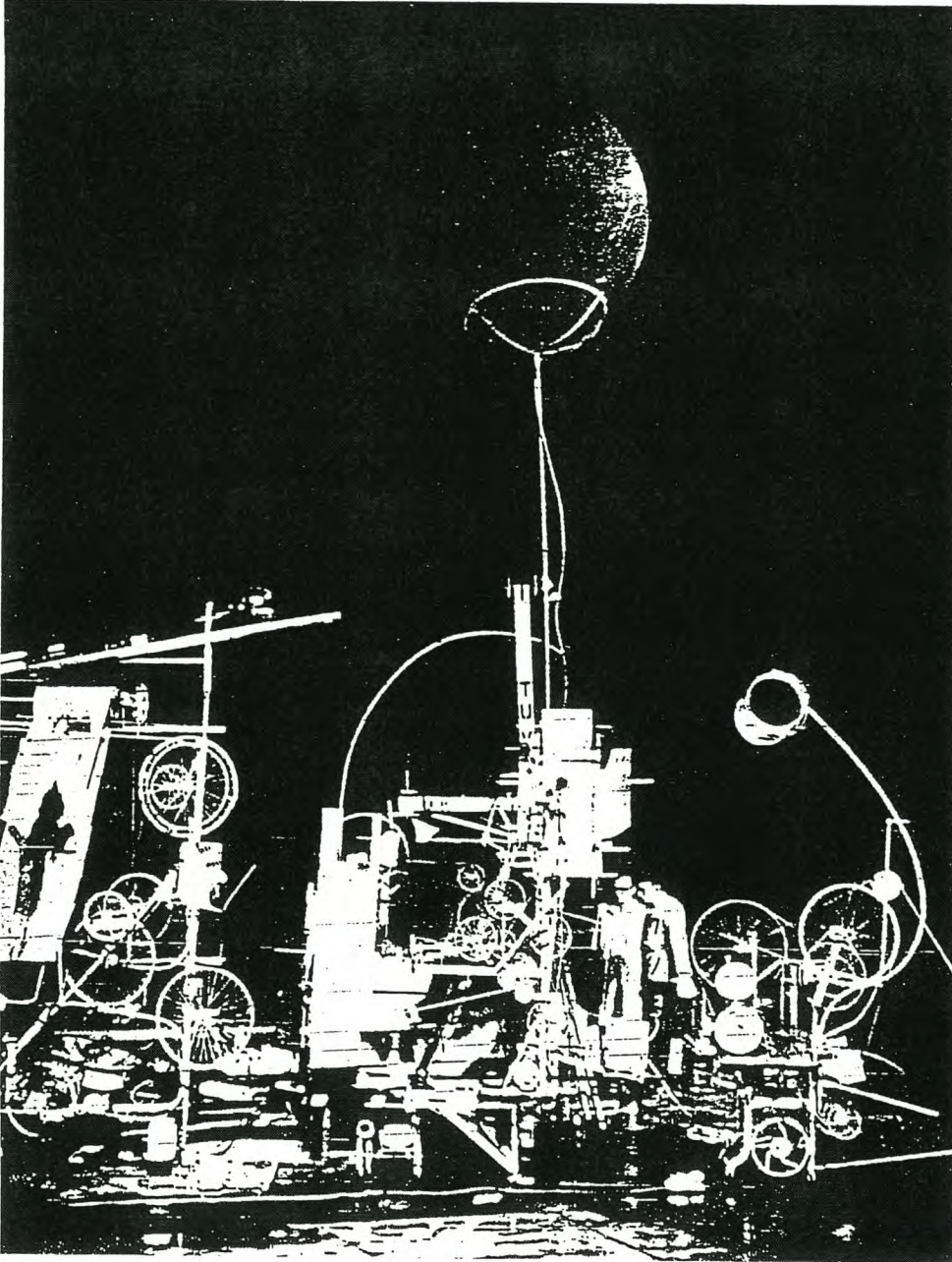


Fig. 3 Jean Tinguely. *Homage to New York*. March 17, 1960. A self-constructing and self-destructing assemblage in the Sculpture Garden, The Museum of Modern Art. New York. 27 ft. high x 23 ft long.

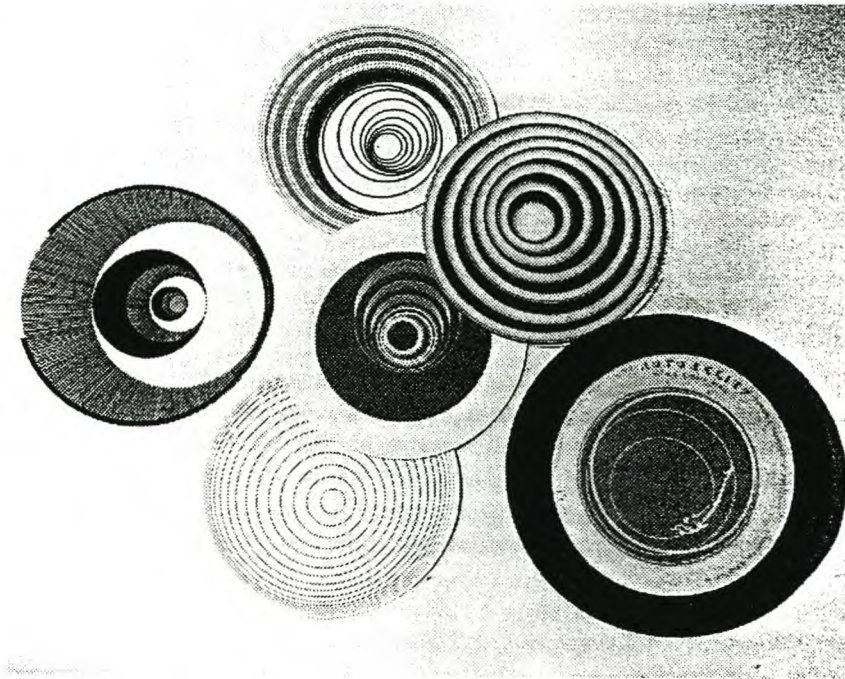
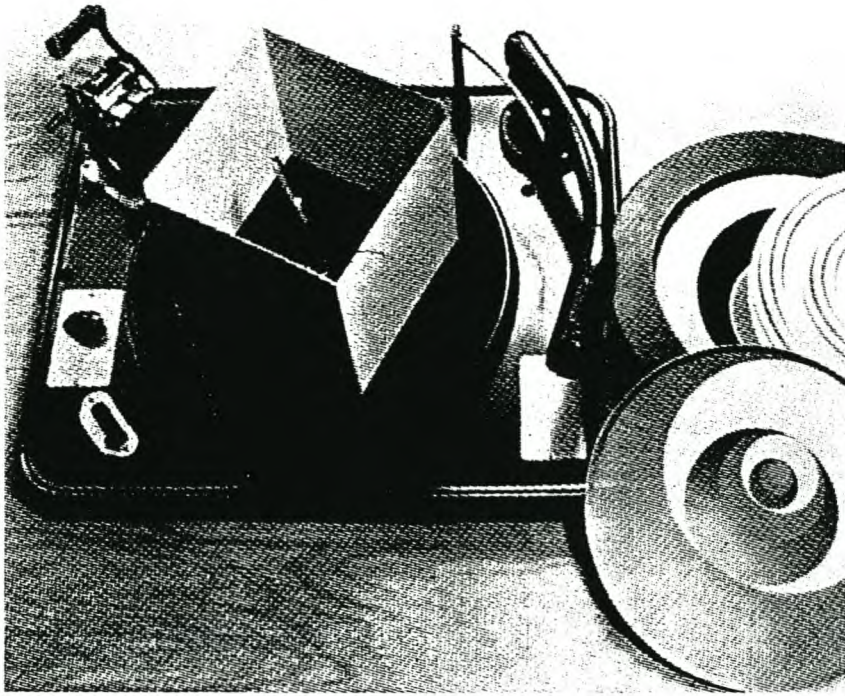
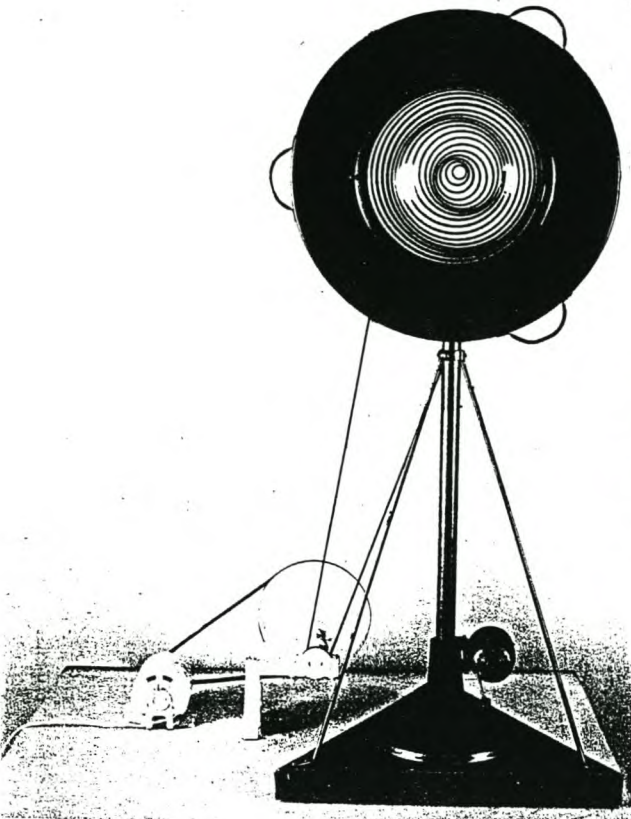


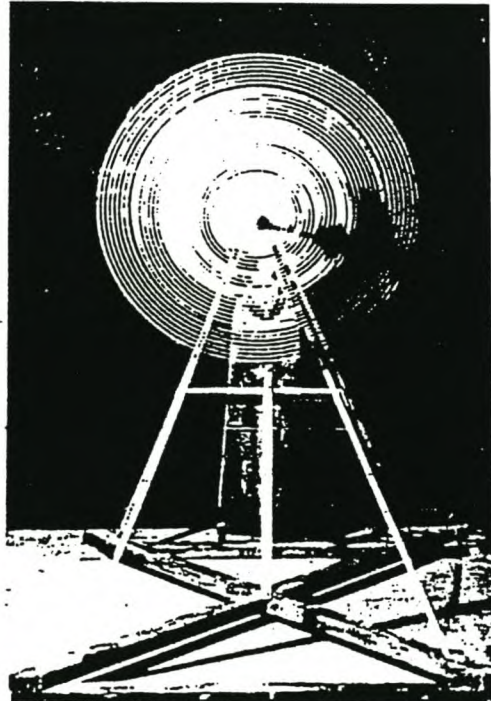
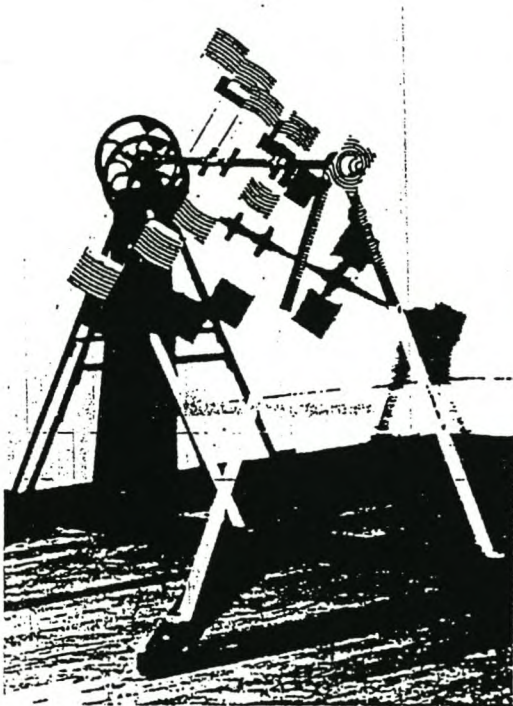
Fig. 4 Marcel Duchamp. *Rotoreliefs*. 1935. Optical disks. Paris.

Set of six cardboard disks, printed by offset lithography on both sides, each 20 cm diameter.

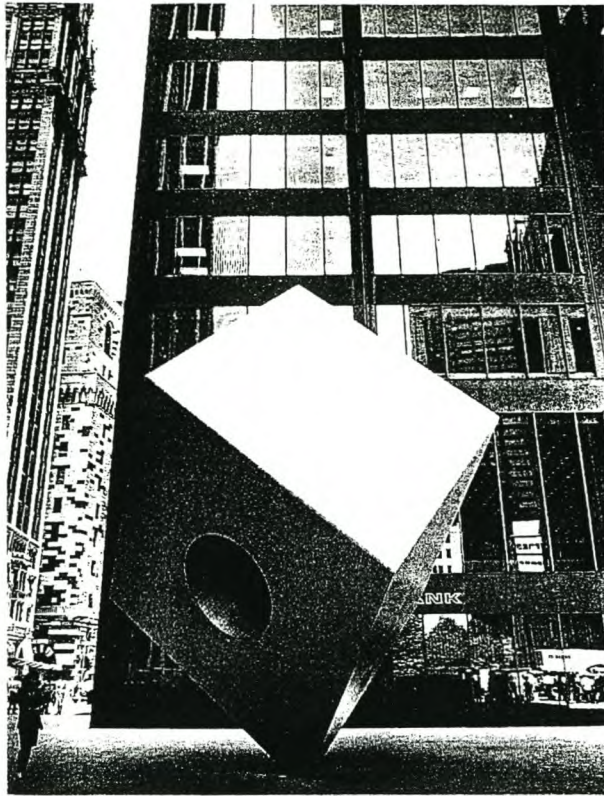
First edition: 500 unnumbered sets, Paris, 1935; second edition: 1000 unnumbered sets, produced by Enrico Donati, New York, 1953.



