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Cyberspace, as a generator concept
for the architecture
of the future

By

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ABSTRACT

Within the scope of this study, while questioning the impacts of digital technology on the individual and architecture, the thesis contains theories and projections relating to the new and future possibilities of the architectural design process in the information age, as explored through the digital medium as well as the transfer of the digital ideas into reality. The aim is to widen the understanding of the new possibilities for architecture. The concepts, metaphors, possibilities, techniques and expressions available to the designers of the virtual world, are discussed and exemplified. The new applications and opportunities that the digital world has to offer 'cyber-architects' of the future are explored.

The thesis aimed to form a discussion on investigating the role of computer on design, and what the idea of virtuality offer to architecture related with the projects. In this regard, the idea which is aimed to achieve is in all these transformations, architecture, too, lives challenges inside and tries to find a new way in expressing the ideas together with cooperating the other disciplines. Today, in every field of our life, we have been liberalizated, or more truly, virtualized. A general movement of virtualization has begun to affect not only the fields of information and communication but also our physical presence so as architecture. As a result, thesis, tries to answer the questions of 'what is the break-through?' 'Is the break-through only in technology, not in architecture? or 'is the computer more than a representational tool?' including a series of comparative analysis.

Key Words: cyberspace, virtual reality, computer aided design, information technology, hypersurface and liquid architecture, future, media, architectural space, philosophy, digital architecture, information age, internet, interaction, simulacr, cyberpunk, cyberception, cyberculture.

ÖZ

Bu çalışmada, enformasyon teknolojisinin birey ve mimarlık üzerindeki dönüştürücü etkisi sorgulanırken, mimarlık disiplininin gelecekteki yeri kestirilmeye çalışılmıştır. Tez, dijital ortamda sorgulanan gelecekteki mimari tasarım sürecindeki olasılıkları içeren teori ve gösterimlerle, dijital ortamdaki fikirlerin gerçeğe dönüştürülmelerini içermektedir. Amaç, mimarlık için yeni olasılıklar geliştirmektir. Tasarımcının sanal dünyadaki kavramlar, metaforlar, olasılıklar, teknikler, ve ifadeleri örneklerle tartışılmıştır. Dijital dünyanın geleceğin 'siber-mimar'larına sunduğu yeni uygulamalar ve olanaklar araştırılmıştır.

Tez, bazı projelerle ilişkili olarak, bilgisayarın tasarım üzerindeki etkisini ve sanallık kavramının mimarlığa ne sunduğunu araştırma çabasındadır. Bu bağlamda çalışmada varılmak istenen nokta, tüm bu değişimler karşısında mimarlığın kayıtsız kalmadığı ve çeşitli disiplinlerle etkileşime girdiğidir. Bugün, hayatımızın her alanında serbestlik, özgürlük hatta onun da ötesinde sanallık ön plana çıkmıştır. Genel bir kavram olarak sanallık, sadece iletişim alanında değil, varoluşumuzu, dolayısıyla da bireyi kıstas alan mimarlığı da etkilemiştir. Sonuçta, tez, bu tartışmalardan sonra ortaya çıkan, 'kırılma noktası nedir? ' 'bu kırılma noktası sadece teknolojide mi vardır?' 'gerçek hayata geçirilemeyen bu çalışmaları mimarlık olarak tanımlayabilir miyiz? ' sorularına çeşitli projelerle karşılaştırmalı olarak bir analizi içermektedir.

Anahtar Kelimeler: sibermekan, sanal gerçeklik, bilgisayar mimarlığı, bilgisayar destekli tasarım, enformasyon teknolojisi, hiperyüzey ve akışkan mimarlık, gelecek, medya, mimari mekan, felsefe, dijital mimarlık, enformasyon çağı, internet, etkileşim, simulakr (benzeşim), siberpunk, siberalgı, siberkültür

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Chapter 1

INTRODUCTION

1.1 The Aim of the study

'If the universe is forever expanding and jumping to new levels of organization, then indeed, we need the equivalent of a new architecture.' (Charles Jencks, 1995)

Many critics (including Charles Jencks) have heralded a new method of communication, a new culture, a new definition of space, and a new form of architecture that evolves from them. Cyberspace has been seen as a free, uncharted frontier with new ideals, abilities, and realities. Information technologies have offered new modes of perception and opened new spaces for the imaginary.

The noted characteristic of the person reaching from industrial age to information age is perhaps its mounting integration with technology. Today what lies in the heart of 20th century discussions is the virtualization of reality. Now, reality becomes a thing that is operational. In this regard, when we gaze at the 20th century, we see the debates are focused mostly among a concept, introduced by demateralization of architecture, that is cyberspace, and we see new technology's production process shaping architectural space and perception. Thesis, in this regard attempts to study this breaking point in the form of architectural thought in order to understand the latest formations, tendencies.

One of the rising concepts in the postmodernist scholarship, is the virtualization. This study, while investigating the architectural applications, inspirations and experiences created in virtual world; aims at estimating the role of virtuality in the architectural discipline and also the society in general. The main goal is to seek shaping process of the virtuality over architecture and the individual. Among these virtuality- reality discussions, the meaning of architecture, the future of architecture will be questioned with respect to the related concepts, architectural theories, the future of architecture and media facing

at the moment. Further, it attempts to find the relation between the tool, process and end-product.

This study takes its main departure point from the information age (age of cybernetics, internet, dematerialization of architecture) by considering its position of being an alternative to the real world architecture, which is to generate new modes of perception and spaces. While studying this thesis, rather than a positive or a negative interpretation, different tendencies and their integration have been held to understand the concepts generating this study.

Here are some questions taken into consideration within the scope of the thesis such as;

- What role will virtual reality play in the society in general and architecture in particular, in the more distant future? (Since it has been seen that VR is used in different fields, such as health, defence, scientific research, entertainment, architecture, etc. it has been an important figure effecting our daily life.)
- Have architects been designing towards a new understanding of space? What does virtuality offer to architecture?
- Can the 'experience' that virtual world offers, replace the 'living' of life totally? (It is not an alternative world, but a world of alternatives, individual choices)
- Is it necessary to search for the 'original' in the period of reproduction of reproductions? (In this simulation period, the problem is the unindentity of the copy.)
- What is the break through? Is the break through in only the technology, and not in architecture?

1. 2. The Domain of the study

At the end of the century, the widespread culture most important characteristic is, undoubtly, the new communication technologies and their radical transformations of 'Time and Space' concepts in the minds. In the hyperreality of

postmodernity, time and space seem paradoxically to be simultaneously absolute and relative.

With the context of electronic media, and technology; the mixed, integrated phenomenons, 'time & space' and real time processing have already integrated to our daily life. It was not far that, the informational fields, such as that, art/science/technique/socio-politic have been classified and act as different disciplines, but today they have become integrated and grew up within this mutual influence and become chaotic. The framework of the study investigates these interdisciplinary effects in architecture.

And architecture, in addition to this, has lived a great transformation and change in this mutual influence; and affected by the other disciplines, scientific categories, such as –endophysics, nanotechnology, genetic, virtual reality, robotic, electronic mail, internet, chaos theories, fractals, etc.- and generates new architectural discourses in its field. Among these influences, chaos, fractal theories, field analysis, with the concepts of surface, digital and liquid field; architecture's basic concept 'order' has replaced with chaos, complexity, relativity. While studying in this context, we see architectural product not as conventional space, border/ceiling/ground, but liquid, uninterrupted surfaces giving the individual a feeling of movement.

Today's media socialization generates the result that of disappearance of the 'Original'. The disappearance of the 'original', its endless copies, its immateriality, reflects to architecture as well. All this disappearence of borders between the copy and original, makes architecture transferrable from everywhere. The study aims to explore all these transformations reflecting to architecture.

For millenna architects have been concerned with the skin bounded body and its sensory environment- with providing shelter, warmth and safety, now they have proposed electronically augmented reconfigurable, virtual environments. New digital design media serve new territories for art and architecture. New design means new dimensions, new capabilites of new forms.

The domain of the study was chosen on the premise that the entire roller-coaster of twentieth century history has been driven by the transformative power of innovation in communication and computer technology. Architectural communication has rapidly advanced through this technology with diverse effects on form and language.

1. 3. The method of the study

This study has three subjects in nature:

Transformation from industrial age to informational age; Concepts; and Relations (examples). Instead of an analytical approach, on the contrary, the concepts have been tried to be understood.

In the introduction part, the idea of information age and its radical transformation in both architecture and general has been put forward.

In the second chapter, the tools of all these socio-economical, cultural transformation, and mounting virtualization have been tried to be expressed. The transformation over the society and architecture has been emphasized. The character of information age and the circumstances of postmodern thinking have been notified in the context of information society comparatively with industrial age. It has taken the reader through the fields of transformation in the information age, and the issues that are the origins of these transformations. In order to understand the transformation in architecture, architectural thought (from industrial age to information age) the fields such as geography, computer science, economy, etc. affecting architecture have investigated. Moreover, the transformations in these fields and their architectural revelances have been studied with respect to these transformations.

Also in the second chapter, reflections of postmodern science and philosophy or moreover, virtualization of a society has been presented. Themes like chaos theory, fractal geometry, science, quantum physics, have started to effect art and architecture; so as the new science generates new architecture.

In the third chapter, the main concepts such as cyberpunk, virtual reality, cyberspace –forming the title of this dissertation- as the product of this transformation have been studied and their architectural revelances have been investigated. In this chapter cyberspace and the concepts belong to this field as where the social, economical, cultural fields cut in architecture are defined.

In the fourth chapter, cyberarchitecture, virtuality in architecture is tried to get concretized in the context of some architectural examples in theory and practice. The works (buildings) given as examples in this chapter have notified the context and the characteristics of their work in the periodicals and sources within cyberspace concept. In addition to that, the following characteristics have been guided, ruled in selecting the examples such as;1) the concepts they present, 2)different scales, 3)theoretical and practical applications have been in consideration within the articulation of space components. (ground, ceiling, from, material, border, etc.).

The thesis emphasized the conception of the computer as a tool which has supplied to its limited range of application and creativity in the profession of architecture by challenging many of the boundaries of art and the practice of design within simulation opening up new areas of exploration in design, new areas that would be impossible to explore outside a virtual environment.

Chapter 2

TRANSFORMATIONS FROM POST-INDUSTRIAL AGE
TO INFORMATION AGE

life	natural or artificial
forms of consumption	digital/ analog/ natural or virtual
time	third millennium
tec(nique)ology	immanent
mechanism of perception	out of control- with technological prothesis
reality	transcendental
sex	optional
language	recursive, digital
aesthetic	silicon, hybrid, liquid
geography/ space	mixed- (fictional)-cable connected
history	encyclopedic information
politics	economical strategy

As we move out the first technological era, that of industrial production, into the era of the digital, a deep break occurs across the cultural surface. Just as the industrial revolution produced a mass migration from farm to factory, the postindustrial revolution seems to be producing a mass migration from factory to fantasy. Just as Disney has turned imaginary castles into buildings, so tourism (the world's biggest industry by the turn of the century) has turned Europe's buildings into imaginary castles.

'We stand at the dawn of the new era.' 'Before us is the most important decade in the history of civilization, a period of stunning technological innovation, unprecedented economic opportunity, surprising political reform, and great cultural rebirth.'

We are approaching one of the most dramatic transformations in human history. 'Not just a crisis of individuals, governments, or social institutions; it is a transition of planetary dimensions. As individuals, as a society, as a civilization, and as a planetary ecosystem, we are reaching a turning point.' George Gilder has announced that the central event of the twentieth century is the overthrow of matter. 'In technology, economics, and the politics of nations, wealth in the form of physical resources is steadily declining in value and significance. The powers of mind are everywhere ascendant over the brute force of things. Books seem to be published weekly announcing the coming of the New Age, the 'new physics', the 'new science', the greatest shift in our conception of reality since, depending on your point of view, Einstein published the theory of relativity at the beginning of this

century, since the birth of modernism in the middle of the last, since the founding of humanism with the French Revolution at the end of the eighteenth century, since the beginning of the human civilization . Everyone senses change.' (Gilder, 1994)

During the fifty years since the Second World War, a paradigm shift has taken place that should have profoundly affected architecture; this is the shift from the mechanical paradigm to the electronic one. This change can be simply understood by comparing the impact of modes of reproduction as the photograph and the fax on the role of the human; the photograph within the mechanical paradigm, the fax within the electronic one. In photographic reproduction, the subject still maintains a controlled interaction with the object. With the fax, the subject is no longer called upon to interpret, for reproduction takes place without any control or arrangement. The fax also challenges the concept of originality. The mutual devaluation of both original and copy is not the only transformation affected by the electronic paradigm. The entire nature of what we have come to know as the reality of our world has been called into question by the invasion of media into everday life.. How have these developments affected architecture? Since architecture has traditionally housed value as well as the fact one would imagine that architecture would have been greatly transformed. But this is not the case, for architecture seems little changed at all. A change in the everyday concepts of reality (such as house, home, brick, mortar..) should have had some effect on architecture. It didn't because architecture was the visible manifestation of the overcoming of natural forces such as gravity and weather by mechanical means. The electronic paradigm directs a powerful challenge to architecture because it defines reality in terms of media and simulation, it values appearance over existence. Architecture has been dominated by the mechanics of vision.

'By abandoning those populations that had become superfluous and unproductive, thanks to the advances of automation and the progress of tele-informatics, the crepuscular end of the providence-State would find a voluntary geography characterized by the bankrupting of all public assistance: the geopolitics of urgency, unemployment and destitution. Out of this would emerge the post-industrial and transpolitical destiny-State founded on threat, on apocalyptic risk as opposed to political enemies, the economic rival, the social adversary or partner. This would turn the tables on all History, for it would mean the end of the principles of territorial assembly and of the law of the city, and in which places, people and things became interchangeable at will.' (Virilio, Paul, 1991, p.124)

2. 1. Transformations in The Economic System

The transition from an industrial age to a post-industrial age has been discussed so much and for so long that it has not very much noticed that we are passing into a post-information age. The industrial age, an age of atoms, gave the concept of mass production, with the economies that come from manufacturing with uniform and repetitious methods in any one given space and time. The information age, the age of computers, showed us the same economies of scale, but with less regard for space and time.

The electronic revolution will be as resounding as the industrial one. The global economic culture is going through a change of state. The state we have occupied for many years is the system of centralized industrial production that consumes raw materials supplied by (economic) colonies. The new and quite unfamiliar state is transnational commodity capitalism, enabled by instantaneous, space-collapsing communication of electronic data, especially financial data.

> 'Capitalism and neo-capitalism have produced an abstract space that is a reflection of the world of the business on both a national and international level, as well as the power of money and the politique of the state. This abstract space depends on vast networks of banks, businesses, and great centres of production. There also is the spatial intervention of highways, airports, and information networks. In this space, the cradle of accumulation, the place of richness, the subject of history, the centre of historical space, in other words, the city, has exploded.' (Lefebvre, Henri; 1994, Invisible in Arch., p.428)

2. 1. 1. The Virtualization of The Economy

Contemporary economy is an economy of deterritorialization and virtualization. Worldwide, tourism-travel, hotels, restaurants-has the largest turnover of all sectors of economic activity. Communications and transport are part of the same general wave of virtualization. We find in the discovery and development of money the characteristic features of virtualization: not only displacement from the here and now, deterriolization, but the transition to public forms of interaction, anonymity, the possibility of sharing and exchange, the partial exchange of an impersonal mechanism.[1]

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[1] See for more information about the virtualization of the economy in Pierre Levy, 'Becoming Virtual'

2. 2. The virtualization of the market

When referring to the information highway, political discussions often evoke the 'new markets' that will promote growth and create jobs. Virtual worlds, Cyberspace does not indeed one a new market, but it is less representative of a future area of consumption than the emergence of a different transaction space, in which the roles consumer, producer, and middleman are undergoing profound change. In addition, the emergence of the multinational corporation brings into play a marketplace mentality of competition, defeating through colonization, specialization, and the deformable and transformable decisions that computer tracking allows.

In Benedikt's characterization of postindustrializm; he asserts that, 'the economic principles of material production and distribution in their classically understood forms-principles of property, wealth, markets, capital and Labor- are no longer sufficient to describe our guide the dynamics of our modern, complex, information society.'

'Where the early market economies grew out of the temporal and spatial regularities of city life, todays are built on the logical or virtual regularities of electronic communication, a new geography of nodes and hubs, processing and control centres. Networks of computers, cables, and radio links now govern where things go, how they are paid for, and who has access to what.' (Mulgan, 1991,p.3)

Together with the information age, product of the process of the economical production transforms into the process. The passage from the capitalist production to the service sector effects the society in its social, physical, and political structures. Due to the speed of change, production of the new service centers, markets (for instance, Singapoure, Bankong stock exchange offices, internet…) are the places of the loss of borders, generating new accumulated spaces. (Hongkong, Shangai exp.)

With the introduction of home-offices rapidly integrating to our daily life, and the firms prefer to give services in virtual environment rather than physical one, shows us new systems-new housing/city modellings created by the production of capitals based upon new capital productions rather than the production of capitals drawn up against goods.

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İşin sırrı burada

Bilgisayar ve İnternet dünyasının trilyoner patronları
işin sırrını açıkladı: 24 saat çalışan ve yaratan kazanır

YÜZYILIN en büyük buluşlarından biri olan bilgisayar, cesur girişimcileri milyonlarca dolarlık servete kavuşturuyor. Dell'in sahibi Michael Dell ve İnternet'çilerin yakından tanıdığı Amazon'un sahibi Jeff Bezos bunlardan sadece birkaçı. Fortune dergisi, bilgisayar ve İnternet dünyasına hükmeden bu yöneticilere işin sırrını sordu. Hepsi ağız birliği etmişcesine kendi şirketlerinin yapısının çok farklı olduğunu, gece gündüz çalışmak gerektiğini söyledi.

"Rakibini gözle"
GELENEKSEL yönetimlerin aksine kuralcı bir yönetim izlemediklerini vurgulayan Amazon.com şirketinin sahibi Jeff Bezos, sözlerine şöyle devam etti: "Ancak tüm yenilikleri takip etmek zorundayız. Dinamizm ve yaratıcılık bu işin önemli kuralı." Belli bir mesai saatleri olmadığını söyleyen Michael Dell de "Rakiplerinizi yakından izlemeli, onların bir adım önünde olmalısınız!" dedi.

Michael Dell, rakiplerinin gerisinde kalan yöneticilerin piyasadan silinmeye mahkum olduğunu düşünüyor.

Jeff Bezos, aylarca hiç tatil yapmadan çalıştığını, gelişmeleri izlemek için buna mecbur olduğunu söylüyor.

Sanal alem patronu erken köşe dönüyor

Internet yöneticileri (e-CEO)
Yaş ortalaması 37
Çok zengin
Kuşkucu
Patavatsız
Daha atak
Belirsizliğe bayılır

Diğer yöneticiler (CEO)
Yaş ortalaması 57
Zengin
Uyanık
Açıksözlü
Atak
Belirsizlikten hoşlanmaz

En yaşlısı 47 yaşında

Adı	Yaşı	Sahip olduğu şirket	Hisselerinin değeri
Michael Dell	34	Dell	13.9 milyar dolar
Jeff Bezos	35	Amazon	12.4 milyar dolar
Steve Case	40	AOL	2.5 milyar dolar
Tim Koogle	47	Yahoo!	974 milyon dolar
Kevin O'Connor	38	DoubleClick	740 milyon dolar

Fig. 2.1. Newspaper article about the virtual bosses, (Hürriyet, 1999)

In this informational postmodernist condition, parallel to the transformations in both social, cultural, and architectural organisations, new production methods have been started to search for creating an alternative economic solution in addition to developments in broadcasting, mass media technologies, information technologies (cable TV, satellite, video, personal computers). We witness a big sector of electronic industry –which has never been so wide and important before-. In the industrial transformation, we see the main activity is the processing of information and knowledge. The post-industrialism relies on finance and marketing to see that new things are built and to promote their trade. Post-industrialism orients toward human services. (Human resources department)

Machine was the power of the industrial society. While industrialism deals with the machine; post-industrialism deals with the effects of production, machines, services, efficiency, demand management, business efficiency, productivity, social control, scientific innovation.(Industrial design here gained very importance, as for innovations, research-development departments have extended their influencing field) organizes the new arrangement of production.

Since the world got smaller and bigger at the same time; the flow of the capital has been operated on the global scale. The fundamental change in economic

organisation is the globalization of capital on the global scale. The traditional structures of social, and political control over development, work, and distribution, have been subverted by the placeless logic of an internationalized economy enacted in advance of information flows.

2. 2. Transformations in The Social System

In the information age, with the help of production of new technologies, communication and transportation; society and the individual maximises their influencing field and affected by the events in the global scale. While this process damages the 'genuis loci' and the feeling of belonging to, it also generates a universal scaled notion and life-model. A paradigm shift takes place for the individual that somewhere in the world can make a vital effect on his/her daily life. The loss of reality, actuality and genuis loci have left their places to their representations, and become reproduced/ reconsumptioned. With the modernity, the individual has become domestic, and behaved in a strictly programmed life served to him. However, as a matter of fact, this situation has been modificated with the transformations in social life today-the transformation on the social rights, guarantees, home-offices, sexual identities, personal rights. Individuals belonging to different identities, religious, ethnic, politic groups, have gathered in this pluralist society and this united society is seems to enable a heterogenous structure. The individual has evolved from using machines of production that require a disciplined labor force and an efficiently planned and organised city to inhabiting what is known as a space of flows defined by global networks of computers- a free floating membrane of connectivity and control encircling the globe in rapid fashion and enabling a new economic order of multinational corporations to arise. This presents a liberated society but sometimes uncommunicational and unconnectable. The individual is now free to choose the presented identities and groups.

The electronic mediascape is about to go through a vital change of state. Telephone, computer networks, television, and interactive gaming will be digital and thus connectable. The pace of these changes is itself causing cultural dislocation. Some would claim that by using these new media of communication, we are beginning to create new on-line or virtual communities, new forms of spatial social relationships,

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new disembodied modes of interacting and for some, as we have seen embryonic cyberspace. As patterns of both social and geographical mobility increase the fluidity of social life they undermine the formation of strong social bonds. In the twentieth century electronic media are supporting an equally profound transformation of cultural identity. Telephone, radio, film, television, the computer and now their integration as *multimedia* reconfigure words, sounds and images so as to cultivate new configurations of individuality. If modern society may be said to illustrate an individual who is rational, autonomous, centered, and stable then perhaps a postmodern society is emerging which nurtures forms of identity different from, even opposite to those of modernity. And electronic communications technologies significantly increase these postmodern possibilities.

2. 2. 1. Virtual (On-line) Community

'What is so galvanizing today is that technologically advanced cultures-such as those of Japan, Western Europe, and North America- stand at the threshold of making that ancient space both uniquely visible and the object of interactive democracy.' (Benedikt,M. 1991)

Introducing the wideness of the informational worlds-internet-, the character of the community, society has been started to transformed. Up to now, community always meant neighbourhoods, counties, or states—geographically defined communities. But the growing online world is already filled with thousands of new virtual, online communities. The growth of cyberspace had some consequences for public space and for the sense of community in cities; that the consequence is a sort of increased complexity and increasing richness of choice when computational connectivity meets with the non-hierarchical, multi-centered, open-ended forms defining a 'new community'. While some writers claim about the advantages of the network, some claims about the damages, disadvantages of the new computer technology we face. At a time when a new culture is being formed, the distopian and utopian approaches come off at the same time. Some claim about that cyberspace will reproduce the media, the spectacle, the consumption of commodity information, and social exclusion are presently experienced on a scale far greater than any we have known (to a large extend

this is the natural trend seen in the current development of the 'information highway' and interactive television), some claim that the people will accept the most positive aspects of the ongoing evolution and work toward civilizing project centered on intelligent communities: This will involve a re-creation of the social bond through the exchange of knowledge, mutual recognition, the awareness and enhancement of singularity, more direct, more participatory forms of democracy, the enrichment of individual lives, the creation of new forms of open cooperation to resolve the terrible problems that humanity must confront, and the improvement of the software and cultural infrastructures associated with collective intelligence. [2]

The progressive development of high-technology has a considerable impact on the restructuration of existing social praxis. Although every technological discovery seems, at first sight, to introduce into the domain of social uses as a technical detail of the everyday life, one should remark that it always attains, a certain power of determinance over the entire process of the cultural production. All new technologies have actually this potential to be articulated within cultural domain, while they also begin to shape the socialities issuing from and undergoing together with this technocentrical world conception. Several technological innovations add to the institutionalization of such trend; but one of them, the virtual reality technology, seems to present particularly all technical requirements for a global dominance throughout its ability to be integrated with the individual's mind.

> Together with the build-up of information superhighways, according to Virilio, 'We are facing a new phenomenon: loss of orientation. A fundamental loss of orientation complementing and concluding the societal liberalization and the deregulation of financial markets whose nefarious effects are well-known. A duplication of sensible reality, into reality and virtuality, is in the making.' And adds that ' The specific negative aspect of these information superhighways is precisely this loss of orientation

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[2] As Michael Heim claims in 'Erotic Ontology of Cyberspace', the matrix or computer network holds out a promise of connectivity that reality denies, since the technologies of networking through on-line communication, e-mail, or newsgroups offer each unit at his terminal a way to stand urban isolation and alienation. Even though 'new communities' are formed, Heim admits that there is a dark side to networking: 'it operates through stand-ins of ourselves, representations in which we can lose our humanity or hide our identity, and it may inspire an amoral indifference to human relations. 'As on-line culture grows geometrically, the sense of community diminishes.' (Heim, M., 1991, Ontology of Cyberspace, p.76)

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regarding alterity (the other), this disturbance in the relationship with the other and with the world. It is obvious that this loss of orientation, this non-situation, is going to usher a deep crisis which will affect society and hence, democracy.' (Virilio, P. 1991a)

Some writers draw attentions and make some predictions on the evolution of the society, social organizations. Such as Nancy's critic of community; 'The emergence and our increasing consciousness of decolonised communities has not profoundly modified. (the givens of community), nor has today's growth of unprecedented forms of being-in-common- through channels of information as well as through what is called the 'multiracial society'-triggered any genuine renewal of the question of community', (Nancy, 1991, p.22, the Inoperative community, in Mark poster's Postmodern Virtualities, p.89) Manuel Castells analyses the futuristic predictions on the evolution of the society according to social organization between the potential of new technologies and their effects in actuality: 'We are told, for example, that telecommunications allows work at home in electronic cottages, while firms become entirely footloose in their location, freed in their operations by the flexibility of information systems and by the density and speed of transportation network. Or that people can stay at home, and yet be both open to an entire world images, sounds, and communication flows, and potentially interactive, thus suspending the need for cities as we have known them until the coming of the information age. Historian optimism and moralistic pessimism both convey in different tones an equally simplistic message of technological determinism, be it the liberation of the individual from the constraints of the locale,or the alienation of social life disintegrating in the anonymity of the suburban sprawl.' (Castells, M. ,1989, p.1)

> 'On the eve of the twenty first century there have been two innovative discussions about the general conditions of life: one concerns a possible postmodern culture and even society; the other concerns broad, massive changes in communications systems. The discussion of postmodern culture focuses to a great extent on an emerging new individual identity or subject position, one that abandons what may in retrospect be the narrow scope of the modern individual with its claims to rationality and autonomy. The discourse surrounding the new communications systems attends more to the imminent technical increase in information exchange and the ways this advantage will redound to already existing individuals and already existing institutions.' (Mark Poster, 1995, 'Postmodern Virtualities' in 'Cyberspace, cyberbodies, cyberpunk,')

Rheingold (1993; p.5) defines virtual communities as 'social aggregations that emerge from the Internet when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace'. He adds: 'Think of . . . the Net as the agar medium, and virtual communities, in all their diversity, as the colonies of microorganisms that grow in petri dishes. Each of the small colonies of microorganisms the communities on the Net is a social experiment that nobody planned but that is happening nevertheless.' (Rheingold,1993; p.6)

According to Rheingold and others, the notion of virtual community is not to be discharged as a technological, cyberpunk fantasy in which people increasingly live in 'second-hand worlds'; chained to their computer terminals, experiencing life through dehumanizing technology rather than through human contact. Commenting on the virtual communities, he notes: 'People in virtual communities use words on screens to exchange pleasantries and argue, engage in intellectual discourse, conduct commerce, exchange knowledge, share emotional support, make plans, brainstorm, gossip, feud, fall in love, find friends and lose them, play

games, flirt, create a little high art and a lot of idle talk. People in virtual communities do just about everything people do in real life, but we leave our bodies behind. You can't kiss anybody and nobody can punch you in the nose, but a lot can happen within those boundaries. To the millions who have been drawn into it, the richness and vitality of computer- linked cultures is attractive, even addictive.' (Rheingold 1993; p.9)

2. 2. 2. Global Village

One interpretation of cyberspace is that it concerns the annihilation of space. 'As electronically contracted', wrote Marshall McLuhan in 1964, 'the globe is no more than a village.' After three thousand years of explosion, by means of fragmentary and mechanical technologies, the Western world is imploding. During the mechanical ages we had extended our bodies in space. Today, after more than a century of electric technology, we have extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned.

The concept of the global village began to become fashionable again in the 1980s. It was seen as the perfect expression of the new era of world finance and international telephone networks. In the 1980s, the financial system had migrated onto computer and communications networks, satellite and cable links that spanned the globe, capable of carrying data and voice. In principle, information is now instantly available all over the globe and may be stored and retrieved as long as electricity is available. Time and space no longer restrict the exchange of information. McLuhan's 'global village' is technically feasible.

Marshall McLuhan expected more from the idea of the global village [3]than a new type of post-industrial working environment. Mc Luhan [4] saw technology as an extension of the body. Just as the wheel is an extension of the foot, the telescope an extension of the eye, so the communications network is an extension of the nervous system. Television has become our eyes, the telephone our mouths and ears; our brains

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[3] For more information see Marshall McLuhan, Global Village
[4] McLuhan's other great contribution to the media age was the phrase: 'The medium is the message.' What he meant was that networks (or media- in other words, systems for carrying information) are not

are the interchange for a nervous system that stretches across the whole world- we have breached the terminating barrier of the skin.

The technology that has made this is the network. Networks are not new: there have, presumably, been social ones since the dawn of the society. What is new is the technology of communication that has enabled information of any type to be carried from one place to another regardless of their distance.

2. 3. Transformations in The Character of Knowledge

In the 19th and early 20th centuries, theoretical knowledge has been the basic of innovation-telegraph, telephone, electricity, light derived from it. In the past, knowledge remained in the background. Today, it has become a moving figure. New technologies and new socioeconomic configurations now have the ability to reshape the order and importance of knowledge at any time. Knowledge is reduced to abstract systems of symbols and becomes plural like that of language. And with these transformations in language, and so knowledge, brings architecture heterogeneity and plurality which serves a postmodernist point of view.

The basic product of the information age is the knowledge. According to the capitalist understanding, the beginning of the consumption of the knowledge is related with the increasing amount in the developments on communication and speed. It's not a big surprise that information and technology have been the basis of the modernist manner so as to serve big ideologies and grand narratives; on the contrary however, postmodernist manner gives precedence to the local and subjective narratives; tries to avoid from the generalization. In this case, knowledge becomes plural, heterogenous. The point where postmodernism criticized is, against to the discourse of the modernist knowledge consisting of ideological manners, postmodernist knowledge is purified from big ideologies and narratives and becomes subjective. (Feyerabend's discourse on the liberized knowledge). However, in the long period, it is seen that this modernist approach with increasing production of information –information produced by every

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transparent. Television is not a window on the world, it does not simply show its audience pictures of events that happen to be taking place elsewhere.

identity, etnic group, sex,etc.)- serves the end of knowledge in both reliabelity and truth in this pluralism. (Can we always talk about the truth of information on internet?) The speed in order to reach the information and its possibilities, forces us to bring up all our past, history, our accumulation of knowledge to today and does not allow us to forget. These all produced knowledge has been kept in the memory (so as to be reproduced, reused) and got out of from its historical context and geographic properties. Soon it is homogenized, and stayed alive as to be reused.

Two paradigms characterize the evolution of the new technologies. One is the increasing interest on information process. 'What an integrated circuit does to speed up the processing of information while increasing the complexity and the accuracy of the process. What computers do is to reorganize the sets of instructions required for the handling of information and increasingly for the generation of new information, on the basis of the combination and interaction of stored information. What telecommunications does is to transmit information, making possible flows of information exchange and treatment of information, regardless of distance, at lower cost and with shorter transmission times.' (Castells, M. 1989). And the other one is the innovation on processes rather than products. These effects have major effects on society.