Left: Fig. 6 Marcel Duchamp. *Rotary Demisphere*. 1925. Motorised optical device. It was the prototype for the *Rotoreliefs*.

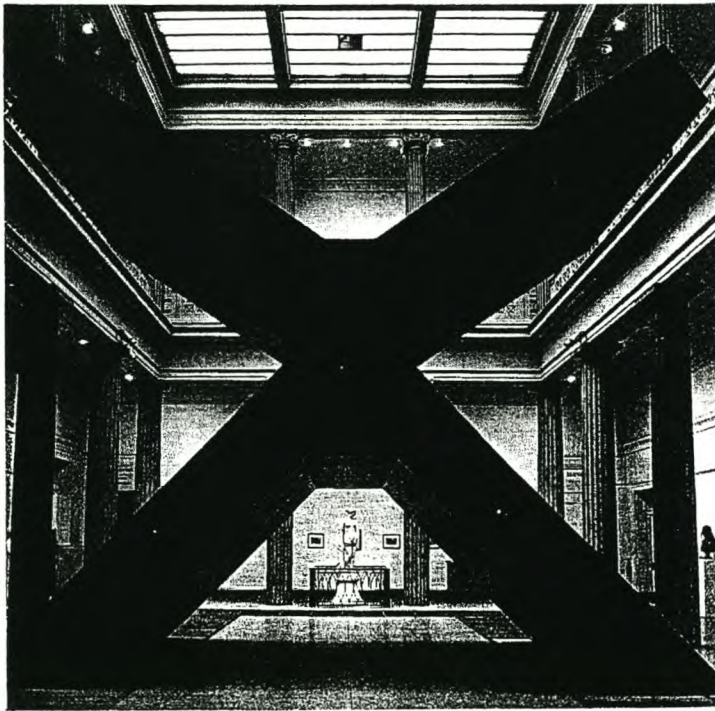


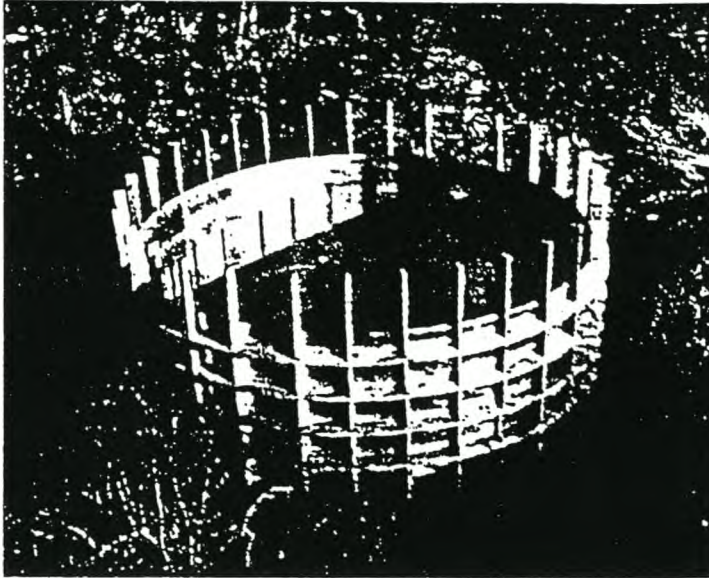
Above: Fig. 5 Marcel Duchamp. *Rotative Glass Plates*. 1920. Motorised optical device: Five glass plates with black designs form continuous circles when turning on a motor driven axis.



Above: Fig. 7 Isamu Noguchi. Cube. 1968. Painted welded steel and aluminum, height 8.53m.

Below: Fig. 8 Ronald Bladen. X. 1968. Painted wood for aluminium, 6.71 x 7.93 x 4.27m.



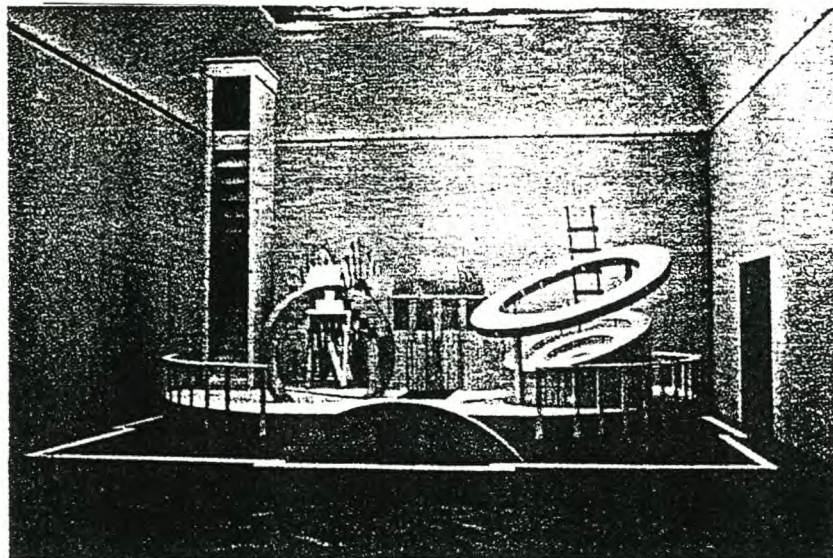
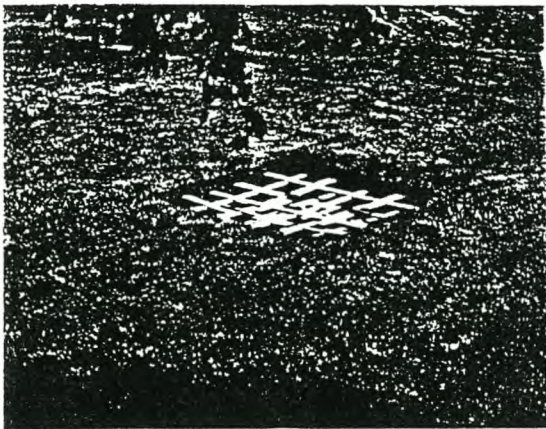


Above: Fig. 9 Mary Miss. 1974. *Greenwich, Connecticut.*

Below: Fig 10 Mary Miss. 1975. *Oberlin, Ohio.*

Below right: Fig 11 Alice Aycock. *The Angels Continues Turning Part II.* 1978.

Wood construction, 25 x 17 inc.



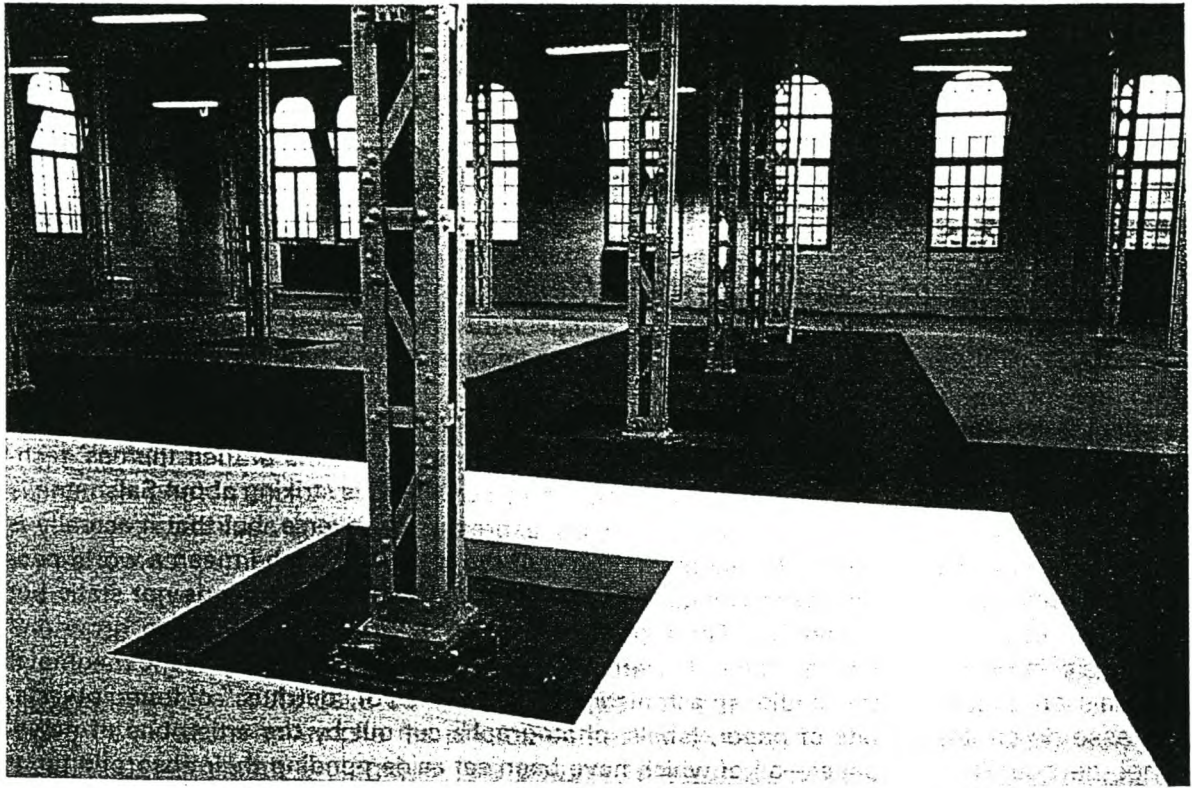


Fig. 12 Krijn de Koning. *Artis Den Bosch*. March, 1993. Wood, Paint, 11.1 x 13.2 x 0.2m.

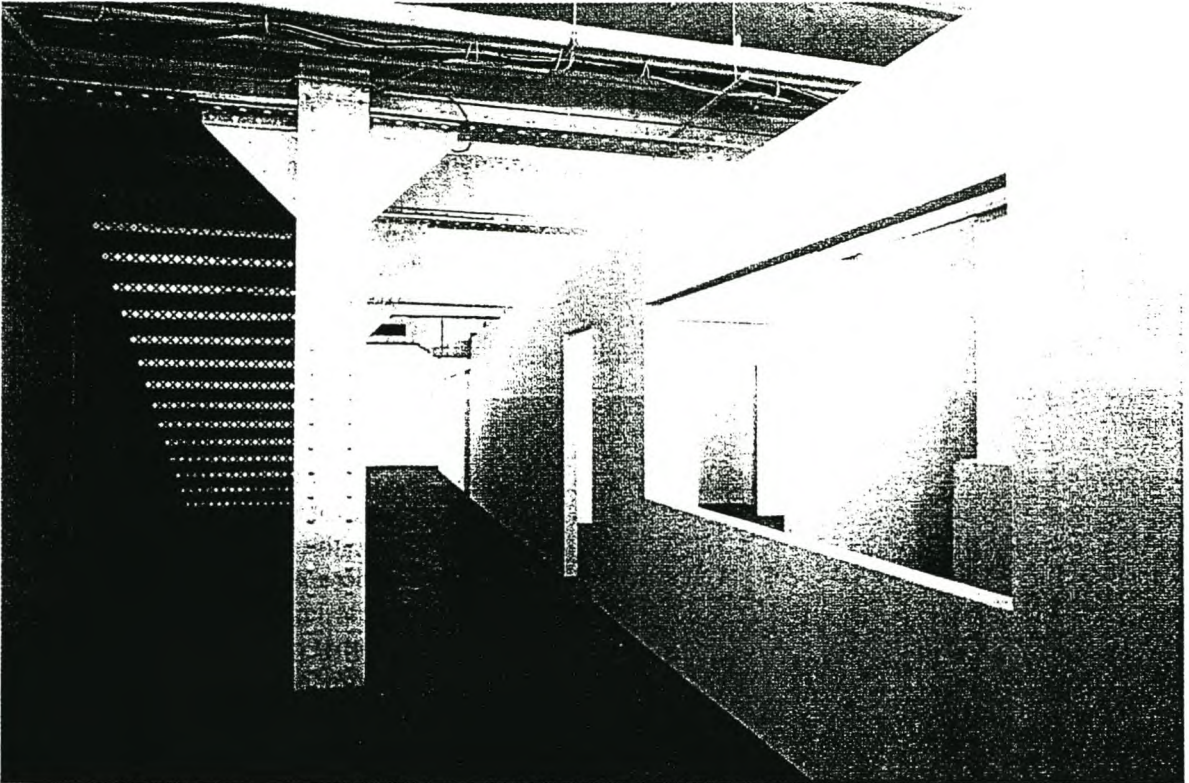


Fig. 13 Krijn de Koning. *Sculpture*. 1995. Plaster panels, paint.
Galerie Le Sous-sol. Paris.

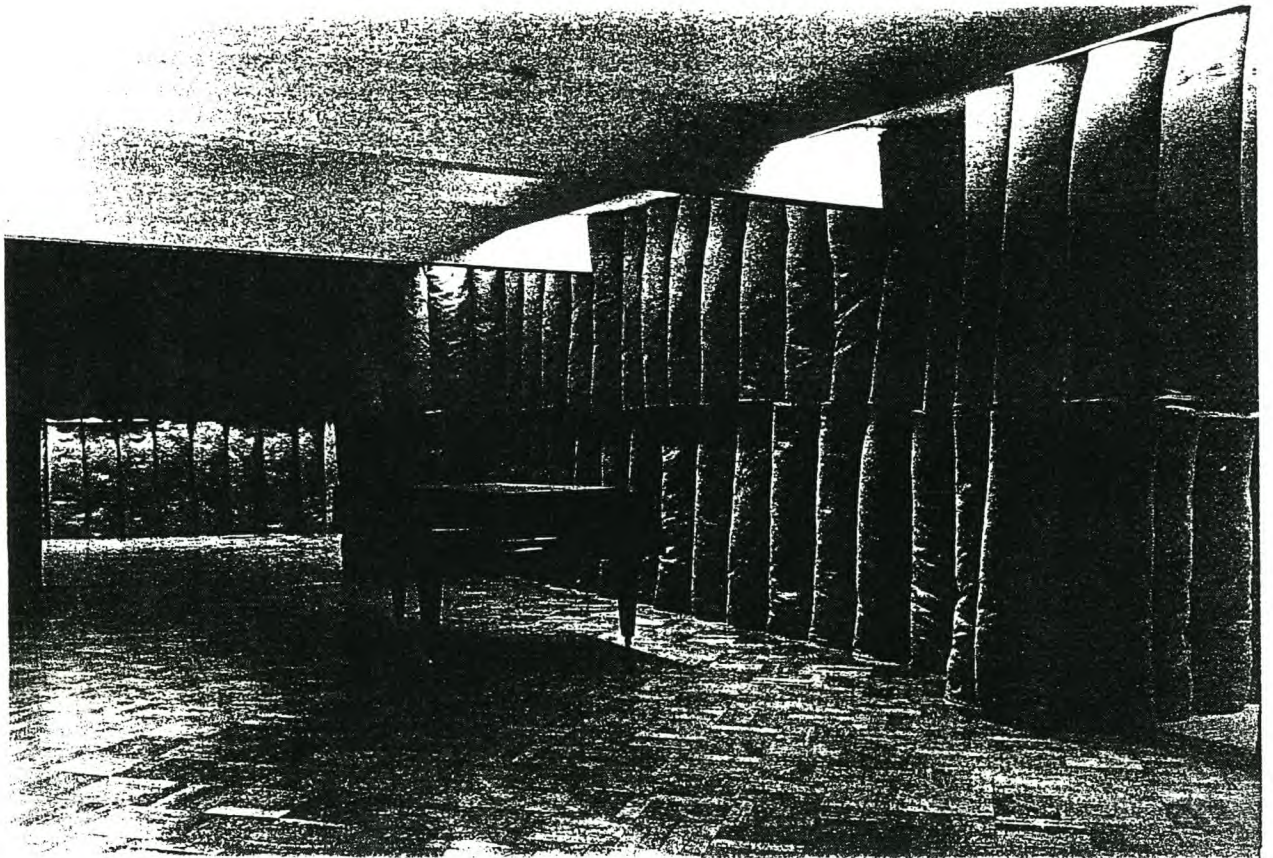
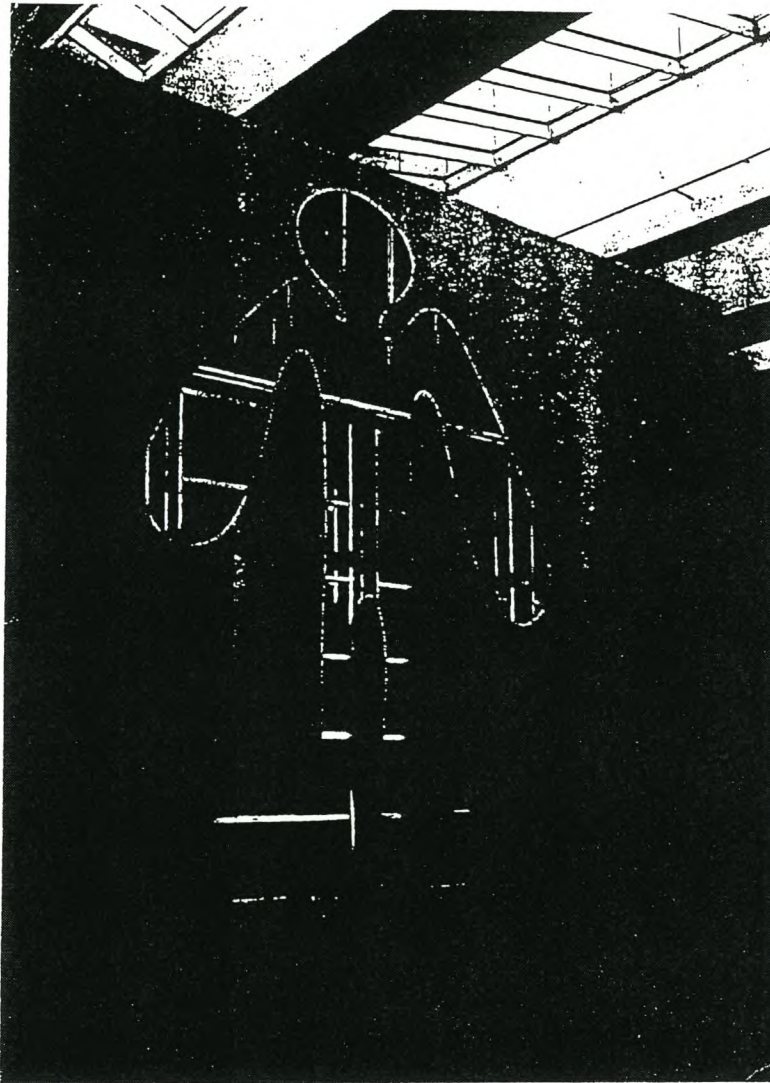


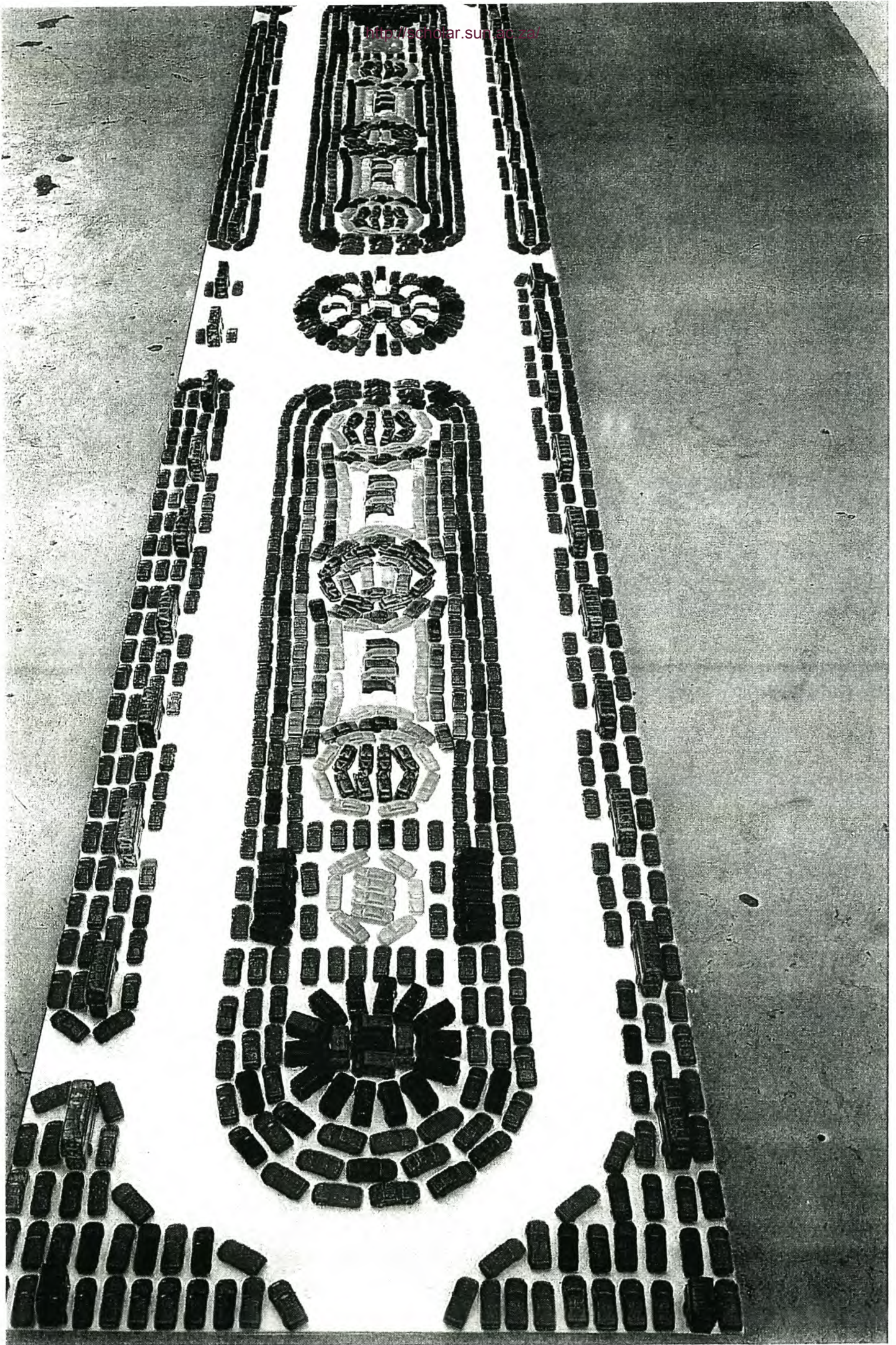
Fig. 14 Joseph Beuys. *Plight*. (detail) 1958 - 85 .

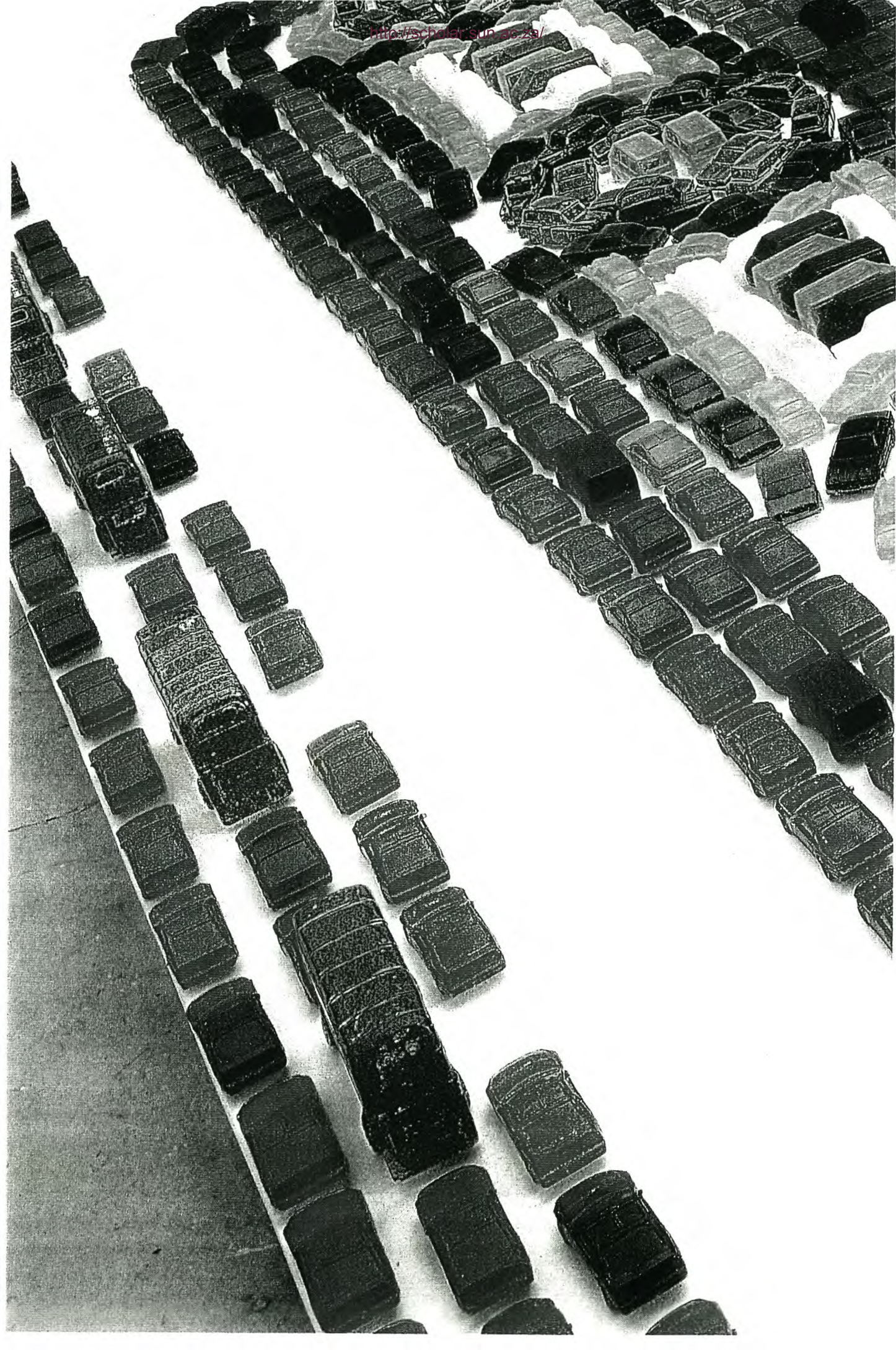


Above: Fig. 15 Craig Wood. *Pink shrugging monument*. 1996. Installation.