'Fundamentally it is the growing understanding that pluralism creates meaning, or put negatively in the cool terms of information theory, that 'where there is no difference, there is no information.' (Jencks, C., 1995: 65)

The historical understanding of information as being static, materialistic in the sense of the creation of the physical artifacts of print and linear has been superseded. There are at least four major schisms between print and electrinic information, primarily of time and velocity, indexing, immateriality and ephemerality and the simulation of a visual perspective for the user .These breaks challenge the notion of a historical understanding based totally within print.

'One must remember that, initially, the sciences were about substance, about foundation: geology, physiology, physics, and gravity. And architecture was very much part of that concern, with its focus on solidity, firmness, structure and hierarchy. Those foundations began to crumble in the twentieth century. Relativity, quantum theory, the uncertainty principle: this shakeup ocurred not only in physics, as we know, but also in philosophy, the social sciences and economies.' (Tshumi, 1996, p.218)

The mechanical, linear paradigm of science has been superseded: this does not mean that the scientific community now agree on the non-linear paradigm; in fact they may not even agree on positive formulations. Mechanistic world view may have ended

(from quantum physics to chaos science) but there is no single inheritor such as organicism, complexity science, nonlinear dynamics, the new genetics. New sciences are revealing, and throw the mechanistic paradigm into doubt and lead us to assume that the universe is a lot more creative, free, self-organising, and open than Newton, Darwin, and others supposed.

Today, science has witnessed to a cultural shift. An example of this is Newtonian physics, once considered the basis for a universal system of thought. Newtonian physics still exists, but it is no longer seen as universal. Such as displacement of universals has had a far reaching effect in many discourses, but more problematic for the discourse of architecture is that science no longer focuses on the problem of man and nature. Rather, science is concerned with the struggle of man to overcome knowledge. This important epistemological shift form man/nature to man/knowledge has created a problem for architecture as for no other discipline: first because architecture must continue to stand against gravity and shelter against nature and second because the shift has trivialized the formerly significant symbolism of these acts. When the antromorphism of the body and the concerns for the natural are taken away from architecture, it is left with no object. The loss of architecture's thought to be natural object is complicated by several factors. One is the explosion of a media culture that has created a desire for more and more information and thus for more knowledge. The hegemony of the media creates an excess of information in the world, access to which is now international.

Scientific knowledge is in crisis in postmodern condition. Knowledge is now legitimated no longer according to any notion of human emancipitation or speculative spirit, but solely through performative discourses of economics and technology. With the end of 20th century, we face with an interesting paradoxs, (or irony). On one hand, it is asserted that we enter a information age, on the other hand, intelligence and science's capacity of understanding world, and the truth of the reality is denied. On one hand, in science, quantum science (Heizenberg and Bohr's Copehangen interpretation), chaos (Edward Lorenz) and complexity (Ilya Prigogine) theories; deny the irrevocability unignorance principles (although Einstein's emphasis on the science's definiteness). On the other hand, postmodernism in philosophy and literature, defends with the theory of

language denying relationships with the outer world (Saussure) and asserts that the meaning is never existed as exactly in the language, is nothing only the text (Jack Derrida). The text-existed for centuries as determined and finite has changed into hypertext in the information age.

2. 3. 1. Hypertext

The word 'hypertext' was coined by Theodor Nelson in the 1960s to refer to a process of non-sequential electronic reading and writing that offers the reader/writer a series of branch points within an interactive computer network from which to choose. It is a vast assemblage that enables the user to shuttle constantly back and forth among words, images, sounds, maps, and diagrams. (Landow,G. 1992, p.2-8)

As George Landow (Landow,G. 1992, p.8) has explained, hypertext theory abandons the ideas of the center versus the margin, of hierarchy, and of linearity, replacing them with the concepts of multilinearity, nodes, links, and networks. Within an interactive hypertext, links between spatial components – be they texts, photographs, animation, film, or sound –can be made in a random associative manner at a click of a computer mouse.' This type of associational thinking, as well as the references to dream experiences, are points of similarity between the 'virtual' and Walter Benjamin. The ability to reduce images to a number of pixels, numerically located within the matrix of a computer memory, means that these images can be stored, transmitted, and transformed.

> 'The real challenge that hyperreality presents to architecture is not technical or aesthetic or even ideological; it is epistemological. Indeed, of all disciplines, it is architecture that most closely indicates the pervasive epistemological crisis of postmodern society. We cannot claim that as currently formulated, the bulk of architecture is any way representative of the current state of the knowledge. The challenge is to develop new ways of thinking: about culture, technology, and the profession, not merely to illustrate these through formal manipulation. We might think of this new way of thinking as a kind of 'soft' knowledge, not closed, objective, absolute, and overdetermined, but subjective, situational, open and conditioned by its reception.' (Mathews, S. 'Architecture in the age of Hyperreality')

The hypertext found in digital networks has deterritorialized the text. It has created a text that lacks sharp outlines or a definable interior. The text has been set in motion, swept up in the flow, vectorized, metamorphosed. The ancient page is slowly disappeared beneath the informational flow, its signs carried away by the digital world.

Certainly, the digitized, fluid, and reconfigurable text, nonlinear, circulating throughout local or global networks in which each participant is an author and potential editor, is vastly different than the conventional printed text. It is as if we had just invented writing.

> Marshall McLuhan remarked, 'Gutenberg made everybody a reader. Xerox made everybody a publisher'. PCs are making everbody an author. In cyberspace everyone is an author which means that no one is an author: the distinction upon which it rests, the author distinct from the reader, disappears.' (Benedikt,M., 1991)

> 'In the digital world, the distinction between original and copy has ceased to have any real significance. Now, cyberspace has blurred the notions of unity, identity, and location. Hypertext links can connect us with an address that supplies us not with a specific text but with data that is updated in real- time: statistical results: political information, images of the world sent by the satellite, etc.' (Levy,P. 1998, p.56)

> 'Architects might understand the architectural conditions and the implications of hyperreality through the model of the electronic hypertext. Hypertextuality suggests a way of considering architecture as a series of situational relations and responses. Once I push the send button on my keyboard and launch these words into the ether of the electronic network, it becomes truly a hypertext, effectively without origin, without beginning or end, constantly in flux and without author; we all become collaborators and co-authors. With the electronic journal it is possible to create a situational discourse whose content need not be static, finite or essentialized, but rather ultimately determined by the reader. Likewise, as architects, perhaps the most we can do is to provide the dynamic MDNMsituations for people to play out their lives, rather than scripting their actions in minute detail or choreographing their interactions with mass culture. Could this be the emblem of a new situational architecture?' (Mathews, S. 'Architecture in the age of Hyperreality')

2. 4. Theoretical Discussions on The Transformation of Architecture at the Turn of the Millennium

Beyond all the transformations in processes of socio-economic, politic and cultural mentioned above; architecture has been living serious transformations inside. From the 19th century to 1920s, we see architecture centered around the structural basis, and together with Loos, in 70 years, it was defined by space based concepts; and when we come to 90s, it was formed a basis around the concept of 'time'. In addition to the concepts such as perception, dynamic, vector proposed by the time concept; concepts such as 'field', 'wave' have been added. And this generated a big variety in the architectural discipline. In the essence of this variety, it was seen that architecture, from time to time, has selected such disciplines like, engineering, philosophy, sociology, to be grounded. Dating form 90s, as a result of these transformations; architecture has

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selected and integrated within a new field: space sciences. In the direction of this interaction, what was came acrossed in the architectural discourses, was chaos and fractal theories, analysis based on the field rather than object, concepts of liquid, surface, and digital field. What is seen today is, the concept of 'order', seen as the ground of architecture for centuries, has been misplaced by all concepts, sciences mentioned above, and enter a new era in which chaos, complexity, relativity have all been legitimated. While examined in this context; it can be said that architectural object is no longer made up of the conventional produced space or floor/ceiling/border/ground, but of melting, unlimited surfaces, and dynamism for the human beings continous actions, movements.

During the last twenty years, an important amount of architectural theory and practice has been transformed to the formless, to the indeterminate. As a valid alternative crisis of modernism, corporate capitalism, and other forms of structural, deterministic thinking, randomness, arbitrariness, formlessness, complexity, contradiction and incoherence have become the most adequate tools either for approximating the fuzzy existential and productive conditions of late capitalism of for escaping to the deterministic, reductive operation. This trend in architectural thought has been important in all artistic practices since the crisis of modernism in the 1960s, when important experiments aimed at exposing random, inconsistent, nonhierarchic, entropic organizations.

Architecture today questions its direction within the play of tensions caused by the contradictions between contemporary man's desire for expansion and his need for contraction. This new architecture attempts to locate itself within this uncomfortable and fragile condition. Open, flowing, undifferentiated space has an undefined continuity, while articulated and differentiated spaces present distinct irregularities. The doubt and ambiguity that arise from this contradiction between flowing and interrupted space permit us simultaneously to accept the impermanence of change and to discover the specific metaphysical attributes and possibilities of a place; that is, to discover new types and qualities of spaces.

Today we are witnessing the birth of a new architecture that seeks to align itself both with global continuity and with local poetic expression. This architecture is being defined by the intersection of two vectors, one of force provoked by the dynamic changing and expletive context and one of the constraints defined by the cultural and physical characteristic of each site. It is thus determined by the contradictions between the space of the continuous and indefinite universal megalopolis, and the specific, unique, and particular place. This new architecture is torn between a universally recognised, autonomous language and local tradition, between history and geography, time and space, techne (making) and topos (place).

The stability of the industrial era has dissolved, and the machine, the protagonist of the modern aesthetic has given way to a new technology that partakes in virtual disappearance. Similarly, the human body is ceased to be defined by its own physicality; the global network of flux and movement establishes its limits. The new architecture has also lost its materiality. No longer defined only by its physical components, it is open and discontinuous, established by webs of energy and flux, expressed in a universal language. Volume and mass are giving way to an architecture of lines and planes that is spatially defined by the dynamic relationship of its elements and by the changing and ephemeral forms of the bodies that inhabit it. Different luminary of conditions transparency, translucence, opacity now play a determining role in architectural proposals. This new language is torn between the inventive capacity of spaces and the selection of construction materials and processes. The poetics of the architect's discipline reside in the complexity and resolution of the processes that commense this new disembodied and discontinuous architecture with order, clarity, precision, passion, and an understanding of the nature and energy of things. The tectonic now involves executing and communicating an idea in relationship to changing and dynamic space.

If research in recent years has blurred the definition of architecture and opened it new possibilities, it has been destroying, disempowering the practice of architecture by systematically taking a critical, marginal role in respect to the systems that produce the built environment. To recover an important role in the current economic, technical,

social, and political transformations, architects will have to focus their research on reformulating the discipline.

2. 4. 1. The Issue of Space, Time and Speed

'For the first time, history is going to unfold within a one-time-system: global time. Up to now, history has taken place within local times, local frames, regions and nations. But now, in a certain way, globalization and virtualization are inaugurating a global time that prefigures a new form of tyranny. If history is so rich, it is because it was local, it was thanks to the existence of spatially bounded times which overrode something that up to now occurred only in astronomy: universal time. But in the very near future, our history will happen in universal time, itself the outcome of instantaneity - and there only'. (Paul Virilio *Cyberspace alarm)*

2. 4. 1. The Issue of Space

'The present epoch will perhaps be above all the epoch of space. We are in the epoch of simultaneity: we are in the age of juxaposition, the epoch of the near and far, fo the side-by-side, of the dispersed. We are at a moment, I believe, when our experience of the world is less that of a long life developing through time that of a network that connects points and intersects with its own skin. One could perhaps say that certain ideological conflicts animating present -day polemics oppose the plons descendants of time and the determined inhabitants of space.' (Foucault, M. Diacritics 16, p.24)

'The anxiety of our era has to do fundamentally with space, no doubt a great deal more than with time,' wrote Foucault in 1967. Time, the chief component of the ideology of modernism and the basic stuff of the modernisation process, went out of fashion. Space became the important element of postmodern thinking. Not space as three dimensionality, as a physical entity, but as a category. 'That new spatiality implicit in the postmodern.' said Fredric Jameson. ' It is space not time that hides consequences for us,' that explained by John Berger. Here we conceive space as a world of a certain mentality. Space is not only part of the physical and spiritual universe, but also an expression of it. It shows the relative order of things, from social structure, cultural and economic entity to geographic place.

For centuries, space had been a modality of existence. Man was confronted with space because he was confronted with himself. Nowadays, architects have thrown out the modernist dogmas but remain no less preoccupied with spatial effects, philosophers are concerned with mobility and circulation. Sociologists study space as a social construct, artists make space-specific work. Add to this list, the enormous expansion of migratory movements, the universalization, the rapid developments in virtual reality techniques and spatial simulations, formed an explosion in the concept of space. An actual space or spatial experience becomes less and less necessary, owing to the many techniques for projecting (free) space such as telecommunications, television, fax, data, links, etc. Home becomes a place of work as well as a place to live and sleep yet we displace ourselves physically more and further than ever, through spaces that come to resemble one another more and more closely. We impress our own culture on that of others through the agency of transnational capitalism and tourism.

After the second world war, the optimistic interpretation of space (space as mass, construction, cladding, light, etc.) as a platform for human action declined. Space, gradually come to be described as a décor of disillusion, the end of the meta-narrative or even as the end of history itself. Space lost its three-dimensionality by reduction to an image. Even though we live in an three-dimensional space; we no longer experience it until we see the videos or the photos afterwards. Physical, geographical space is no longer a source of identity. The reality of an experience is no longer required to be synchronous with the event.

'Space today is totally fractalized, but above all totally clonable.' (John Frazer, AD Arch. in Cyb.II)

Marshall Berman equates modernity with a certain mode of experience of space and time. According to Daniel Bell, the various movements that brought modernism to its apogee had to work out a new logic in the conception of space and motion. He suggests, that the organisation of space has become the primary aesthetic problem of the mid 20th century culture as the problem of time (in Bergson, Proust, Joyce) was the primary aesthetic problem of the first decades of this century. Harvey, D.,1989)

Since capitalism has been a revolutionary mode of reproduction in which the material practices and processes of social reproduction are always changing, it follows that the objective qualities as well as the meanings of space and time also change. We have witnessed annihilation of space through time that has always lain at the center of capitalism's dynamic. In 1960s Marshall McLuhan thought about global village ; 'After

three thousand years of explosion, by means of fragmentary and mechanical technologies, the Western World is imploding. During the mechanical ages we had extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned.'

> For Foucault, 'Space is fundamental in any form of communal life; space is fundamental in any exercise of power...I recall having been invited in 1966, by a group of architects, to do a study of space, of something that I called at the time 'heteropias', those singular spaces to be found in some given social spaces whose functions are different of even the opposite of others. The architects worked on this, and at the end of the study someone spoke up, saying that space is reactionary and capitalist, but history and becoming are revolutionary. This absurd discourse was not at all unusual at the time. Today everyone would be convulsed with laughter at such a pronouncement, but not then.' (Harvey, D., 1989)

> 'Boundaries become fluid; space is conceived as flowing.' (Moholy-Nagy)

> 'A boundless depth opens up, effaces the walls, drives away contingent presences, accomplishes the miracle of ineffable space.' (Le Corbusier)

As Karsten Harries argues, 'architecture organizes a deep defence against the terror of time.. to abolish time within time'. Time is defeated by removing from it the most dangerous element, that of flux. Architecture attempts in it conceptual genesis to freeze time, to hold onto that perfected moment of the completion of the building for as long as possible before and after the event. For Karsten Harries, (1982, 59-69), architecture is not only about domesticating space, wresting and shaping a liveable place from space. It is also a deep defence against 'the terror of time'.

We live now, as Manuel Castells says, 'not in a space of places, but in a space of flows.' (Manuel Castells, 1989)

> 'Pre-phallic space is absolute space, the space of the sacred [or cursed], and was only indicated, circumscribed, or suggested in archaic life.)... Rather, it is indeed a space, at once and indistinguishably mental and social, which comprehends the entire existence of the group concerned. . . In a space of this kind there is no 'environment', nor even, properly speaking, any 'site' distinct from the overall texture.This absolute space begins to look a lot like contemporary electronic 'virtual', media space with the difference that there is the abstract, geometric, visual,dare we say it-phallic/scene applied 'over' the mater/obscenealthough there are those who would say it's not applied over anything; it's just extrapolating its way 'forward'.' (Lefebvre, H.1991, p.240)

2. 4. 2. The Issue of Time

'Undoubtly we are entering a 'globalized' society, as they say, but the only really global thing about it for the moment is time'. (Virilio, P. Domus 800) And so he

offers to the so-called 'world time' that induces globalization. It is not the speed of transport but the time of communications.