Next page: Fig 16a Elizabeth-Jane Grose. *Park*. 1996. Installation of approximately 1500 translucent, pigmented resin casts of toy cars. Avenue Gardens. Regents Park. London;

Fig. 16b *Park*. Close-up; Fig. 16c *Park*. Close-up.







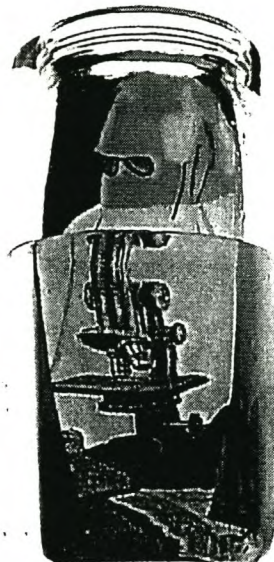
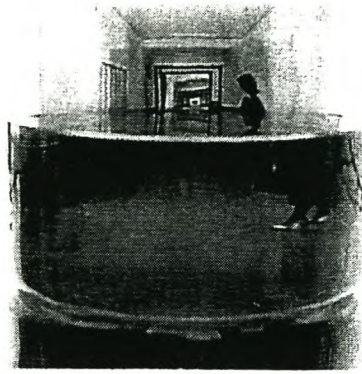


Fig. 17a Sylvia Libedinsky. *City in a bottle*. 1996. Mixed Media.



Fig. 17b *City in a bottle*. Close-up

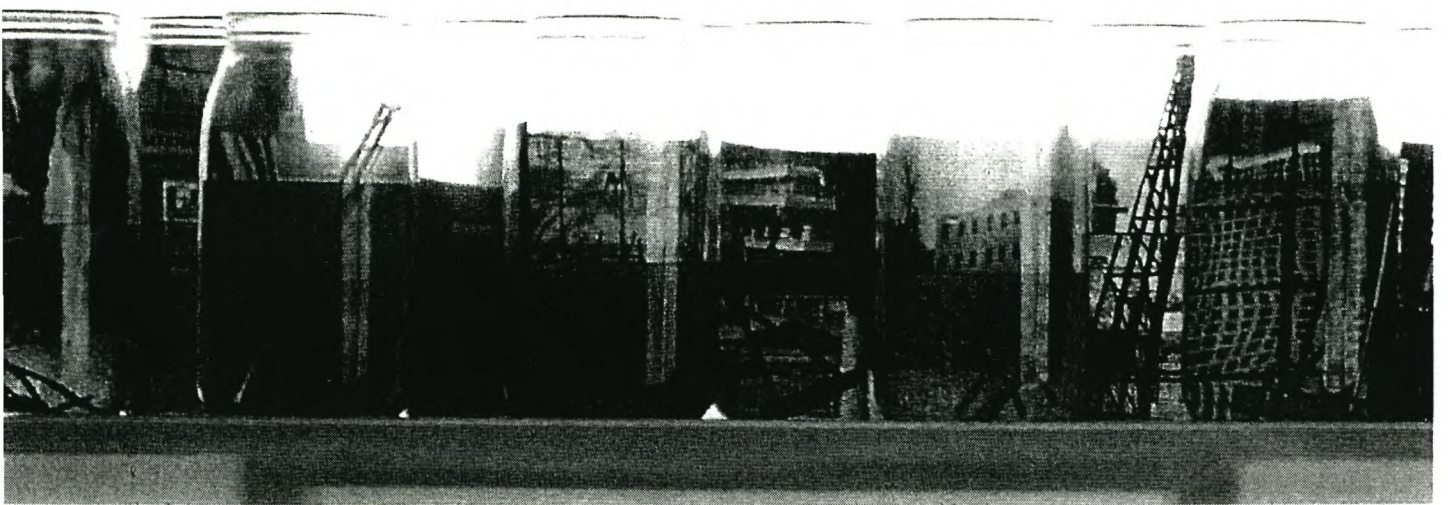


Fig. 17c *City in a bottle*. Close-up

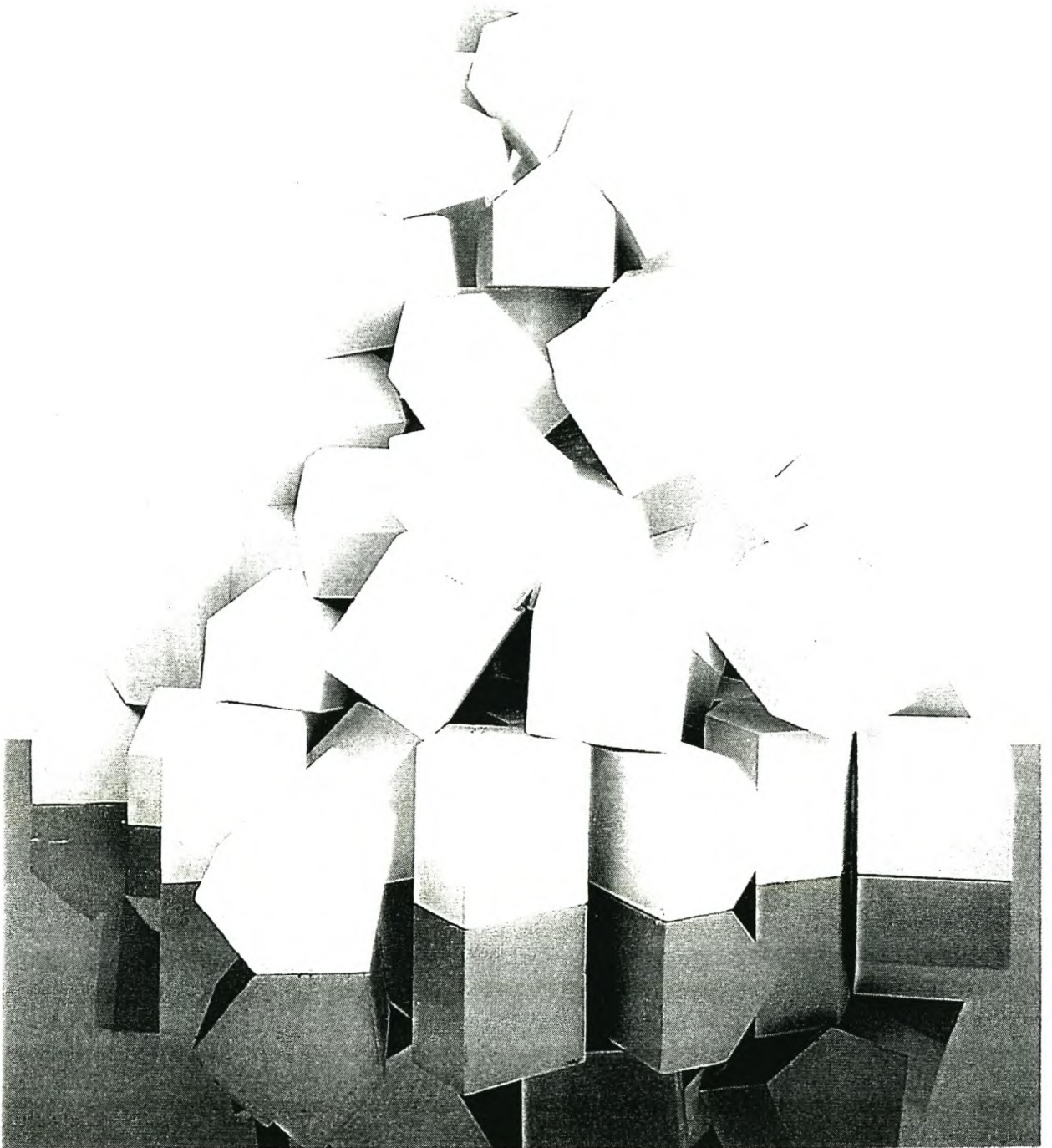


Fig. 18 Pat Kaufman. *Safe as Houses*. 1996. Installation of 1000 handmade white plaster of Paris houses.

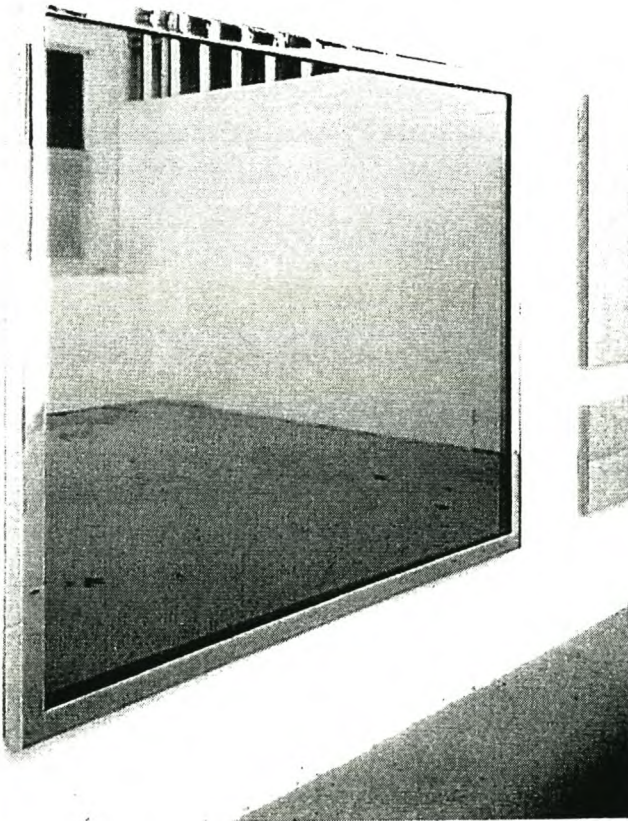
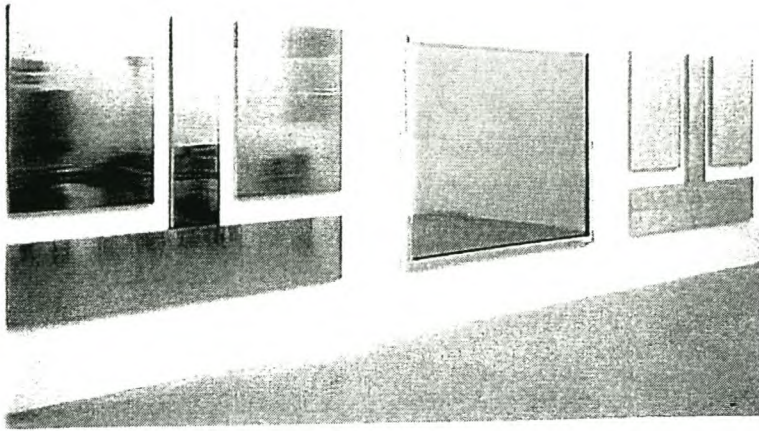
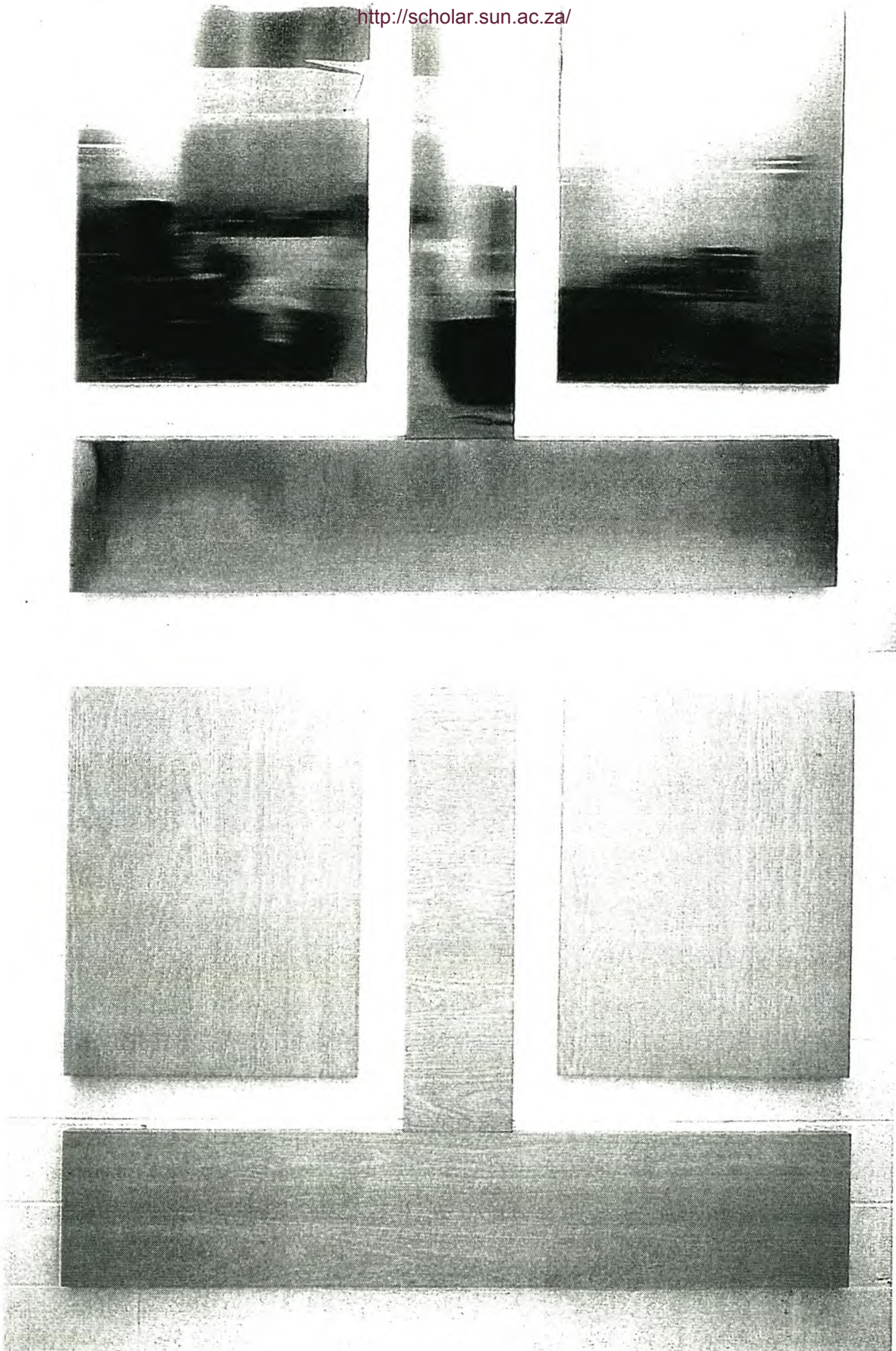
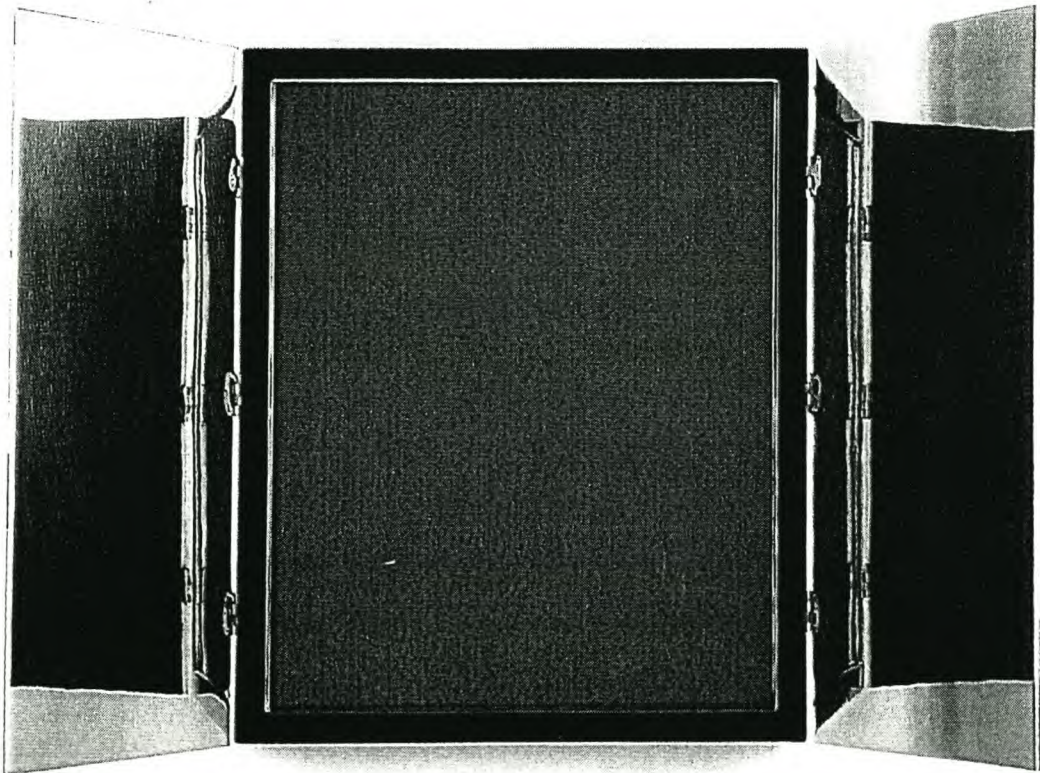
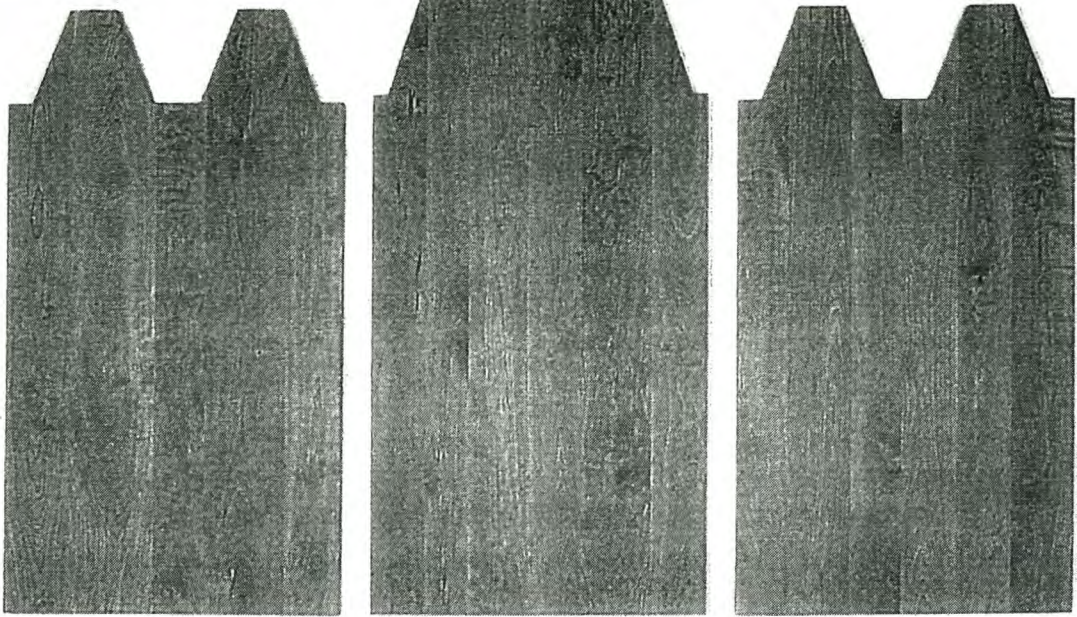


Fig. 19a Pat Kaufman. 8x4. 1995. Steel, glass, wood.



From above: Fig. 19b 8x4: Steel; 8x4: Wood. Close-up



From above: Fig. 20 Pat Kaufman. *Civitas*. 1991. Cherrywood.

Fig. 21 Pat Kaufman. *Contained I*. 1991. Stainless steel, glass, pigment.

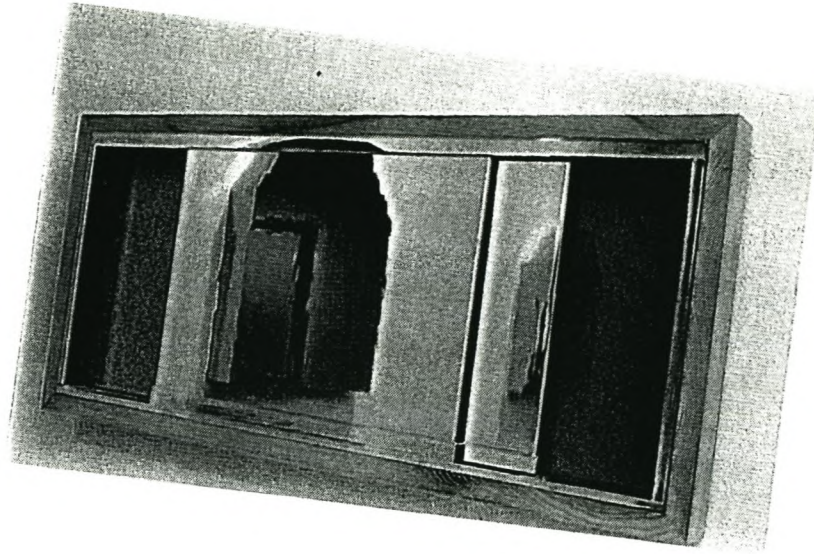


Fig. 22 Pat Kaufman. *Meld*. 1991. Wood, metal, glass, pigment.

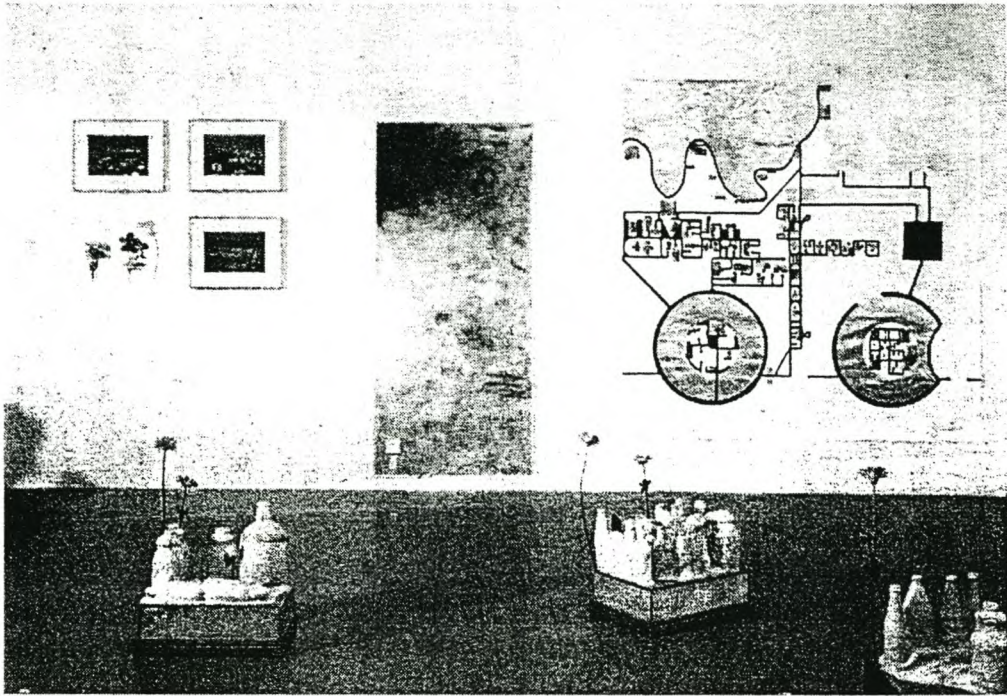


Fig. 23 T. Kelly Mason. Exhibition view. Project: *High Points Drifter*. 1995.
Next page: Fig. 24 Stephen Hobbs. *Piss Figure*. 1999. Graffiti installation.

IT IS NOT A TOILET HER





Above: Fig. 25 Stephen Hobbs. *Erasing Roadmarkings, cnrs Bezuidenhout and Jeppe Street*. 1999. Photograph, digitally altered.

Next page: Fig. 26 Stephen Hobbs. *Postcard Panorama*. 1999.





Fig. 27 Stephen Hobbs. *Ponte Tower*. 1999. (detail from project: *54 Stories*).