Today we cannot think about one, unique time. Different approaches and theories have been developed in relation with the space-time which has an important role in dressing up the society. One of the approaches belonging to Benedikt Anderson, talks about the homogenous and empty time concept replacing the synchronic time concept of the Middle Ages and about the transformation of a community to a nation relates to the changes of the understandings of the time concepts. For Laclau, 'time takes the form the dislocation, a dynamic with disrupts the predefined terms of any system causality. The spatial, because it lacks dislocation, is devoid of the possibility of politics.' (Massey, D. (1994), 'Politics, and Space/Time,' Space, Place, and Gender, Minnesota Univ. Press.) 'to some extent too, there is embedded time, the time in which our daily lives are set. These times, says, Laclau, this kind of 'Time is space'. (Massey, D. (1994), 'Politics, and Space/Time,' Space, Place, and Gender, Minnesota Univ. Press.) And according to Anthony Giddens' view, time is divided into years, months, days, hours. Space and time are basic categories of human existence. We record the passage of time in seconds, minutes, hours, days, months, years, decades, centuries, and eras as if everything has its place upon a single objective time scale. During the modernity, the calendar, and the clocks changed our daily life radically and as a result of this space and time were seperated from 'place'. Thus the time concept became independent, homogenous, and abstract. According to Harvey's and Giddens' analysis, modernity has three effects on space-time:

- Time and space have got out of /decomposed from their local concepts and became homogenous.
- Both time and space have been empitied, and this caused a fragmentation of time and space understood as a passive surface that all objects located on.
- Time and space have dispersed from each other. (Işık, O.1998)

According to Giddens; the change/transformation over the time-space understandings have gave modernism a dynamism; and for Harvey, an opportunity to space annihilated by time. In addition to this, the reproduction of capitalism is not just the reproduction process of the economy, for instance, in this case the reproduction of the time-space understanding in the minds. The time of capitalism is linear,

homogenous, and similar to this, the space has also become homogenous, emptied, and abstract.

David Harvey in *The Condition of Postmodernity* talks about space-time compressions creating crises of representation: he allows that each revolution in communication technology caused an annihilation of space by time, and produced a crisis of representation in its wake. Fredric Jameson notes in *Postmodernism, or the Cultural Logic of Late Capitalism* that the cultural conditions of postmodernism have created the need for cognitive maps to link our ideological positions with our imaginations, and hence they enable social transformations to take place.

> In his book, 'the Condition of Postmodernity', Harvey [5]explains what does he mean by using the concept 'time-space compression'. ' I mean to signal by that term processes that so revolutionize the objective qualities of space and time that we are forced to alter, sometimes in quite radical ways, how we represent the world to ourselves. I used the word compression because a strong case can be made that the history of capitalism has been characterized by speed-up in the pace of life, while so overcoming spatial barriers that the world sometimes seems to collapse inwards upon us. The time taken to traverse space (plate3.1) and the way we commonly represent the fact to ourselves (plate3.2.) are useful indicators of the kind of phenomena I have in mind. As space appears to shrink to a global village of telecommunications and a spaceship earth of economic and ecological interdependencies-to use just two familiar and everyday images- and as time horizons shorten to the point where the present is all there is (the world of the schizophrenic), so we have to learn how to cope with an overwhelming sense of compression or our spatial and temporal worlds.' (Harvey, D. 1989, p.240)

According to Virilio, not only that the philosophers- from St.Augustine to Heidegger, Bergson and others- faced with an enormous issue which is that of time, but also today, planners, architects, designers are concerned within it.

> 'The very word 'globalization' is a fake. There is no such thing as globalization, there is only virtualization. What is being effectively globalized by instantaneity is time. Everything now happens within the perspective of real time: henceforth we are deemed to live in a 'one-time-system'. For the first time, history is going to unfold within a one-time-system: global time. Up to now, history has taken place within local times, local frames, regions and nations. But now in a certain way, globalization and virtualization are inaugurating a global time that prefigures a new form of tyranny.' (Virilio,P. 'Cyberspace alarm.)

> 'In a sense, the history of the world is completed in real time by the workings of virtual technology. Unfortunately, this also means the disappearance of the world in real time.'(Baudrillard, J. 1996, p.24)

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[5] Harvey uses the term time in the general meaning of history, and place as a concrete and peculiar geographic place. According to him, the concept of history has every time had priority to the concept of space , because it is based on development of capitalism.

'Live your life in real time – live and suffer directly on- screen. Think in real time – your thought immediately encoded by the computer. Make your revolution in real time- not in the street, but in the recording studio. Live out your amorous passions in real time- the whole thing on video from start to finish. Penetrate your body in real time- endovideoscopy: your own bloodstream, your own viscera as if you were inside them.' (Baudrillard, J. 1996, p.26)

Bergson observed that movement and distance, and thus time and space, were not together decreasable. In the paradox, time is measured in spatial units; Bergson's view movement is thereby incorrectly characterized as a succession of contingent moments of being, which are in fact totally alien to movement. What Zeno did to space- conceptually slice it into an endless number of tiny autonomous pieces- was what Duchamp did to time (Nude descending). The free movement of man in a neutral space such as the Moderns envisaged has been made obsolete by the digitalization of humanity into a cyborg/cyberpunk.

We live in an era when things are speeding up and spreading out. The view of our age is now frequently found in a wide range of books and journals, web pages. Much of what is written about space, place and postmodern times emphasizes a new phase in what Marx once called 'the annihilation of space by time'. The process is argued, asserted to have gained a new momentum, to have reached a new stage. It is a phenomenon which has been called time-space compression.' And the general acceptance that something of the sort is going on is marked by the almost obligatory use in the literature of terms such as speed-up, global village, overcoming spatial barriers, the disruption of horizons, and so forth. Time-space compression refers to movement and communication across space.

2. 4. 3. The Issue of Speed

After the spatial and temporal distances, speed distance erases the notion of physical dimension. Speed suddenly becomes a primal dimension that questions all temporal and physical measurements. This radical erasure is equivalent to a momentary immobility in the environment.

'Mechanization has overhelmed everything.

Communications: In the past, men organized their undertakings at the scale of their legs: time had a different duration. The idea of the world was its great size, without limits...

Interpenetration: one day Stephenson invented the locomotive. They laughed. And as businessmen- the first captains of industry, who will be the new conquistadors- take it seriously, ask for rights-of-way. Mr. Thiers, the statesman who was leading France, intervenes immediately in Parlement, begging the deputies to keep to serious things. 'A railroad could never connect two cities...'

Came the telegraph, the telephone, steamships, airplanes, the radio, and now television. A word said in Paris is with you in a fraction of a second!...Airplanes go everywhere; their eagle eyes have searched the deserts and penetrated the rain forest. Hastening interpenetration, the railway, the telephone unceasingly run the country into the city, the city into the country...' (Colomina,B.,1994, p.333)

'Three physical barriers are given: sound, heat, and light. The first two have already been felled. The sound barrier has been cut across by the super- and hypersonic aircraft, while the heat barrier is penetrated by the rocket taking human beings outside the Earth's orbit in order to land them on the moon. But the third barrier, that of light, is not something one can cross: you crash into it. It is precisely the barrier of time which confronts history in the present day. To have reached the light barrier, to have reached the speed of light, is a historical event which throws history in disarray and jumbles up the relation of the living being towards the world.' (Virilio, P. Speed and Information: Cyberspace Alarm!)

Past societies were changed by the space-time of transport, by the advent of railways. Today the revolution of transmissions in real time is causing a completely different kind of temporal compression, because it brings into play absolute speeds, a speed that reduces the world to nothing, as Virilio says, to an instant. After a century of fascination with the ever-increasing speeds of transportation and information, we find speed alone not particularly discomfiting but possibly reassuring. Jet travel introduces a dislocation or destabilization so complete that it is as well to suppress the realization of where one really is in favour of illusion. Railway [6] looses the stability of perception.

'...in times of rapid cultural assimilation in which mobility is replaced by the absolute speed of telecommunications, travel curiously remains a highly valued activity. In the travel/tourism of today, relationship between bodies, geographies, histories, and technologies have altered however.' (Elisabeth Diller, 'Architecture Now', p.70)

[6] Wolfgang Schivelbush reminds us in *The Railway Journey* (1986) that the railway was the mythical image of the new technologies that conquered space and time in the nineteenth century. (Wolfgang Schivelbush, '*The Railway Journey : the Industrialization of Time and Space in the Nineteenth century*, Berkley: University of California, 1986)

The concept of space, place has been argued in recent years on both architectural and philosophical levels. In addition to that, with the 90's, concept of time has been added to discussions within space/place. And speed gained importance, and become one of the symbols of the century, and integrated totally to our daily life moreover we define our works related to speed.

The ever-increasing speeds of transportation, image and information over the concept of geography and place; have related with the definitions of concepts vector and time. The virtualized knowledge/ image has no longer started to move in the place located on, but only in space. Virilio claims about this movement- explosion on the concepts of time and space, and asks the question of where are we, when we move? In the period of our global relations, interactions; the world geography has been evolving with the great speed, different dynamic effects. This rapid development in communication and transportation technology, in one hand, seems to eliminate/ melt the distances among places, and form new communication systems; on the other hand generates new types of distances which we do not get used to. In the space discussions, the question comes up to the agenda is the mutual relations between the universal laws proposed in all spaces and times, and the dynamics of the determined spaces. Space is a very basic category for to understand and transform the today's society. Because of this, space concept becomes the intersection point of different disciplines. According to Foucault, space was treated as the dead, the fixed, the undialectical, the immobile, while time, on the contrary, was richness, fecundity, life, dialectic.' And adds our age is not the sequential age, but the age of simultaneity and juxaposition.

Since the turn of the century, we have witnessed the progressive disappearance of distance-speed, in meters, and kilometres, and more recently, with the development of high-speed technologies, such as telemetrics, telematics, and supersonics, the allegedly ideologically progressive disappearance of distance-time. The measure of extension and of movement is now almost exclusively that of a technical vector, a mode of communication or telecommunication that desyncronizes the time from the space of the passage. The standard for measuring the space travelled through is no longer the time of passage but rather the speed, the distance-speed, which has become the measure

and the special dimension of space as of time. The light of speed illuminates the world and all its matter in the very instant in which it offers up its representation.

Perception...

According to Beatriz Colomina, that we no longer experience architecture through direct engagement, but through its repsentations- that our perception is now tied to transience.' (Colomina, B.,1994, p.6) 'the point of view of modern architecture is never fixed, as in baroque architecture..but always in motion, as in film or in the city. Crowds, shoppers in a department store, railroad travellers, and the inhabitants of Le Corbusier's houseshave in common with the movie viewers that they cannot fix (arrest) the image.'

> 'Space and perceptual modes are inseparable today. We must explore the new space of our changing perspective dimensions. Emptiness is the key. Emptiness is the essential and dominant quality of the city today. The emptiness of traffic spaces while the light is red, the weekend emptiness of business zones, the emptiness of the tourist attraction in bad weather. It is the flux between incompletable patterns of built fabric, between good, bad, large small and indifferent architecture. Emptiness is a field awaiting the invention of appropriate codes of use. The first step is not to resist the sublime qualities of emptiness, to explore its scales, its frequencies, its grains. Then comes the possibility of interruption (stones thrown in the pond), permanent objects, stoppages that give measure to this geography of absence.' (Julia Bolles & Peter Wilson, Invisible in Arch. p. 330)

> 'The perception of our architecture does not happen through the perspectival image, through photography or video, but through the reality of the exhibition space itself. We annexate and transform this space, make it part of our architecture and then expose the observer to this transformed space. In this way the observer can experience our architecture in a spatial manner, can live through it in an almost physical sense.' (Jacques Herzog & Pierre De Meuron. Inv. in Arch. p. 330)

> 'Modern architecture was constructed on the paradigm of clear divisions of space-interior form exterior, environment from building, private from public, historic from contemporary- a strict order based on dichotomy. Yet what was lost to such dualistic articulation were the 'in-between' multivalent ambiguities, that is to say the human qualities harboured in fringe and median environments. I seek a new symbiotic architectural space, to reintroduce symbiotic spaces between exterior and interior, symbiotic ambivalences between nature and architecture, symbiotic multivalences between contradictory elements.' (Kisho Kurakawa Inv. In Arch. 1994, p. 330)

For centuries, space was treated as concrete and always thought of with time-adding a value of timelessness. When coming to the modernist ages, the modernist history understanding, we see, it decomposes/fractures time from space, and the history from geography. In the space based debates, we come across structuralism and postmodernism subjects. Structuralism approach sees space end product only and regards the social relations and its effects on architecture. Postmodernism debates have

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been generated in the discipline of geography together with the different branches such as space-time relations and identity debates.

If we talk about the space in postmodernism, space of postmodernism; we see space deconstructed, fragmented and a bit schizophrenic. And this postmodern space is a collage of the deconstructed, pieceful. According to Frederic Jameson, this deconstruction is a very basic property in our today's capitalism. Drastically, the results of all these deconstructions, politization of identity, schizophrenia, generate a new time-space and society. The perception of time-space has been dissolved and reduced/dropped to the material/ matter and natural events. According to Giddens, this dissolving of space-time are one of the causes of modernity's three basic paradigms; a standard calender system, a world map, one past/history have become the biggest effect in order to accept and spread globalization. When the dislocation of space has communicated among spaces, it has become phantasmagoric. Spaces are already getting affected by all effects which are although very far. With the advent of electronic communication technology, such as fax, TV, computer; space has been zipped. The place concept has been blurred. One of the questions we face is, the indefinite borders of the place. As a matter of fact, when we look at the discipline of architecture, we find as a result of the interaction of the spaces, not international, on the contrary, eclectic. As to reach the knowledge very easy, it serves the architect to face a big variety, complexity and contradiction, but in danger of being eclectic and unethical.

Today's space understanding is a bit similar to Lefebvre's statements/definition about space, so called mental space and abstract space. Lefebvre forms his mental space according to three elements; the person's life experience, perception of the surrounding, the multiplicity of space and its eternity. And abstract space, is formed by the principles of the Euclidean geometry. Abstract space is not homogenous space, but works for abstraction, organisation, deconstruction-aiming homogenization. In the beginning of the 20th century, abstract space had lived a serious shock. With the movements of cubism and surrealism, the euclidean geometry and the perspectival visual space had serious transformations, and became both heterogeneous and deconstructed. The cartesian, rationalist space has no longer lived, it has disappeared paralel with the world trade. Abstract space reduces volume to surface, and surface becomes totally visual.

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According to Lefebvre; 'Abstract space reveals its oppressive and repressive capacities in relation to time. It rejects time as an abstraction – except when it concerns work, the producers of things and of surplus value. Time is reduced to constraints of space: schedules, runs, crossings, loads. Time has disappeared in the social space of modernity. Economic space subordinates time, whereas political space eradicates it because it is threatening to existing power relations. The primacy of the economic and still more of the political leads to the supremacy of space over time.' (Lefebvre, H., 1989)

According to Virilio, space became disappeared with the rapid development in modern technological and political arrangement. For him, TV, fax, computer, road are all the vectors of speed. Speed changes the time-space relations but doesn't remove space. As a result of all this speeding, we all become informational.

Cartesian space was based upon figure, movement and it space. But the new space generated by the pixels, are called synthetic form-image by Virilio. Monitor replaces the place of geography, and space-time; distance exploded in speed. Perception is no longer driven by direct experience, but by a speedization, acceleration related with the density of light. Our loss of dimension is the dimension of daily, directly perception.

Today, speed expands time in the distance in which it shrinks space.

2. 4. 2. The Issue Of The Body

Existence no longer begins with the body while living in these postmodern times.

The contemporary times have created a real cult of the body. While material modernist body incorporates the world with all of its physical senses, the immaterial postmodernist body disappears in the city. These two separate processes of embodiment and disembodiment involve the fear and promise of quite separate technologies, each acting as a metaphorical device to illustrate what is at sake in this transformation from the modern to the postmodern space.