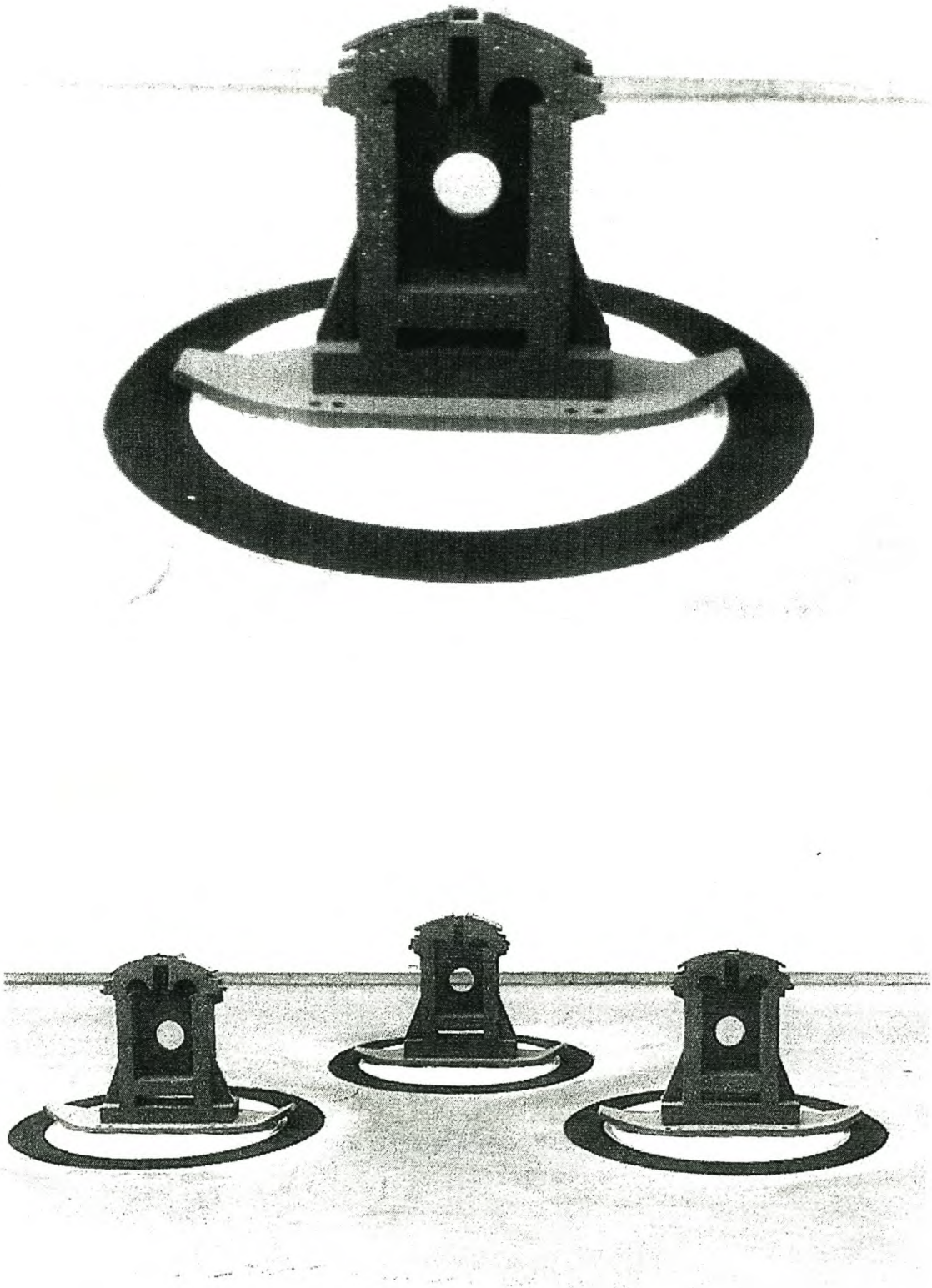


Fig. 1 *Monuments*. 1998. Installation. Clay and oxides, 30 x 40 cm.

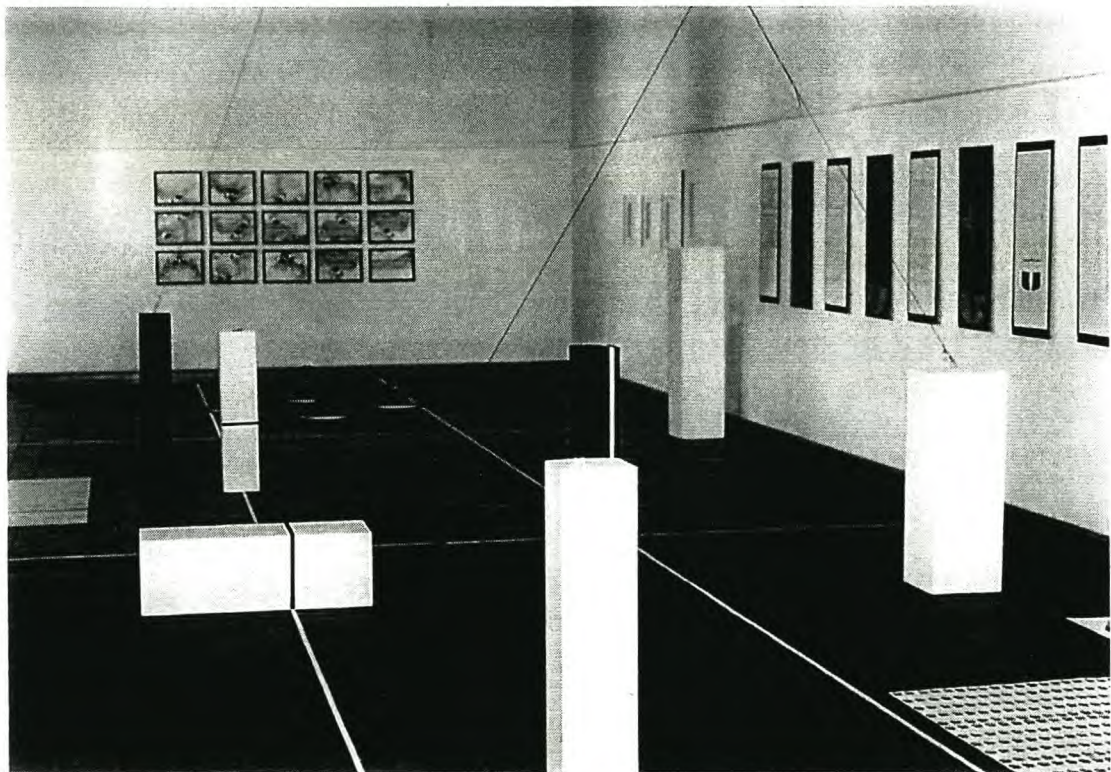
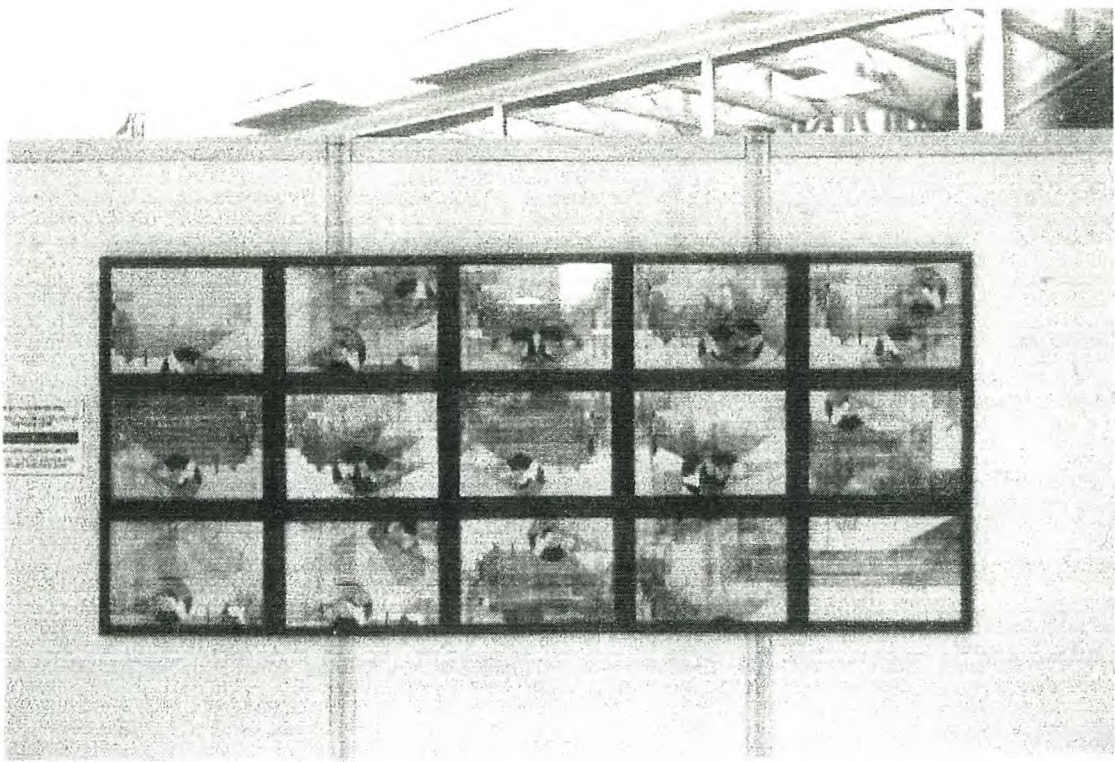


Fig. 2 *System Series: Number 1*. 1998. Installation. Ink on paper, metal and glass. Fifteen units, 32 x 43 cm. Wood, paint, cables.

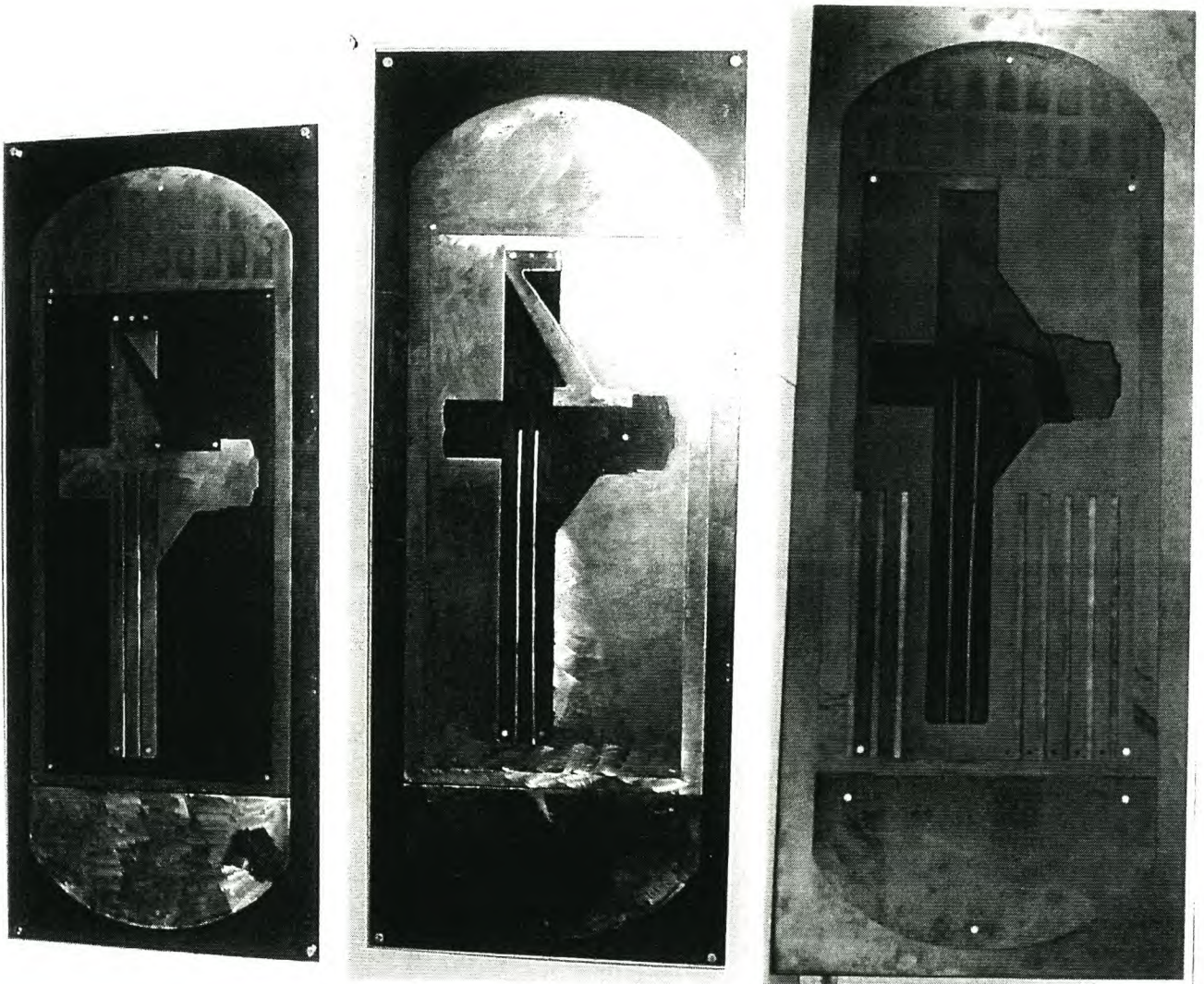
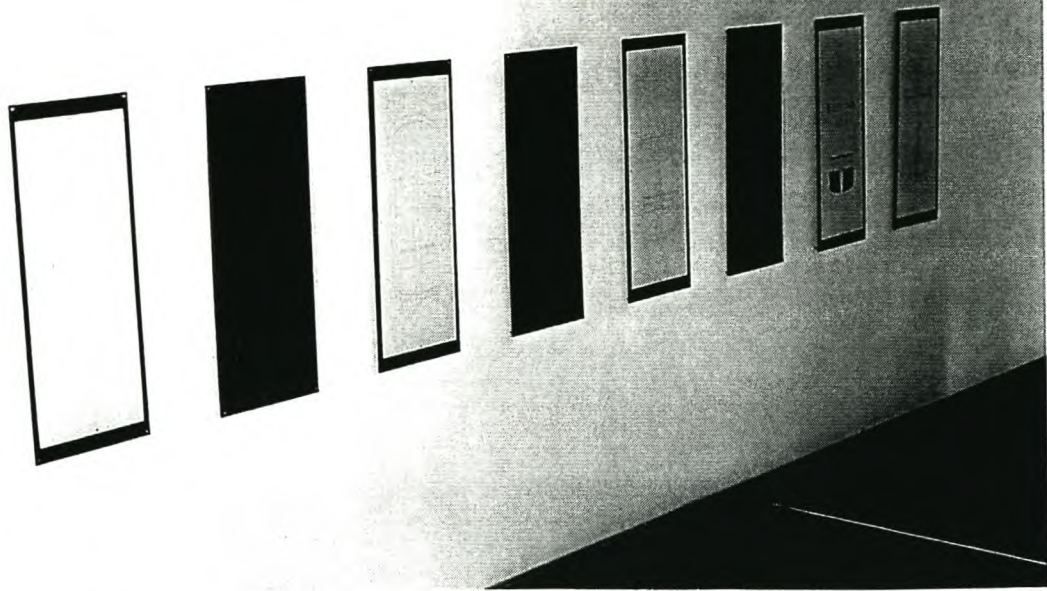