> 'Postmodernism has seen a complete structuring of the body/ machine relationship with the advent of the cyborg citizen who dwells in a post-gendered technological polis where machinic-desires drive cybernetic systems by artificial instincts and recursive feedback loops'.(Haraway, D. 1991, p.149-181)

For Toyo Ito, 'Architecture in the electronic age is the figuration of an information vortex'. People today are equipped with an electronic body in which information circulates, and are thus linked to the world through a network of information. 'This virtual body of electron flow radically changes family and community communication patterns while the primitive body in which water and air flow still craves for beautiful light and wind. The challenge for us is here how to integrate these two types of body.' (Ito, Domus 800)

In the 1960s, Marshall McLuhan said that our clothing and shelter are the extended form of our skin. Contemporary architecture must function as the extended form of skin in relation both to nature and to information. For Ito (Ito, Domus 800); 'Architecture today must be a media suit'.

The function's of one's body have been overlaid by a layer of the electronic body. Different perceptions are generated. Space and time generate new perceptions of the real.

> 'The whole architecture is, in fact, unconsciously invested by us with human movement and human moods...we transcribe architecture into terms of ourselves...this is the humanism of architecture'. (Scott, G. p.75)

Anthony Vidler asserts in *'The Building in Pain: the Body and Architecture in Post-Modern Culture'* that the classical ideal of architectural embodiment, in which a building drew upon the touchable body for proportional and figurative authority, was abandoned with the rise of modernism, and that consequently the current return to the body in postmodern architecture is to a different, post-humanist body, constituting an entirely different sensibility. *Vidler* argues that the post-humanist, fragmented body no longer serves to center or stabilize architecture but demonstrates a perceived loss or lack; it is a body manifesting psychological symptoms of alienation, schizophrenia, hysteria or nervous collapse. When projected onto architecture, the repressed corporeal body returns in the feeling of the extraordinary toward something which has been denied, so that the postmodern architectural projects of Bernard Tshumi, Coop Himmelblau, or Daniel Libeskind, for example, carry the strange signs of this absent body, and they receive the projections of pain, dismemberment, disembodiment. Vidler quotes Coop Himmelblau, who said in 1968, 'We want...architecture that bleeds, that exhausts, that whirls and even breaks...a cavernous, burning, sweet hard, angular, brutal, round, delicate, coloured,

obscene, voluptuous, dreaming, seductive, repulsive, wet, dry, palpitating architecture. An architecture alive or dead.' (Vidler, A. AA Files 19 spring-1990, p.8)
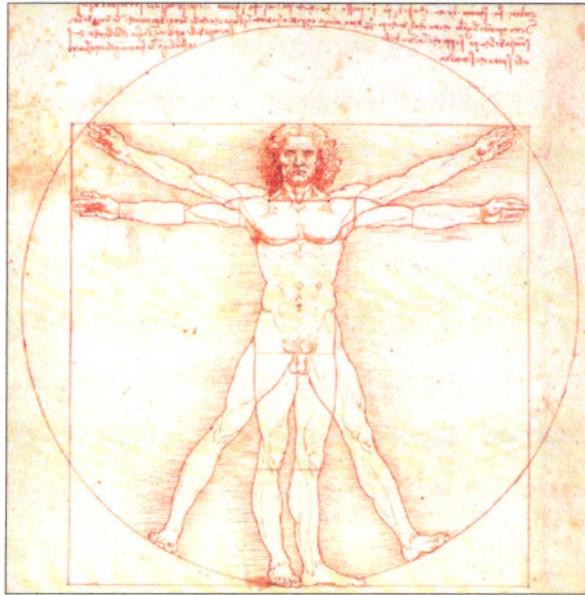
Fig. 2.2. Modular Man, Leonardo Da Vinci

In classical culture the body was the image of the absolute God. Vitrivian Man, the Golden Section, and modular man were formerly proposed as idealized icons of the antromorphic relationship of the body to architecture. It was on these figures of the human male body that proportions in architecture were based. However, with the development of genetic engineering, raised female consciousness have changed not only the traditional idea of the body but also how we inhabit a body. It also has suggested a new idea of the idealized body, by prosthetic devices. The questions should be how does this new body relate to space and architecture affect this new body?

As the technologies instrumentalize the body more and more deeply it seems that we lose the fullness of experience, touch the real. Hegel formulates the classical position as it has been re-elaborated from Vitruvius to Alberti up into modernity: The body is the only natural expression of the spirit; the building is an image of this body or actually an artificial body which represents the idea/type of the human body.

For Marx, the body is primarily the natural producer, of needs and of powers, and the body is social insofar as man is naturally a member of a species. For Foucault,

the body is the ultimate object/subject of power. Since the modern from of power grows from knowledge, and knowledge grows from power, power seeks knowledge.

For Merleau-Ponty, the body is a structure of relationships and therefore not ever separable from the world. They are intertwined and and thus the body can make sense before we know it.

Deleuze sets free both body and mind. The body becomes the field of multiplicity and plurality of intensities, of desiring machines obeying its own laws of machinic consistency. The sign, the forms are therefore now free floating abstract machines that can be found by intensities that are seeking to become. Felix Guattari and Gilles Deleuze in their works; Anti-Oedipus, A Thousand Plateaus; proposed a key notion: *'body without organs'*. [7]

> For Baudrillard, now we have the cloned body, body without an unconscious, body that is a 'rhizome, a metastasis', the final or total artifact produced by genetic engineering. Are we on the way to the physchotropic body, 'a body modelled from inside- without the detours via perspectival space of representation, of the mirror and of discourse…tactile body, body of the wild life that accepts the challenge of the universe, is about to disappear. The body is being made over into an obscene body (since one has more distance from it), an obese body, a body turned into a system constantly observed, reclassified, instrumentalized, and regulated. (Architecture and Body)

Despite its fallibility the body has gained in potentially critical importance because the death of God has, in Nietzche's words, freed it to interpret, and to evaluate life through life. The body undertakes the first announcement, the second is performed by mind/language/form by art. If the question why is the body of critical importance for a renewed discipline of architecture is asked, as Lyotard argues, it is the figure, the bodily, that has directly access to unconscious, to desire, to fantasy, to the body itself.

2. 4. 2. 1. The Virtualization of the body

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[7] They proposed a fragmentary theory of the body and of the productive flows to which the body gives rise in order to explain the relationship that links the productive energies of late capitalism. Felix Guattari and Gilles Deleuze 'Anti-Oedipus, A Thousand Plateaus'

'With the development of communications, internet and telepresence technologies we have been here and there at the same time. Reproduction, immunity against disease, the control of emotional states, all of which were traditionally private, have now become public, exchangeable, externalized. Like information, knowledge, economy, and society, the virtualization of the body that we are experimenting with today represents a new stage in the process of self-creation that our species sustains.... The organism is turned inside out like a glove. The interior appears on the outside, while remaining within. For the skin is also the boundary between the self and the external world. By means of telepresence and telecommunications systems, visible, audible, and sensible bodies are multiplied and dispersed outside us. As in the Lucretian universe, a crowd of skins or dermatoid specters emanate from our own body-simulacra'. (Levy, P. 1998, p.37)

Around 1990s, with the advent of the internet, international network system reached all over the world, has made an inevitable effect on the disembodiment of the human being. In this issue, the concept of identity is no longer determined by the body. (female/male) Since the body has lost its dominance, shared interest and communication succeeded.

Today's virtualized body encourages travel and exchange. Eyes, sperm, eggs, embryos, and blood have now been socialized, mutualized, and preserved in special banks. Blood becomes deterriolized flowing from body to body trough a international network in which we can no longer distinguish the economic, technological or medical components. In addition to the clonning the sheep Dolly, has brought the clonning of the human being to the agenda. In terms of this, the concept of the original has lost its meaning.

Each individual body becomes a participant in an immense hybrid and globalized hyperbody. Thus the body escapes itself, acquires new velocities, conquers new spaces. By virtualizing itself the body is multiplied.

According to Levy, 'the virtualization of the body is therefore not a form of disembodiment but a re-creation, a reincarnation, a multiplication, vectorization, and hetereogenesis of the human. However, the boundary between heterogenesis and alienation, actualization and commodity reification, virtualization and amputation, is never clearly defined.' (Pierre Levy, 1988, p.44) Here the body is the temporary actualization of an enourmous hybrid, social and technobiological hyperbody. The contemporary body resembles a flame. It is often tiny, isolated, separated, nearly motionless.

Dating from 90s, Michel Foucault's discourse about micropolitics in questioning 'The space as a political act', yet another, his notion among the body had also reached to architectural agenda in related to body (shell) and expression tools (structure). Whether these architectural investigations between shell and structure had reached to the Roman Period; these expressionist intentions to be used as a language has dated merely with the rise of modernism movement. However, in the Brutalist manner of the late period of modernism, the structures had been gathered in the exterior (facade) to be used as a shell. What was seen from the dates of 70s were the space based expressions. After this period, the notion of the shell which is never to create spaces, but to limit; has widely been accepted in the discipline of architecture.

Starting from the 90s, most of the debates taken up among the body have been developed around the concepts of virtual/cyber/hyperbody and simulacra. The results were the bodies came up off their structures, being transformed into surfaces (skin). As a matter of fact, correspondingly, its effects discerned in the architectural discipline was made up of surfaces. (For instance: Yokohama Port Terminal in Japan) In addition to the deconstructivist view aiming deconstruction as to decipher the politics lying beneath the space, body; from the 90s it has caused a fragmentation of space in the architectural discourse.
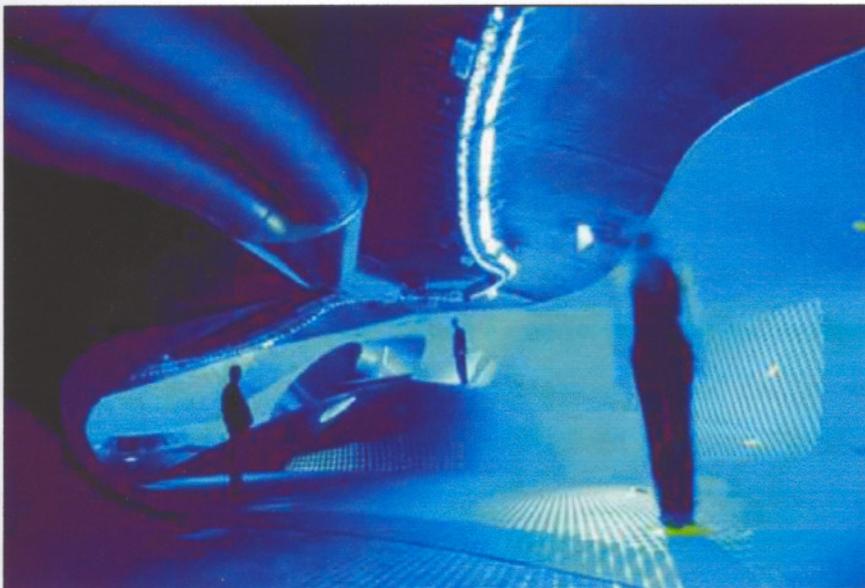
Fig. 2. 3. H2O Pavillion Competition Project by NOX
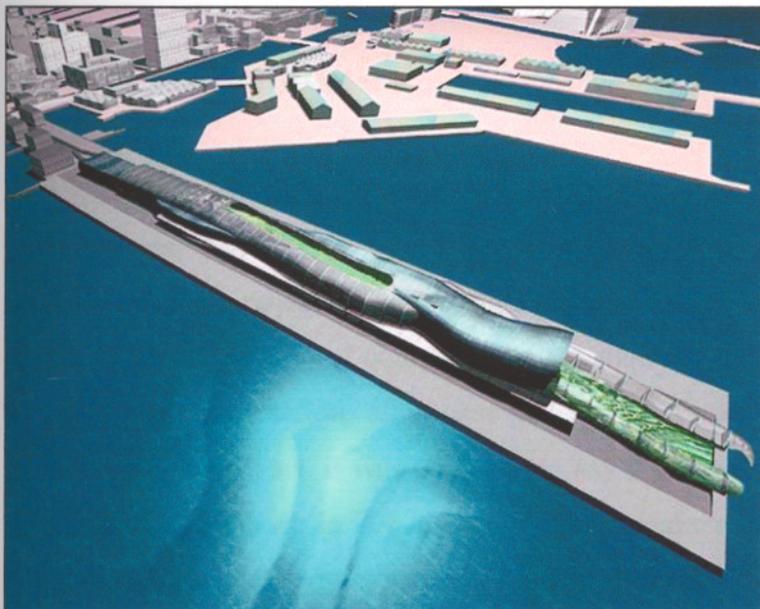
As a result, yet space/ body has no limits, horizon, totality; it has became free and survived as pieceful, partial; and has freed all of its ideologies uniting them.

Fig. 2.4. Yokohama Port Terminal Competitio+n Project, Greg Lynn,1994;
(http://www.archINFORM.de/start.en.htm)

Fig. 2.5. Yokohama Port Terminal Competition Project, Greg Lynn, 1994;
(http://www.archINFORM.de/start.en.htm)
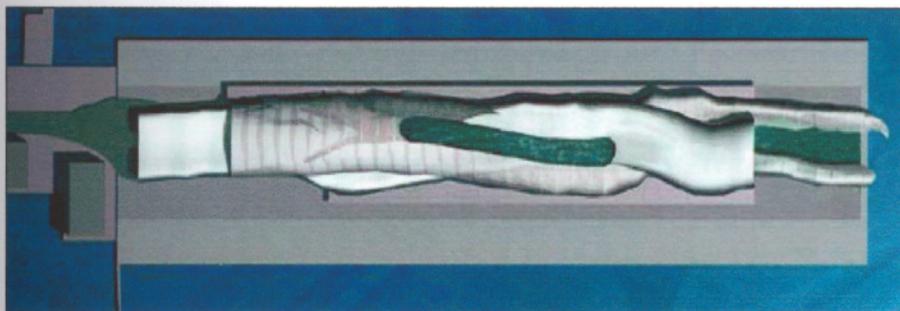
The plurality of rules and values associated with the body of architecture today as well as the changed conditions of the human body, present a crisis that in turn is an opportunity to consider how the discipline of architecture and the physical object of architecture can be rethought and reconfigured. Given the new attitudes toward the human body and toward the physical city, the question of how the body of architecture might be reconfigured can be asked.

2. 4. 3. The Issue Of The Art

Dating from the 70's, the loss of common behaviour and intelligence in art circumstances, had caused to be posed a platform among the artists' individual, subjective understanding and interpretation of the world. Up till now, art has been ruled by the society's widespread common interest, pleasure; but now individualism, the way of interpreting, abstraction, alienation gained importance. Even if this alienation had become dominant in art, it was probable to say that artists have had a tendency to the similar themes; such as; in 70s, perception and memory in the context of image/speed; in 80s, image; in 90s, body- with its full lateral meanings: identity, geography, structure, sexuality, skin-. Today artist, like the architect/designer, was able to acquire the origin of his sensibility from every point of the world. However, while having been formalized all these- relevant to the complexity of life-, it seemed to have chosen a ground for it; that is philosophy.

Together with the post-structuralism and deconstructivism tendencies; 90s were the years of west society's questioning among itself. From now on, west had accepted the products', thoughts of 'other' societies, regarded that as similar. Art had freed of its chains and has become interactive. The birth of this interactive art had generated new forms of art types. Such as installation, video performance art. This live experience had directly reached to the observer, and observer soon found himself in the place of the performer.

In the beginning of the century artists had removed the daily life objects, products (for instance: Marcel Duschamp's ready-mades) to the spaces of museum and had questioned the art institution. But today art had come back to our daily life among electronic media and technologies. While the thoughts of first media artists have perceived as radical position, today they had transformed into social reality. (telematic). The demands of 70's media art activists to form, create autonomous social form among telecommunication networks; lives among internet today. Art of media has formed its character in the structuring of interaction and participation. This new branch of culture within the context of development of social democracy, has generated radical thoughts and further taken up a position in the development of media technologies. With the

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words of Marshall McLuhan – media artists' propagandist and guru of 60s- 'to carry out new art form to community's cognitive maps', had formed a basis to generate new art theories. Electronic media artists have soldered new generated communication networks among the practices of technological model worlds with the electro-optic and electro acoustic tactile symbols.

> 'If men were able to conceived that art is precise advance knowledge of how to cope with the phychic and social consequences of the next technology, would they all become artists? Or would they begin a careful translation of new art forms into social navigation charts?' (Marshall McLuhan, 1994)

In ancient Greece the patron goddess of both science and art was *Techne*. From there comes the Greek word *Techne*, which means to create. And from her name the words technique and technology were derived. Over the last 2000 years science and art have gradually gone their separate ways, but once they both looked to the same source for inspiration-the will to create and understand the world. Today, art and science integrates to each other again. The effect of artists's work in changing the attitudes and perceptual filters of a culture makes for the insights and discoveries of its scientists.

> 'In the case of the visual arts, in addition to illuminating, imitating, and interpreting reality, a few artists create language of symbols for things which there are yet to be words…the radical innovations of art embody the pre-verbal stages of new concepts that will eventually change civilization…This collation leads to abstract dieas that only after give rise to descriptive language.' (Leonard Shlain, Art & Physics)

Computers and virtual reality are seminal inventions whose future impact we can guess at. How many people watching the first steam engines 300 years ago could foresee the Industrial Revolution and the changes to the world that would come? Only as artists explore the new electronic media will we get clues to the long-range potential for the changes it will bring to our lives. We're entering an age in which everything can be digitized and expressed in a computer as an object or environment with which we can interact. By the last half of the century, the techniques of representational painting had all been pioneered. Not only had traditional life, art styles and portrait painting been done to death, but a new technology had appeared that was quickly displacing them: Photography. Not only was it faster and easier to do, but reproductions of the original

undoubtly change the way we think about ourselves and the world, and will ultimately alter our understanding of reality.

2. 4. 3. 1. Music & Art

> 'When space existed as a separate category, architecture was the art of space; when time existed as a separate category, music was the art of time. The realisation of the deep relation between space and time as space-time, and the corresponding parallel relation between mass and energy, challenges the idea that architecture and music are separate, and prompts us to conceive of a new art of space-time: ArchiMusic. But while we can surely imagine such an art form, we have had no way to actually construct and inhabit the spatio-temporal edifices of that imagination. While our science examines microscopic and macroscopic regions of curved, higher dimensional space-time, we build within the confines of the small lots of what our limited sensorium can comprehend directly. Even though we depend on devices that rely on phenomena at these other scales, our architecture does nothing to help us form an intuition of the larger world we know through our theories and instruments.' (Novak. M. Liquid Architectures in Cyberspace, 1991)

> 'Architecture is frozen music.' (Schelling)

One may visualise music in the mind's eye as one listens to music with closed eyes. Architecture as notation in space, is compositions in space through music. The designer relies on music and other auditory signals as essential resources to create moods or feelings that establish the path/bridge between the real and the virtual and maintain the 'reality' of the new environment. We have already witnessed snapshots of fully edged 'cyber-spatial' creations during this century. The early modern artists such as Malevich, Kandinsky, Klee, Mondrian, Dali and Picasso constructed static images/forms of their worlds, fashioned out of unlikely combinations of a code consisting of familiar elements, such as cubism, surrealism and futurism. These images have the added advantage of embodying a meaningful crossing of expected conceptual and categorical boundaries. Bringing them one step closer to the doors of cyberspace.

Many aspects of twentieth century culture have come under the influence of scientific fashion. In art, modernism followed a trajectory of reductivism. It has been argued that the computer graphics is the last refuge of modernism, and certainly the art and technology movement of the late 60s and 70s subscribed to a scientist approach. But the wave of new critical theory of the 80s, particularly feminist and deconstructive

theory, and the acceptance of computer-based inductive proofs and simulations have weakened the claims of science to be objective and true, to be a master-discourse.

The new digital design media serve new territories for art. But they need reconsideration on both art production and consumption. The new design means new dimensions and capabilities of the new forms (interactivity, instantaneous multiple distribution, ephemerality) try to set up the generation of new, unmatched aesthetic models-yet aesthetic value has also been transformed into semiotics and used up, new ethical models, new institution, and new conventions of consumption.

Art in the information age, digital age, has melted in the virtualization; met with the electronic artists negotiate between the hand of traditional, institutionalised aesthetic discourses and the organic, emergent forms of social communication. Artist has come to a point that, with his brain, hands, spirit; also he has acted his art by his body. One of the first performance artists, Stelarc, [8] who makes of the surfaces of his body a theater of second nature- In his performances, his skin becomes the point of interface for relations to the technical. He appears strapped and wired to any and every device. Some are devices he controls through the movement of his muscles. Some are devices that control him shaking up jerks.

'Art can make the vertiginous leap into virtualization, which we so often undertake blindly and

unwillingly, perceptible and accessible to our senses and emotions. But art can also intervene in, or interfere with , the process. Isn't the fundamental architecture and design of our epoch based on the hyperbody, the hypercortex, the new economy of events and abundance, the fluctuating space of knowledge? Artists have been encouraged to express themselves only for a very short period in the history of art.' (Levy,P., 1998, p.185)
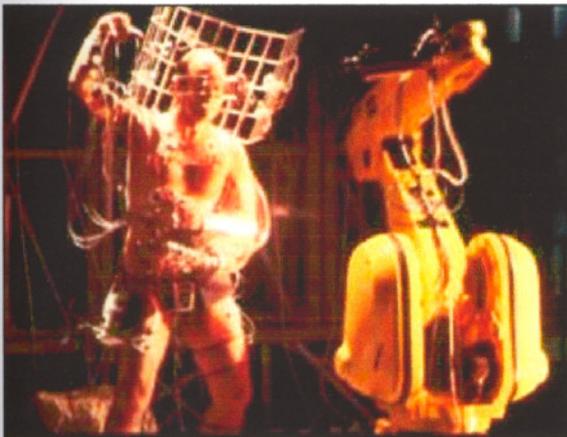
Fig. 2.6. Performance artist Stelarc (Anyone, 1996)

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[8] see for more information about the electronic body artist Stelarc in 'HAT', (1998: 001)

A new type of artist appears, one who no longer relates the course of historical events. This new artist is an architect of the space of events, an engineer of worlds for billions of future histories, a sculptor of the virtual.

2. 4. 4. The Issue of 'Real', 'Virtual' and 'Hyperreal'

'A tormenting thought; as of a certain point, history was no longer real. Without noticing it, all mankind suddenly left reality; everthing happening since then was supposedly not true; but we supposedly didn't notice. Our task would now be to find that point, and as long as we didn't have it, we would be forced to abide in our present destruction.' (Elias Cannetti (1978, 69) http://www.ctheory.com/a-pataphysics_of_year.html)

In our today's world where critical, radical, serious transformations occur, liberalization gain importance, we come across the concepts Hyper/ virtual/ simulacr not only in the field of architecture, but in every disciplines as well, together with the questioning of reality (how real is the reality?) serves us new ways, datas in the structure of the revolution in communication technology, increasing speed of communication (by means of introducing modems); a community of isolation/alienation of integration in the social order. In this chaotic, complex, and a bit shizophrenic situation the values we have lost their importance and meaning.

We live in a schizophrenic situation where the dominant reality is concealed behind an extremely visible, liberal pseudo-reality. The critical tradition is going through a crisis. The main problem of digital age is the *loss of reality*. This disappearance process starts with the industrialization in the 19th century and its radical changes in life. As the very emphasis of Walter Benjamin , until industrialisation, art- painting, sculpture- was considered to be static. But with the invention of photograph, it has lived its first chaos. These revolutional changes has showed us the effects on all the fields of life. (Industrialized production with prototype) And with the invention of cinema; image is no longer static, but dynamic, has a vector of speed and imitates the real life with its rhythm. The borders of the dilemma between the original-copy, has been deconstructed by the developments in digital technology after 70s. There is no longer an original or a copy. Every original can transform into a copy, and every copy can transform into an original. This is the loss of reality, totally. Digital/ computer technology speeds up the transgression to a different period which is called : *Hyperreal/*

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Simulacr period. With the words of Baudrillard, simulacr gets out of from the concrete, copy/original, is the production of the non-existed reality. Every produced virtual image/ narrative has been fragmented from its reality. This understanding generating cyberspace/virtual-space forms radical changes in our understanding the world. (It's so interesting that we watch (and accept) the films, music programs presented/performed by the totally simulated, virtual characters, artists on TV /cinema) The rapid development of digital technology has allowed the powers of cultural and political forces to reach a new level. The revolution in the computer technology has generated a new understanding of the world of power relations brought about by the information with its political and cultural forces. This new generated cabled geography is considered to be virtual rather than physical.

Undoubtedly, the idea of the virtual has not been brand new, on the contrary, virtual has always been used in abstract thought, games, science, science fiction films/narratives (Bergson's schema of the world -in Matter and Memory- is made up of two centers: Real & Virtual. The image in the memory, places in endless movement), and some visionary architectural examples -Archigram, Peter Cook, etc-. Today, we no longer experience architecture through direct engagement, but its representations. What appears most popular today in the fashion of architecture is the image, representation rather than function, structure.

> In *'The Work of Art in the Age of Mechanical Reproduction'*, Walter Benjamin argues that 'mechanical reproduction served to devalue the 'aura' of authenticity and authority of the artwork, yet it seems that mediation actually has something of a reifying effect when it comes to image. Things become 'more real' when endowed with the notoriety of reproduction and mass diffusion. To many architects, buildings do not even become real until published, and consequently, buildings are often designed with that mediation in mind. In some cases, the graphic flatness of buildings resembles nothing so much as an illustration of a building.'

> *Representation, the world of images..*

> 'What we have forgotten in modernity, by dint of constantly accumulating, adding, going for more, is that the force comes from subtraction, power from absence. Because we are no longer capable today of coping with the symbolic mastery of absence, we are immersed in the opposite illusion, the disenchanted illusion of the proliferation of screens and images.' (Baudrillard, J.1996, p.4)

We live in a time in which representation predominates over existence. People and things seem to be changing more and more into clones from the production lines of the representation industry. Representation slides into simulation. We are referring to a movement that aims to react against the prevalent simulation of a reality which if we do ever experience it as it really is, turns out to be false.

It is no mere coincidence that electronic media, advertising and the entertainment industries have a far better grasp of these new hyperreal experiences of time, space and place than do other disciplines, architecture included. This is because the principal concept through which these experiences are commodified and made consumable is 'image.' As images become decontextualized and liberated from the specificity of substance and place, they become free-floating and thus available for endless recycling.

> 'Now the image can no longer imagine the real, because it is the real. It can no longer dream it, since it is its virtual reality. It is as though things had swallowed their own mirrors and had become transparent to themselves, entirely present to themselves in a ruthless transcription, full in the light and real time. Instead of being absent form themselves in illusion, they are forced to register on thousands of screens off whose horizons not only the real has disappeared, but the image too. The reality has been driven out of reality. Only technology perhaps still binds together the scattered fragments of the real. But what has become of the constellation of meaning in all this?' (Baudrillard, 1996: p.4)

As the boundary between the true and the false is erased, it becomes possible to confuse what is virtual with what is real. The postmodern technology offers new modes of perception and opens new spaces for the imaginary. Whereas critics like Charles Jencks are lively about the postmodern experience, celebrating its pluralism and playfulness, Baudrillard is disgusted by it. At the centre of his disgust lies the discovery that reality no longer exists – that has become a fiction. The concept of an independent, objective reality was an assumption of the modern age that could not be sustained in the face of the technological and economic developments of the late twentieth century. According to Baudrillard, reality, like the Gulf War, is a simulacrum, a perfect copy that has no original. [9]

> 'Three processes of virtualization led to the emergence of humanity. The first is associated with signs: a virtualization of real time. The second with technology; the virtualization of

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[9] For Jean Baudrillard, the War That Did Not Take Place took place not on the deserts of Arabia; it took place on screens of the world's TV sets. It was a virtual war.

action, body, and the physical environment. The third process increases with the growing complexity of social relations'. (Levy, P. 1998, p.97)

The development of the media has allowed the sign and nature of the powers whom it serves and who serve it to reach a new level. Baudrillard sees the crisis of representation and of the referentials as symptoms of the pain of the real brought on by a capitalist system that no longer revolves around production or profit but which is based on the control of reality through the skin values and codes which it produces and reproduces. One power maintained itself by silencing the real through the signs it imposed on it. Now power searches out the real, immediately assigns signs to it, classifies it, and simulates it in all the sign media available. 'Reality is covered over by simulacra. Power needs to take over the real in this way in order to be 'legible' and 'legitimate'. This continuos re-production and recodifying of reality produces a kind of hyper-reality, a reality that brings us everything too close, too magnified, too real, a reality that moves in on us and smothers us with an unending assault of simulacra. 'Anticipation, deterrence, preventive transfiguration, etc...the model acts as a sphere of absorption of the real.' (Baudrillard, 'In the shadow of silent majorities', p.84)

'We oscillate between an illusion and a truth which are each equally unbearable. But perhaps truth is even more unbearable, and we ultimately desire the illusion of the world, even if we take up all the arms of truth, science and metaphysics against it. Our latent truth is that of nihilism, but as Nietzsche writes, 'truth cannot be regarded as the highest power. The will to semblance, to illusion, to deception, to becoming, to change (to objective deception) is to be regarded here as deeper, more original, more metaphysical than the will to truth, to reality, to being – the latter is itself merely a form of the will to illusion.'(Baudrillard, J. 1996: p.9)

'There is not more than one reality maybe, but it is absolute that there are millions of ways of perception of reality denying each other. Reality; is the function of integration and communication of all the perceptions.' (Vassaf, G.1992)

2. 4. 4. 1. The Issue of 'Real'

'In search of the new modernism, the relationship of the architectural profession to the problem of our age must be re-defined today. The role of architectural objects in the total emergence of the town must be looked at realistically. The new relationship of architecture to civilization can only proceed via the investigation of the phenomena of reality'. (R. Koolhaas, Domus 800, jan. 1998, p. 40-41)

'It is now being argued that being released from reality and all of its messy and uncontrollable chaos enables the virtual to recover reality, even while, paradoxically, it implicates a withdrawal from it.' (Castells, M. 1989)

'At all events, illusion is indestructible. The world as it is – which is not at all the 'real' world – perpetually eludes the investigation of meaning, thus causing the present catastrophe of the apparatus of production of the 'real' world, so true is it that illusion

cannot be combated with truth – that is merely to redouble the illusion – but only a higher illusion.' (Baudrillard, J.1996, p.18)

'The body, landscape, time all progressively disappear as scenes. And the same for public space: the theater of the social and theater of politics are both reduced more and more to a large soft body with many heads. Advertising in its new...dimension invades everything, as public space (the street, monument, market, scene) disappears. It realizes, or, if one prefers, it materializes in all its obscenity; it monopolizes public life in its exhibition... It is our only architecture today: great screens on which are reflected atoms, particles, molecules in motion. Not a public scene or true public space but gigantic spaces of circulation, ventilation and ephemeral connections.' (Baudrillard,J. 1983, pp. 129-130.)

The media images and mass communication has created countless new hyperrealities, not of the concrete and the enduring, but of the ephemeral, the virtual and the ever- changing. The condition we call 'postmodernity' may indeed be characterized by these radical transformations in the ways in which we think of time and space. Since time and space are the vehicles through which we perceive reality, as our perceptions of space and time change, so do our experiences of that reality. In the hyperreality of postmodernity, time and space seem paradoxically to be simultaneously absolute and relative. On the one hand, the smooth functioning of the global economic and commercial complexes require exact and absolute constructs of time and space. On the other hand, we experience more and more rapid communications and transportation and the demands for ever-increased growth and productivity in the workplace subjectively as a 'shrinking' of the world and a relativizing compression of space and time.

'For Gosse, matters are simple: reality exists on God's authority. But what can we do if that same God is capable of simultaneously creating the true and the false? In this case, what is there to guarantee that our world is not as false as the simulacrum of an earlier world? All of reality- present, past, future- suddenly comes into doubt.' (Baudrillard, J.,1996, p.25)

Reality is not the product of universal laws but of perception. Reality depends on your point of view.

'There are no facts, only an infinity of interpretations.' Nietzsche

'It is not, then, the real which is the opposite of simulation – the real is merely a particular case of that simulation- but illusion. And there is no crisis of reality. Far from it. There will always be more reality, because it is produced and reproduced by simulation, and is itself merely a kind of simulation. (the proliferation of reality)' (Baudrillard, J., 1996, p.6)

Reality has left the physical world and moved into the virtual one.

2. 4. 4. 2. The Issue of 'Virtual'

With the Virtual, we enter not only upon the era of the liquidation of the Real and the Referential, but that of the extermination of the Other.