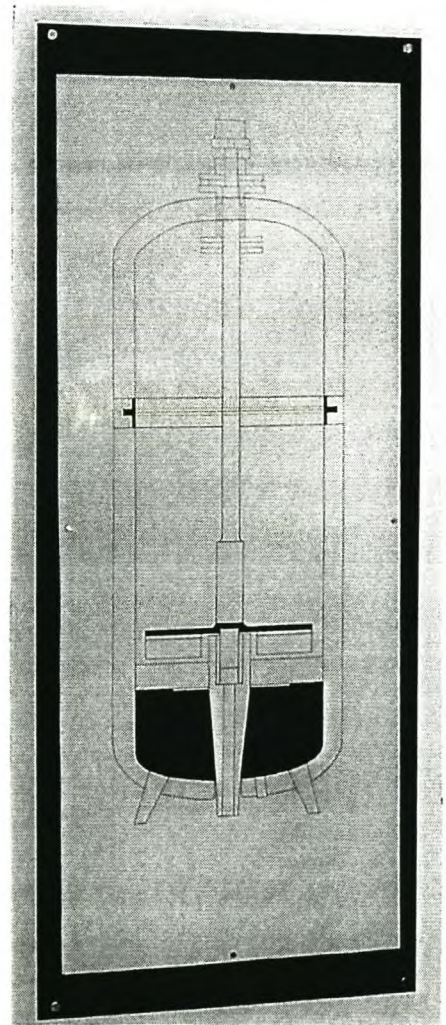
Fig. 3a *System Series: Number 2, Unit 1*. 1998/1999. Metal, Perspex, leather.
Eight units, 37 x 92 cm. Close-up

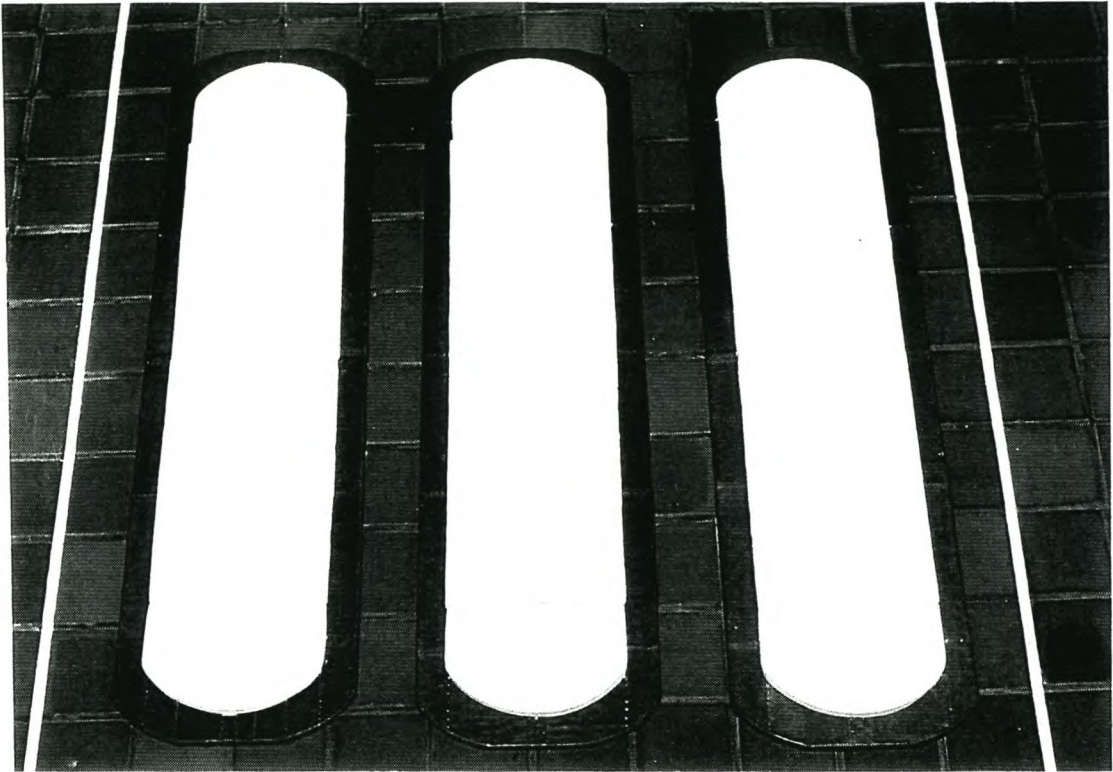


Above: Fig. 3b *System Series: Number 2, Unit 1*.
1998/1999. Metal, Perspex, leather, ink on
paper. Eight units, 37 x 92 cm.

Exhibition view

Right: Fig. 3c *System Series: Number 2, Unit 1*.
1998/1999. Ink on paper. Close-up

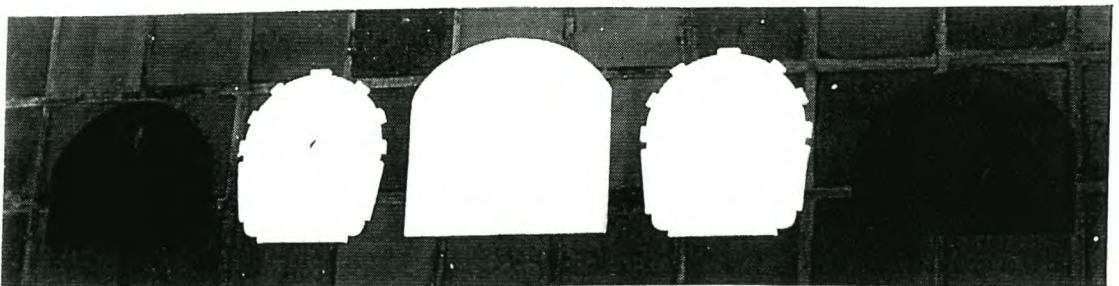


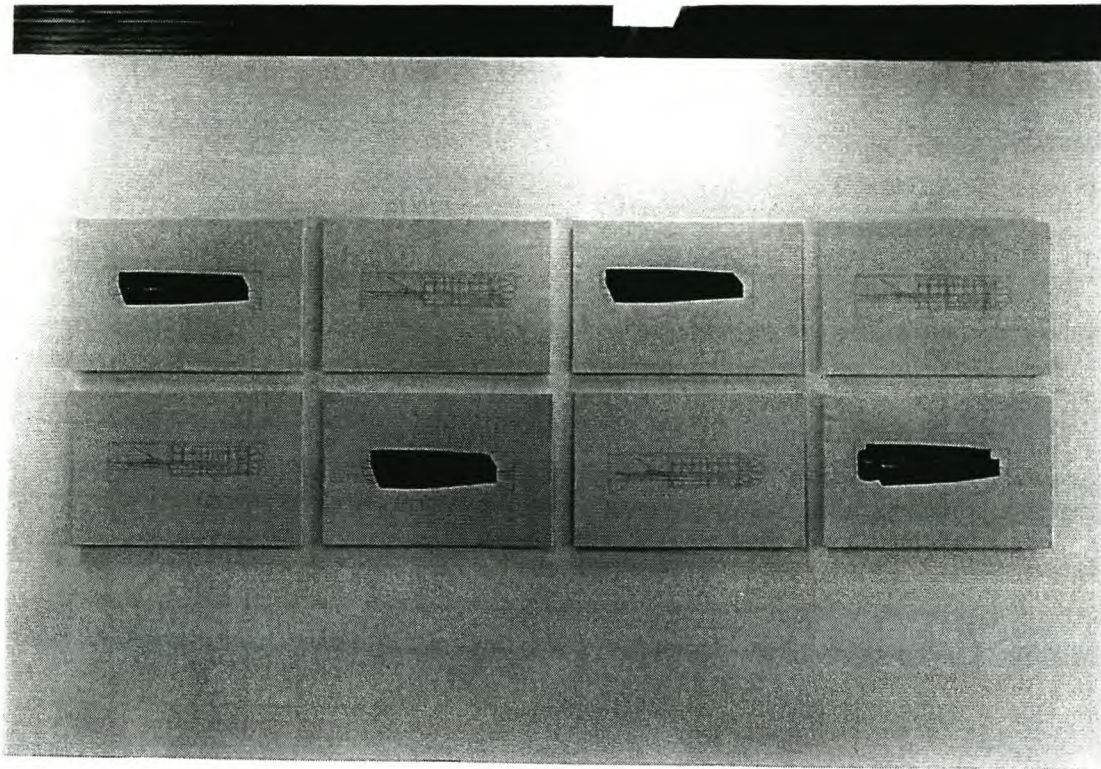


Above: Fig. 4a *System Series: Number 2, Unit 2*. 1999. Lead, plaster of Paris.

Three units, 150 x 41 cm.

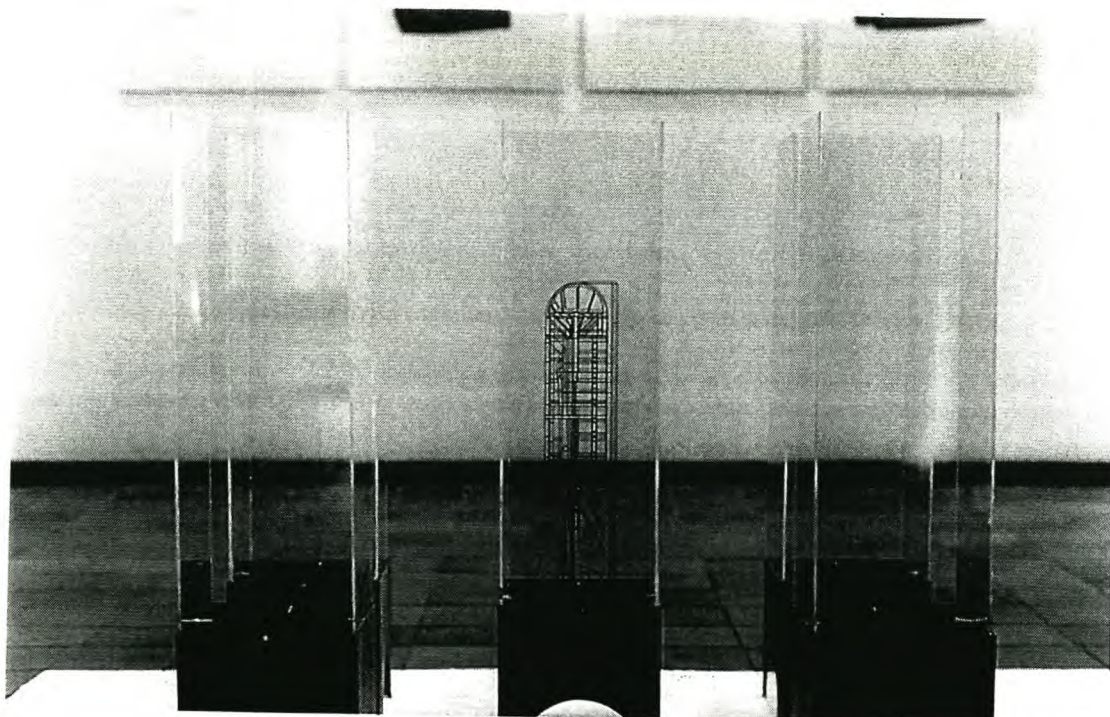
Below: Fig. 4b *System Series: Number 2, Unit 2*. 1999. Clay. Five units, approximately 15 x 15 cm.