> 'The otherness of death – staved off by unrelenting medical intervention.
>   Of the face and the body – run to earth by plastic surgery.
>   Of the world – dispelled by Virtual Reality.
>   Of everyone (chacun) – which will one day be abolished by the cloning of individual cells.
>   And, quite simply, of the other, currently undergoing dilution in perpetual communication.
>   If information is the site of the perfect crime against reality, communications is the site of the perfect crime against otherness.
>
>   No more other: communication.
>   No more enemy: negotiation.
>   No more predators: conviviality.
>   No more death: the immorality of the clone.
>   No more seduction: sexual in-difference.
>   No more illusion: hyperreality, Virtual Reality.
>   No more secret: transparency.
>   No more destiny.' (Baudrillard, J , 1996, p.110)

'The virtual is opposed not to real but to the actual. The virtual is fully real insofar as it is virtual.' (Deleuze, G., 1998, p.15)

The word 'virtual' is derived from the Medieval Latin *virtualis*, itself derived from *virtus*, meaning strength or power. In scholastic philosophy the virtual is that which has potential rather than actual existence. The virtual tends toward actualisation, without undergoing any form of concretization.

> If virtualization were nothing more than the transition from a reality to a collection of possibles, it would be derealizing. Virtualization is one of the principal vectors in the creation of reality. (Levy, P., 1998, p.26)

In the old world view- a paradigm shift that is dramatically transforming our understanding of reality – was the chief casualty is common sense. 'Whereas in the Newtonian picture of reality, human senses and intuition proved a good quite, in the abstract wonderland of the new physics it seems that only advanced mathematics can help us to make sense of nature.' 'common sense' was ever part of the Newtonian picture of reality. (Boyer, C. 1995) Common sense interprets the virtual as something intangible, the complement of the real, or tangible. For the virtual, it is considered to be 'not there'.

We can draw a close relation between the virtual and mirror. Mirror can be considered as a virtual environment. When a real object is reflected in a mirror image, the mirror contains behind its surface an object in a relation of inverted identity with the real object, existing in virtual space, the space behind the plane of the mirror. The mirror surface creates a virtual field that reflects the real, duplicating its spatiality and the object's visual characteristics. Gilles Deleuze identifies a extension interaction between the virtual and the real, as if the image could take the place of an object and force the object behind the constraints of the mirror's plane. Deleuze, in his writings on Henri Bergson and the time-image, affirms that the real is only functional as such, exits in time, through its immersion in and as the space of virtuality.

In his discussion of utopias and heterotopias Michel Foucault noted that there is a mirror standing between the utopian arrangements that have no real space but that reflect society in either its utopian or dystopian state, and the heterotopias that represent 'other' spaces, spaces set up to counter arrangements or to offer compensatory places from those that exist in reality. Foucault uses the body's reflection in this mirror to help define this mixed-up, in-between space. This mirror is then a utopia, a placeness place where 'I see myself there where I am not, in an unreal, virtual space, that opens up behind the surface;...a sort of shadow that gives my own visibility to myself there where I am absent...' (Michel Foucault 'Of Other Spaces', Diacritics 16, no:1, p.24) But the mirror is also a real place, a heterotopia: 'It makes this place that I occupy at the moment when I look at myself in the glass at once absolutely real, connected with all the space that surrounds it and absolutely unreal, since in order to be perceived it has to pass through this virtual point which is over there.' In the mirror we find projected the rational self, privileged over the subjective emotional self.

The mirror hung on the wall, the boy's problem solving in the film 'Good Will Hunting' show the metaphorization of meanings of the materials. The reflection to the outer world materializes in the portrait of 'I'. In the result of this interaction, there is no any difference between inside and the outside. Mirror makes superimpositions. While it makes multiplications, the chaos of the images become more realistic than the being/situation accepted as real.

The attraction of photorealism is the simulation of reality, creating an image with all its characteristics complete except one: its fixed relationship to what it depicts. It is the achievement of this level of simulation that shows how reality has itself become part of the artificial realm. 'Today reality itself is hyperrealistic,' wrote Baudrillard. 'Now the whole of everyday political, social, historical, economic reality is incorporated into the simulative dimension of hyperrealism; we already live out the 'aesthetic' hallucination of reality. The old saying, 'reality is stranger than fiction' has been suprassed. There is no longer a fiction that life can confront, even in order to suprass it; reality has passed over into a play of reality.' (Benedikt, M. 1991, p.209)

The term of virtual reality attests to a phantasmatic extension to save not the real but rather will, desire, mind, beyond body and matter: this is a real not quite real, not an actual real, a really real but a real whose reality is at best virtual. The relations between the virtual and the real prefigures and its entwined with a whole series of other oppositional terms, among them, mind and body, culture and nature, origin and copy. Just as the seperation of the body from mind has long been the regulating fantasy not only of the philosophical scheme but of those practices (including architecture) based on the privilige of its terms (reason, order, truth, light, vision, etc.), so too the relation between the virtual and the real, while generated from a history of philosophy, has extensions everywhere, form the most global of public spaces (today: the global space of broadcasting) to the most familiar of personal spaces (the space of individual inhabitation, production and pleasure). It is the task of architecture, among other things, to negotiate how these spaces are to link and exist in contiguity with each other and how we are to inhabit them in times to come.

We can change the title of the book of Ilya Progigine that 'All that is solid melts into air' as 'All that is solid melts into information'. For Novak, after modernity, virtuality comes. 'Between modernity and virtuality, transmodernity. As we all know, definitions, disciplines, instituitions have all become unstable and inadequate, and everywhere there are re-evaluations of the structures by which we comprehend the world. These changes are not formless. They are characterized by the aspects of the metamorphic change clustered under the prefix 'trans': transformation, transmutation, transgression, etc. Everywhere present, this kind of change is most evident in the structures of our quest for knowledge. In-between modernity and virtuality spans the transversal link we are crossing: transmodernity.' (Novak, M.AD)

The theme of the virtual is illustrated as something 'not- there'. Imagination, memory, knowledge, and religion are the vectors of virtualization that have enabled us

to leave this 'there' long before the appearance of computerization and digital networks. While developing this theme, it can be indirectly pursued a polemic against the Heideggerian philosophy of 'being- there' (dasein) which primarily signifies existence. However the fact of not being associated with any 'there', of clinging to an undistributed space (the one in which telephone conversations take place?), of occuring only between things that are clearly situated, or of not being only 'there' (like any thinking being)- none of this prevents us from existing.

> 'Virtualization is always heterogenesis, a becoming other, an embrace of alterity. We should not confess heterogenesis with alienation, its intimate and menacing opposite, its enemy sister, which I would characterize as reification, a reduction to the thing, to the 'real''. (Levy, P., 1998, p.34)

Today what lie in the heart of discussions in technology is the virtualisation of reality, the culture that is undergoing the virtualization of reality through modern technological media such as television, video, fax, moderms, etc. which lead to space and time shrinking till they eventually merge in an ultimate simultaneity. This development has enourmous implications for architecture that has traditionally been understood as being the bringing together of space and materials in the context of time. In order to establish its position in this process it will have to give an explicit account of itself. It follows that the virtualising of reality also has enourmous implications for how we experience reality.

> 'The boundary has become virtual. In many of my projects you enter from below like a spaceship. The door in the sense of a door-tool is physically eliminated. You take an escalator and suddenly disappear. There is no more door, only flowing movements.' (Nouvel, J. Invisible in Architecture, p.323)

> 'There is yet another dimension that is important and that is ubiquity, being everywhere at once; this had to do with the wonder one feels for the faculty of perception as a function of speed. In the project in Nogent sur Marne, for a nightclub, this is very revelant because an extensive video system has been installed there. Inside and outside are simultaneously present; what is more, our eyes see both the reality and the film. In the end, you no longer know where you are. The space has become virtual because all that one sees is in fact a space which people imagine they have made their own.' (Nouvel, J. Invisible in architecture, p.325)

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'We are in the speeded-up phase of that movement where all 'real' things are in a hurry to live and die. We are in the –perhaps interminable- phase of hysteresis of the real, or remanence of the shreds of reality in the immense virtuality which surrounds them'. (Baudrillard. J.,1996, p.314)

2. 4. 4. The Issue of 'Hyperreal'

'Hyperreality is a reality constructed and artificial- but with the full awareness of the participants in this reality. It is a reality that exists while at the same time negating (or even denying) other realities, but the fact that the participants (and creators) are self-conscious of its artificiality opens numerous possibilities for paradoxes. Hyperreality is a place (or area, domain, field, etc.) where all the paradoxes meet and co-exist, side by side. The paradoxes are made obvious (apparent) through media – and this is something that clearly distinguishes the hyperreal from the end of the 20th century from the surreal or any similar concept. The media input enables people to see (and become aware of) themselves as others. The nature of contemporray technology (Netscape, film, TV, video) makes this imagery extremely widespread (especially in the 'West'). It also makes all the paradoxes of the contemporary world more apparent.' (Aleksander Boskovic, 'From Hyperreality to VR')

Baudrillard began his classic essay on postmodernity, 'Simulacra and simulations' with a quote form Ecclesiastes: 'The simulacrum is never that which conceals the truth – it is the truth which conceals that there is none. The simulacrum is true.' Baudrillard commented, 'Simulation is no longer that of a territory, a referantial being or a substance. It is the generation by models of a real without origin or reality: a hyperreality.'

Baurillard's hyperreality: 'When the real is no longer what it used to be, nostalgia assumes its full meaning. There is a proliferation of myths of origin and signs of reality; of second-hand truth, objectivity and authenticity…and there is a panic-stricken production of the real and the referential.'

Simulation pretends to possess power and reality which it sucks out of life; it is the extreme of a representation performed by weak, mean and reactive powers. Today the real is taken prisoner by simulation. Meaning and communication have been hyperrealized.

'Discovery of space coming after the discovery of earth is something equivalent with the disappearance of the humanity's own reality or extending him into the hyperreality of the simulation. The two rooms and a kitchen placed in the space craft to the moon, and thus as we can say, being added a value of space coefficient, are the best evident of this. We witness an ordinary, earthy space being added a cosmic value –the real satelliting in the deep space-. This means the end of phantasm, and science fiction. The name of the new era is the hyperreality age'. (Baudrillard, J., 1998)

'Simulation is always much more effective than the reality.' (Baudrillard, J.1998)

'The fantasy has moved out of the history with the simulation. Here the name of the thing that disappeared is the metaphysics. From now on, there is not a being with its various images; a reality with a mirror (metaphysics) belong to real. Today the real is produced by the miniaturised cells, matrixes, memories, and remote control models. Because of this, it is possible that the real produces the real in numerous ways. The real has become operational. However, this is not the real; because it is lack of its phantasmagoria. It is the hyperreal, that tries to spread a light of combinatuar models which is produced sentetically without an atmospheric situation in a hyperspace.' (Baudrillard, J. , 1998, p.12)

Disneyland...

Disney is the world that 'perfect model of all entangled orders of simulation.' Disneyland is presented as imaginary in order to make us believe that the rest is real, when in fact all of Los Angeles and the America surrounding it are no longer real, but of the order the hyperreal and of simulation.' Baudrillard's argument is that California's Disneyland, like all theme parks, is there as an alternative for a diminishing sense of reality- indeed, to reinforce the sense that there really is an earthwork surrounding the imaginary and preventing it from bleeding out into reality. Umberto Eco writes in '*Travels in Hyperreality'*, about Disneyland tells us that 'technology can give us more reality than nature can.'

2. 4. 5. The Issue of Private- Public Space

In the process beginning with modernity, space produced and transformed by the individual, has become constant, stable and static. Since this situation became a problematic, the discussions among identity, genuis loci, and place has come up to the agenda. The traditional public space we know, pyhsical constructions such as streets, public squares, etc. have all become virtualized (chat programs, knowledge terminals). The new public spaces defined physical, are seen as big shopping malls, multifunctional spaces. However, these spaces with the possibilities they present, in return of the individual being kept in a closed, controlled space (by means of video cameras, controlling devices raise the question of panopticon) so as to control the individual in a maximum time, have become public bazaars expecting maximum consumption.

Individual, with the loss of private space (that is house is buried away from the feeling of place/ genuis loci and become anonymous. It became transparent as to be

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readable from the exterior. In this situation the individual defines its private space among his/her body), finds an opportunity to publicize with the people only in the weekends (a life defined and arranged by the working hours). However this so called meeting/ interaction is not a direct communication/touch, but rather depends on panopticon and aims to become a piece of the whole which have a partnership in only consumption. The individual has lost his/her private and semi-private spaces, and has defined its being in terms of an activity transforming from life to experience.

> 'There is an interior, but no outside. This is the space of twentieth century communication'.
> (Colomina, B., 1994, p.229)

With modernity the interior ceases to be simply bounded territory in opposition to the outside, whether physical or social. An analysis of the status of the house in Loos and Le Corbusier could be used to outline more precisely the transformations of the relationship between private and public space and the wind of boundaries between inside and outside influenced by the emerging reality of the technologies of communication: newspaper, telephone, radio, film, and television.

> 'Aside from deterritorialization there is another characteristic often associated with virtualization: the transition from interior to exterior and from exterior to interior. This 'Moebius Effect' takes place in several different registers: between public and private, personal and shared, subjective and objective, map and territory, author and reader, etc.'(Levy, P. 1998, p.33)

Today, the limits of interaction are no longer self-evident. Place and time blend together. Clear borders give way to fractalized divisions. The concepts of public and private are called into question. The transition from private to public and the reciprocal transformation from interior to exterior are attributes of virtualization that can also be analyzed from the point of view of the semiotic operator. What was internal and private becomes external and public. With the advent of communication technology, capitalism, postmodernism, urban landscape, so both public and private spaces has some transformations. Today, there is less public space in the traditional sense. Standing between the private and public spaces, semi-public spaces (spaces like; bars, restaurants, dance clubs, shopping malls..etc) gained importance. In the big cities, metropolisis, we see the increasing amount of complex, united semi-public nets, which give us strong but ephemeral experiences. Similar to that concept, Bernard Tschumi

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proposes a new space concept generated by events and different united programs. His other additional concepts 'in-between' and cross-dis-transprogramming, he tries to intensify the rich collision of events and spaces in order to reach the possibilities of flexibility and transformation. Tschumi uses about this transformation the word, heterogenization; heterogenization of architecture- space, action and movement- makes it into that event, that place of shock or that place of the invention of ourselves. The consumerism, late capitalism has left traditional public space to the integrated, united, complex consumerist spaces such as, shopping malls, supermarkets, entertainment parks, parking garages, etc. (this is why Akmerkez is very popular in Istanbul).

The invasion of the world, by what Marc Auge calls 'non-space', results in a profound alteration of awareness: 'something we perceive, but only in partial and incoherent manner.' Auge, in his book, 'Non-places; Introduction to an antropology of supermodernity' to describe the logic of the late-capitalist phenomena, a logic of excessive information and excessive space. Starting with an attempt to map the distinction between place, related with historical monuments and creative of social life and non-place, to which individuals are connected in a uniform manner and where no organic social life is possible. Auge doesn't suggest that supermodernity is all encompassing; places still exist outside non-places and tend to reconstitute themselves inside it.

All this consumerism, capitalism, have led the relations between building and exterior in an extended, marginal way. For instance, whether in some Japan and American cities, buildings, office buildings have become more introverted, isolated; private houses acts as the opposite; with the introducing the great use of glass material, they have become transparent and readable from outside as well. Inside and outside disjuncts/ confuses. '...as in the case with computers or other complex machines, there seems to be no relation anymore between the interior and its immediate surroundings. Spectacular public buildings like those in Japan by Philip Stark, and Shin Takamatsu stand there like gigantic, enigmatic household appliances, independently plugged into the city's largely invisible infrastructure.' (Lootsma, B. 1998, p.116-123) They seem to be located temporarily.

One of the good examples of semi-public spaces is the 'Schouwburgplein' by Geuze and West 8 in Rotterdam. It is a large void on top of an underground garage

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which is surrounded by the theater, concert hall and a big cinema. 'Geuze transformed the square into a gigantic stage. A quartet of movable, hydraulic lightning masts 35 meters tall change their configuration every hour. The general public can also change the position of the lights by inserting a coin. The lamps temporarily transmute the public space into a private territory. Whether inspired by one of the surrounding theaters or cinemas, momentarily, it is the theater where they perform, and it could be the stage for marvellous scenes extending far into the night.' Adriaan Geuze explains that 'new public space will manipulate its users to the extent that they will immediately be aware of their behaviour, that they can no longer rever to preprogrammed acts...This space transforms anonymity into exhibitionism, spectators into actors. It is not a matter of design, of the beauty of dimensions, materials and colours, but of the sensation of a discrete culture created by the urbanite. (Lootsma, B., 1998, p.121)

Chapter 3

CONCEPTS

At the end of the century, the debates are focusing on the future. The positivists predict the betterment of living conditions through scientific and technological developments, an ideal democracy and economy brought about by network communication and information. The pessimists argue that this overflow of information confuses the individual more and more and will create an incapacity of perception and understanding. They further predict that as the fragmentation and alienation grows, the media and the commodity powers will control the social and cultural sphere. Without a doubt, people are aware that living conditions, knowledge and consciousness are all due to change. Even those who are still living in premodern conditions are exposed to alterations which they cannot easily understand. One can either remain a consumer, losing critical potential and imagination and being a simple observer, or one can take the problem into his/her hands and control, define, design and configure both the present and the future; the present and the future can still be controlled and designed by way of visionary thinking, imagination and action. Architecture and contemporary art are two of the realms in which we can see the structures and objects conceived by the visionary mind. At the end of this century, architectonic monuments and contemporary artworks have become sources and end-products of accumulated knowledge, of functional and structural interrelation and of inter-disciplinary co-operation. They are becoming instruments for reenlightment. These minds are continously reexamining and reinterpreting with the goal to design and construct intelligible metaphors and models of changing global situations. They are implying a new process of understanding, learning, experience and decision. These minds are creating new concepts that has a tremendous impact on reshaping the society as well.