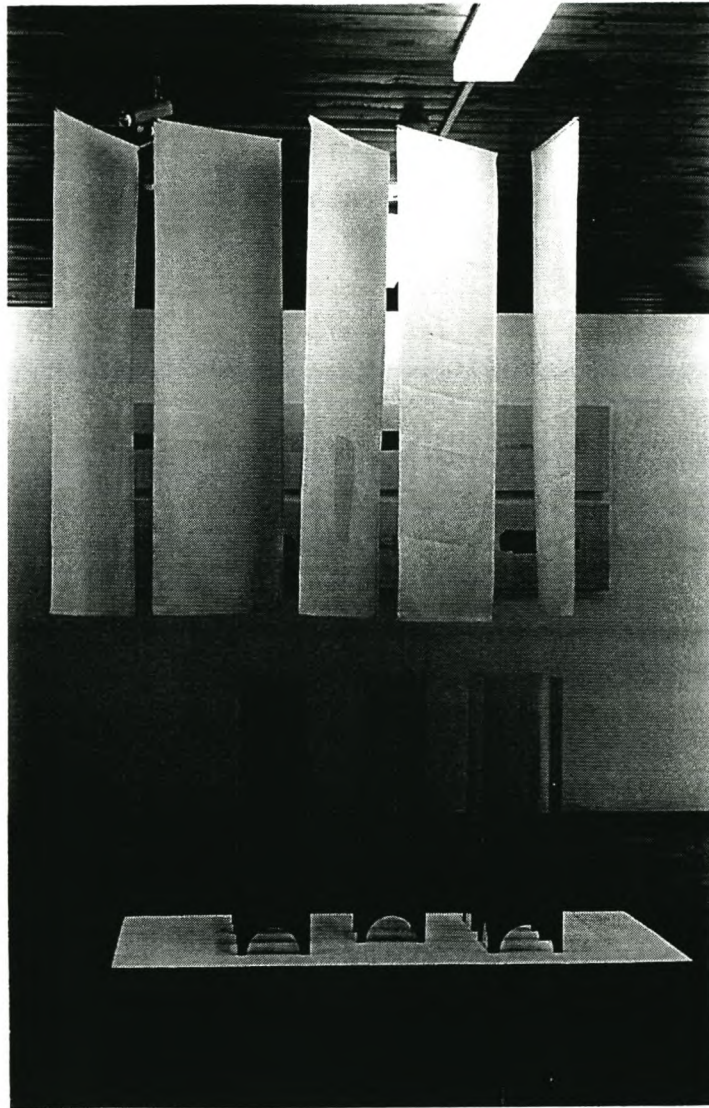




Above: Fig. 5a *System Series: Number 3*. 1999. Installation. Fabric, ink. Eight units, 40 x 60 cm.

Below: Fig. 5b *System Series: Number 3*. 1999. Perspex, metal, ink and paint. Six units, 20 x 80 cm.





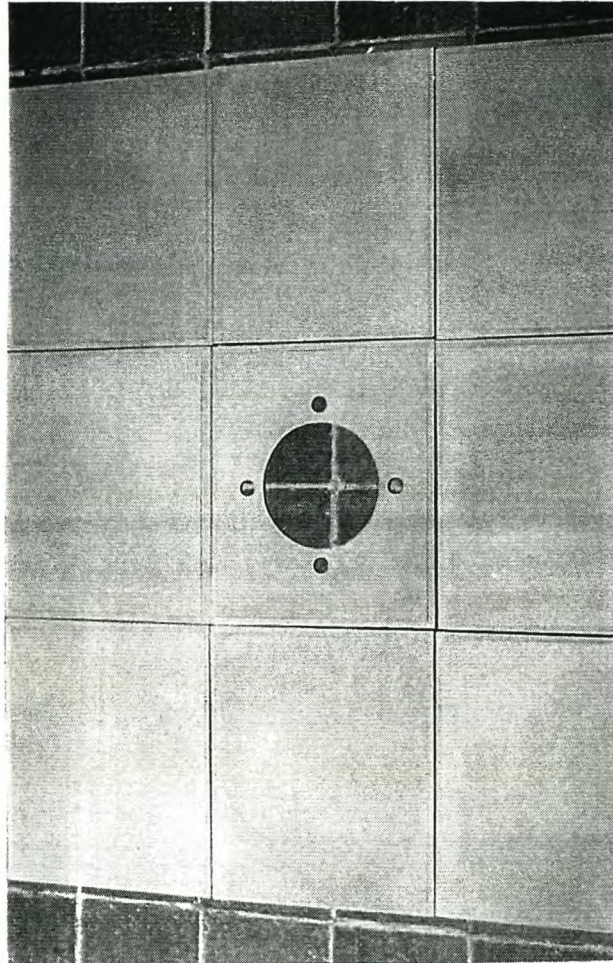


Fig. 6 System Series: Number 4. 1999. Metal, painted. Nine units, 30 x 35 cm.

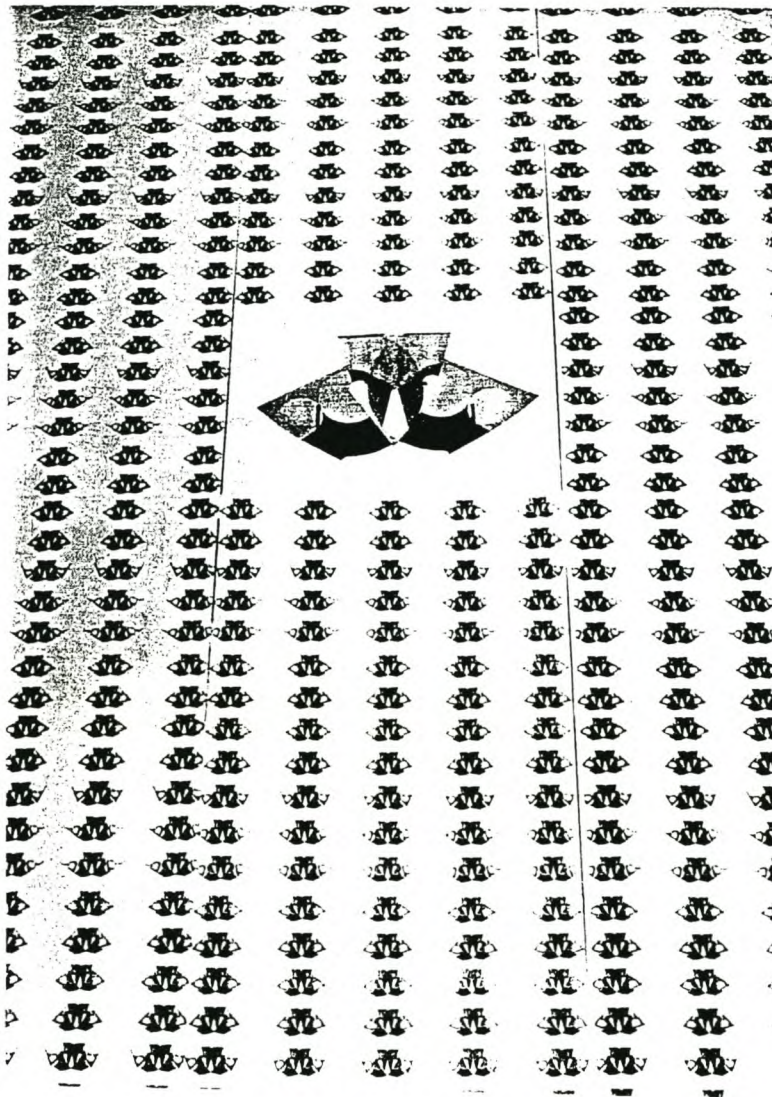
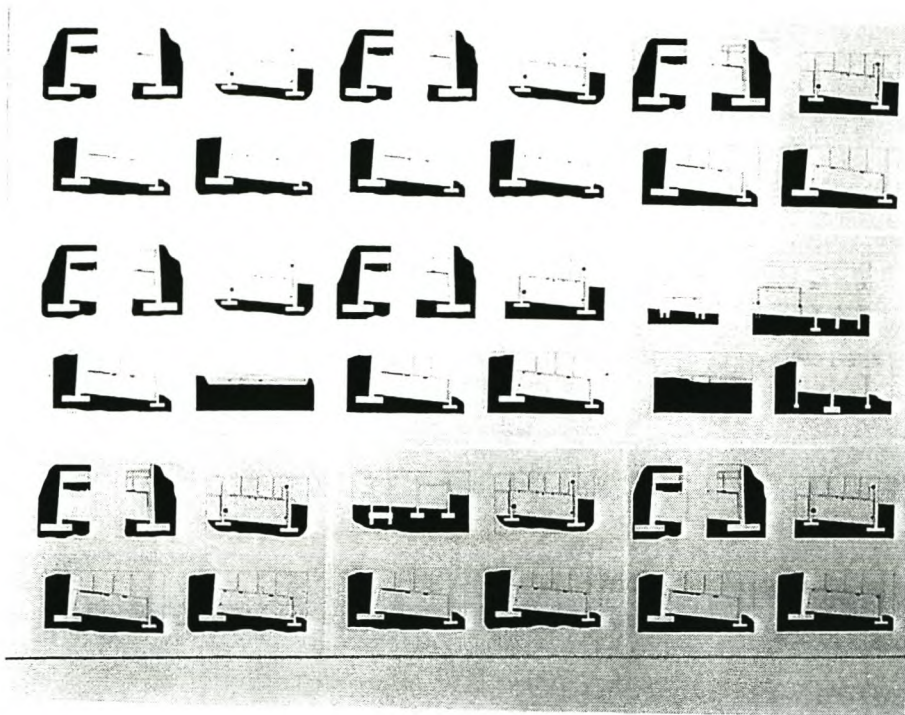
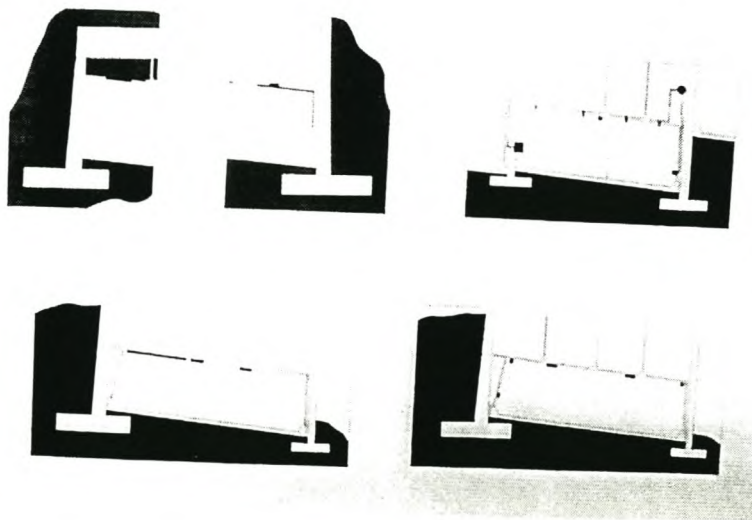


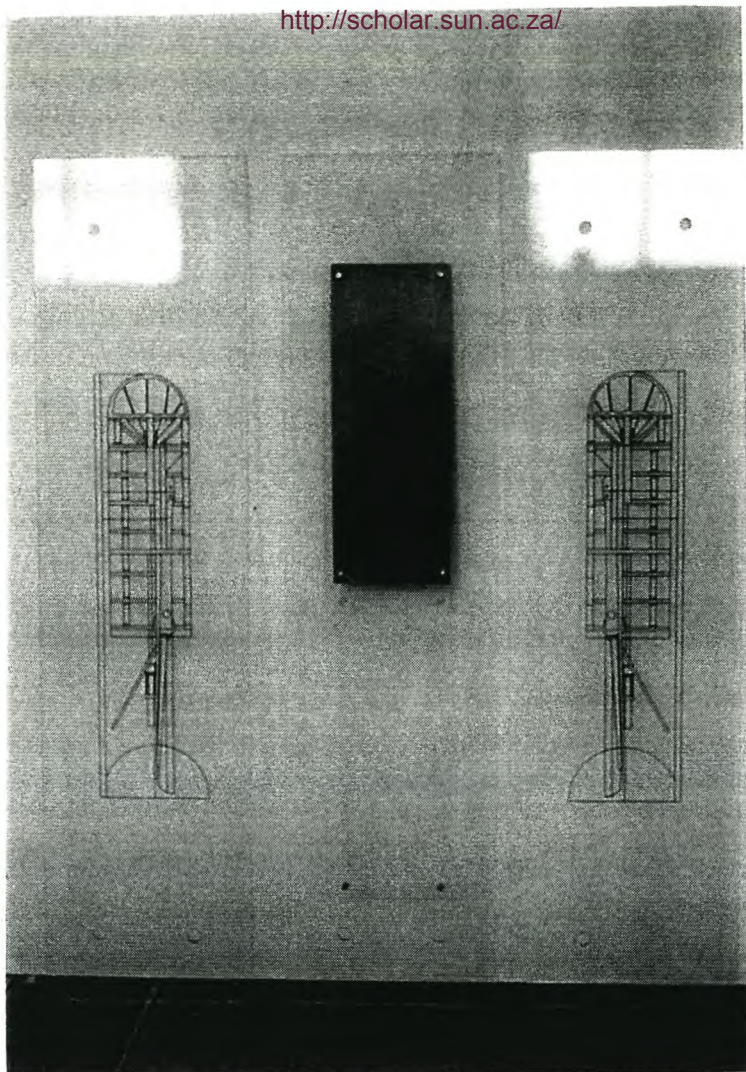
Fig. 7 *Untitled*. 1998. Ink on paper. Three units, 172 x 42 cm.



Above: Fig. 8a *Traffic loop*. 1999. Installation. Ink on paper. Nine units, 40 x 60 cm. Paint and found plastic balls.

Below: Fig. 8b *Traffic Loop*. 1999. Close-up





Above: Fig. 9 Pre – study for *Unperforated Highspeed*. 1999. Perspex, copper. Three units, 20 x 80 cm.

Below: Fig. 10 *Equilibrium*. 1999. Painted metal, copper and Perspex. Four units, 30 x 40 cm.