So, today what we face at the end of the century, is the cyberspace and virtual reality concepts drastically effecting our everyday of life. The concepts of 'Virtual Reality' and 'Cyberspace' came about at approximately the same time during the literary 'cyberpunk' movement started. Since then, the two concepts have been so closely connected that many people seem to think they are identical. Virtual reality is

simply the idea of simulating a three-dimensional 'reality' within a computer architecture, using sophisticated electronics to allow a person to interact within this false world in a way as similar as possible to the corresponding actions in the real world. Cyberspace, on the other hand, is the term for the non-existent world on the other side of the computer, the world of programs, data, interconnections, and hardware. In most of the cyberpunk literature, cyberspace has been accessed by the character through a virtual reality interface. In the rhetoric of the virtual realists, this 'nonspace' was not simply a mathematical space nor a fictional metaphor but a new frontier, a very real one that was open to exploration and, ultimately, settlement.

Fig. 3.1. A Film Terminator, Judgement Day, 1995 (http://www.hollywood.com)

3. 1. Cyberpunk

Cyberpunk was the name given to a group of science-fiction writers in 1980s. This movement, driven by the writers interested in the subjects of low life standard and high technology, had also been known as with different names such as, 'Image on the Mirror', 'Radical Science-Fiction', 'Waves of 80's', 'Movement', 'Anarchic Technologs', and 'Neuromentics'. In this movement, the most repeated theme is based on the integration of two different worlds: high technology and modern pop underground world. In the cyberpunk literature two themes come up; one is, prosthetic arms and legs, operational implants, genetic coding, artificial intelligence, neurochemistry are all the products of this movement. Second theme is, the widespread usage of electronic networks all the over the world and deconstruction/ displacement of space and time with the tricks of multinational companies. Cyberpunk raises the usage of technology, becomes a prophet of it and we face with it in the streets where high technology meets with pop underground. The so-called technology is used whether for positive aims or negative aims, but absolutely eclecticism circulates inside. However, the content of the term grows, and the word cyberpunk is getting to be used to express aesthetical sensibility and a certain life style. This sensibility finds its best expression in

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popular films such as Blade Runner, Mad Max 2, Robocop. We can come across the term also in graphic novels, such enclosed spaces for video games, theme parks. Elements belonging to very old, although primitive ages, integrating with aesthetics and eclecticism, is a widely repeated theme dominating the world's youth culture. In the mid of 20th century, science fiction had served/ emerged various future possibilities before us. However, cyberpunk studies the future now we live in.

Fig. 3.2. A Film 'Lawnmover Man', 1993 (The first independent cinema example: virtual reality has been presented to the cinema with the film 'Lawnmover Man')

In Earth/Cybertech Sourcebook, Lester W. Smith gives a compact definition of cyberpunk: 'Cyberpunk is the term given to a particular genre of 20th-century science fiction. It is coined from two different words: 'cybernetics' the science of electronic, mechanical, and biological control systems and punk referring to modern street culture. The sense of the combined term is of ultratechnology grafted onto the culture of the street. The theory is that technology is changing so fast that each new discovery is old news before we have even had a chance to consider its implications.'

The heroes of cyberpunk are such the bionic fighters, rock-and roll anarchists and technological revelationists, so as their ideals and aspirations will in large measure be the foundations of both presence and form in the architecture of cyberspace. For although the vernacular is well fixed in the cyberspace many of the ideas and creations of the science fiction of cyberpunk will find their way into the reality of common cyberspace.

3. 2. Cyberspace

'Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from the banks of every computer in the human system.

Unthinkable complexity. Lines of light ranged in the ~~
constellations of data...' (William Gibson, Neuroman~

alfway between

This is the cyberspace, described in Gib~   s of social

Cyberspace was first coined by William Gibso~

known as: the 'Net', the 'Web', the 'Matrix'. But as ~

talks about the radical transformations occur in the com~   nd

Cyberspace is a networked sustained computer memory, telecommu~

virtual space.It is, on one hand, telephone network throughout the wor~

communication computer networks, interactive cabled-TV and ISDN; on the ~

hand, an emerging environment created by the internal quantum space of the microchip

and electromagnetic and digital-optical storage technologies. Cyberspace is an emerging

environment created by the internal quantum space of the microchip, and

electromagnetic and digital-optical storage technologies. The basis of cyberspace

infrastructure has been grounded in 1830s –with the development of electronic

telegraph. Morse alphabet with its points and curved lines, has generated a double-

coded knowledge network. The developments in cyberspace technology stems from the

integration of computer systems into telephone lines. It is related with the direct

engagement of the lines with the system. Cyberspace, with the help of fibre-optical

cables, super data-roads, like as the worlds of McLuhan thirty years ago, has become

integrated to our central nervous system day by day.

Telecommunication networks; as the foresight of

McLuhan, will soon deconstruct the distance,

language and time handicaps, and generate a sudden

developed, brand new global village. Cyberspace is

presented not only as a place but also as a movement,

a frontier where a populist surge showing where

culture is going.
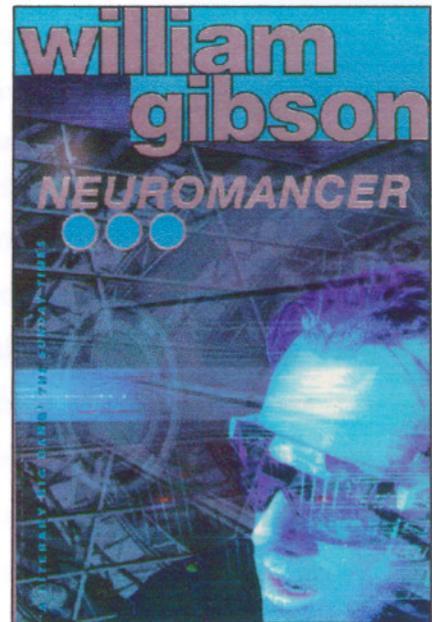
Fig. 3.3. Cover of the Book 'Neuromencar', Gibson, W., 1988

There are many descriptions made about cyberspace such as;

'The mutual connective fabric of the conceptual universe. An encounter halfway between here and not-here. Can be visual, acoustic, or conceptual.'

'A community linked through electronic media, experimenting with new forms of social organization.'

'The universe next door.' Henry W. Targowski (in Mark/Space , 1994).

'A new universe, a parallel universe created and sustained by the world's computers and communication lines. A world in which the global traffic of knowledge, secrets, measurements, indicators, entertainments, and alter-human agency takes on form: sights, sounds, presences never seen on the surface of the earth blossoming in a vast electronic night.' (Michael Benedikt , Cyberspace: First Steps, 1991, p.4)

'Cyberspace is a new form of perspective. It does not coincide with the audio-visual perspective which we already know. It is a fully new perspective, free of any previous reference: it is a tactile perspective.' (Virilio, P., 1996, p.7)

When William Gibson, science fiction writer, first used the word 'Cyberspace' in his dynamic vision of the digital future, found in the pages of Neuromancer (1984) and Count Zero (1987), he was referring to a new type of parallel universe brought to life and supported by the world's computer banks and networks. His futuristic visions of a new mode of reality are rapidly leaving science fiction and becoming real science. Gibson described it as a 'consensual hallucination'. It is the ultimate extension of daily life. It was a fictional rendition of Ivan Sutherland's original concept of the 'ultimate display', a form of display that presented information to all the senses in a form of total immersion. Gibson had extended Sutherland's idea of a 'looking glass into a mathematical wonderland' to embrace the entire universe of information: 'A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights receding.' There are some phrases used synonymously with cyberspace: cyberia, virtual space, virtual worlds, dataspace, the digital domain, the electronic realm, the information sphere. We can examine its etymological entrails for meaning –'cyber', meaning steersman, coming from 'cybernetics', the study of control mechanisms- but that yields very little. Cyberspace exists through electricity, its fabric woven in binary code. The content can be described as any piece of data that is represented digitally. Its limits are circumstantial, in so far as it can be produced, stored and supported by singular or networked digital processing systems.

The word 'Cyber' comes from the Greek 'Kuber' meaning to navigate. Cyberspace can be seen as a space navigated through using digital technology. Through this dissertation Cyberspace is primarily referring to digital environments. These digital environments can be visualised and experimented with on today's PCs (Personal Computers), using the internet and specialised audio-visual-responsive software and hardware. In cyberspace there are no physical constraints to dictate the dynamics or spatio-temporal qualities of the portrayed virtual space. Gravity or friction does not exist in cyberspace unless it has been designed and implemented. When representing real world using the computer, all geometrical models of objects are designed in three-dimensional Cartesian space. However cyberspace is not limited to three dimensions, since any two-dimensional plane or point may unfold to reveal another multi-dimensional spatial environment. Interactive visualisation of data sets represented in four or higher-dimensional spaces are possible in cyberspace. There are no ground rules concerning scale consistency in a virtual environment. Furthermore, the scale of the environment, relative to the user or viewer, may be altered at will. One can transform in size, in relation to each level of the environment, from a geographical level to the level of the smallest thing. In this way, one can experience all levels of information directly and with differing insights to the experience of level of things in physical space. Cyberspace can be non-continuous, multidimensional and self-reflexive; the structure of spaces can be hyper-textual. In general, all principles of real space may be violated in cyberspace and the characteristics and constraints are only determined by the specifications that define the particular digital space.

'Cyberspace; accessed through any computer linked into the system, a place, one place, limitless, entered equally from a basement in Vancouver, a boat in Port- au-Prince, a cab in New York, a garage in Texas City, an apartment in Rome, an office in Hong Kong, a bar in Kyoto, a café in Kinshasa, a lab on the moon.' (Benedikt, 1991, p.3)

Howard Rheingold claims that the cave paintings at Lascaux in France were 'Primitive but effective cyberspaces', because they were used to create a '3-D sound and light show' that was possibly used to 'imprint information on the minds of the 1st technologists'. (Benedikt, M. 1991, p.243)

A commonly held understanding of the virtual in relation to space is the notion of cyberspace, an electronically generated alternate reality. Based on Cartesian notions of the virtual as opposed to the real (physical), it attempts to imitate the real or the physicality of space (architecture) through a technologically generated virtual. It is

important to articulate an alternative theory of virtuality in architecture that is not based on the notion of virtual reality as a simulacrum of reality or as a simulation of physicality of architecture.

Over the past few years, the concept of cyberspace has been effecting everyday experience: there has been a deep interest of TV programmes, journal articles, interactive arcade games, whilst firms such as VPL, Ploehemus, Sun Graphics, and Autodesk in the States, and Division, Dimension, and W Industries in the UK have been designing virtual systems which have infinite applications for education, health, defence, scientific research and entertainment. The term cyberspace invokes a range of notions - electric communications as environment, context, domain, universe, background, medium, setting, situation, territory, area, region, province, sphere, system, realm, location and site.

> 'Cyberspace is a medium that gives people the feeling that they have been transported, bodily, from the ordinary physical world to a world purely of imagination.'(Virtual Spaces, Real Histories, Living Bodies)

In cyberspace data is decomposed or 'liquified' as it is digitally transposed from one medium to another. In this abstract world the building blocks are 'bits' rather than atoms. Using software to order and reorder them, it becomes possible to recreate digitally artificial versions of our physical reality and to construct dreamscapes: imaginary worlds at human scale, or at any desired scale, and with all the traditional notions of reality and conditions of human perception. Moreover, with the aid of the computer, it also becomes possible for us to recreate ourselves and to enter cyberspace and to interact with this digitized environment as freely and directly as we would in the real world.

Karl Popper (1972), one of this century's greatest philosophers of science, included both physical space and cyberspace as the World 3 in the 'three worlds' framework. This world, he said: 'is the world of objective, real and public structures that are the not-necessarily-intentional products of the minds of living creatures, interacting with each other with the natural World 1'. (Benedikt, 1991) Popper also noted that many aspects of this World 3 are abstract, purely informational: '....forms of social organization, for example, or pattern of

communication.' (Benedikt, 1991,p.9) World 3 entities and spaces are things he could examine, evaluate, criticise, extend, explore, and indeed, discover. They could evolve just as natural things do, or in ways closely analogous. For Popper, in short, temples, cathedrals, marketplaces, courts, libraries, theatres or amphitheatres, letter, book pages, movie reels, videotapes, CDs, newspaper, performances, art shows... are all physical manifestations - or, should one say, the physical components of - objects that exist more wholly in World 3. They are 'objects,' that is, which are patterns of ideas, images, sounds, stories, data..... patterns of pure information. And cyberspace is nothing more, or less, than the latest stage in the evolution of World 3, with the ballast of materiality cast away - cast away again.'

Cyberspace and virtual reality appear to bring within our grasp the dream of no longer having to experience a film or a scene as a passive observer but being able to join the action, thus transforming architectural fantasy into reality, or reality into fantasy. Is cyberspace an exact replica of the real world, or is it the ideal opportunity to imagine new architectural fantasies? There is by no means a conclusion.

3.2.1. Cyber-architecture

> '...And we can in our thought and imagination contrive perfect forms of buildings entirely separate from matter, by settling and regulating in a certain order, the disposition and conjunction of the lines and angles.'
>
> Leon Battista Alberti (Ten Books of Architecture)

A new architecture is being conceived in cyberspace by the global cooperation of a world community evolving new ideas by modelling ecologically responsible environments and using the computer as an evolutionary accelerator. The emphasis has moved from product to process as Buckminister Fuller, John Cage and Marshall McLuhan all foresaw; and it has moved from forms, to forms in their environment, to the relationship between forms and their users. This paradigm shift will change our understanding and interpretation of past architecture.

> 'We are experiencing an extreme liquidising of the world, of our language, of our gender, of our bodies: a situation where everything becomes mediated, where all matter and space are fused with their representations in media, where all form is fused with information. We are shifting from matter to substance, from solidity to grain and resolution. The liquid in architecture has previously been associated with the easing back of architecture for human needs, of real-time fulfilment. But this soft and smart technology of desire can only end up with the body as a residue, where its first steps in cyberspace will probably be its last steps altogether.' (Lars Spuybroek AD Vol.68 Architects in Cyberspace 2 nov-dec 1998)

Until the process of building a particular structure is underway or completed, the drawings and sketches which the architect has produced through the design of any spatial environment can be thought of as an abstract representation of an imagined reality. These drawings therefore can be thought of as simulations of mental models of that environment. Cyberspace, experienced directly in three-dimensional space, can be seen as the nearest simulation of the architect's mental models. When one is designing architecture, one requires knowledge of structure, construction, material, environment, social, economic and human factors as well as organisation of three dimensional space to name a few factors. When one is designing Cyber-Architecture, one requires knowledge of hardware, software, visualisation, interface, environment, planning, event managing as well as organisation of multi-dimensional spaces.

Architecture and design tend to follow the key technologies of their period. This is why the Empire State Building has a zeppelin mast on top, and in the 1930s people used to make streamlined toasters, or peculiarly aerodynamic supersonic jet-age coffee-tables in the 1950s. Sometimes new architectural styles appear from nowhere as a mystical spark of inspiration from the mind of one individual. There are many examples throughout history, from Le Corbusier's 'Machine' to the 'anarchitecture' of Lebbeus Woods. But generally the process involves broader cultural, linguistic, institutional and technological contexts. During the last 30 years the electronic revolution has been a breakthrough technology that has captured the popular imagination by its attraction, its seeming of promise for a better the future and its sense of open-endedness.

All architecture (cyber or real), by virtue of its cultural nature, portrays and broadcasts information. However, when using architectural metaphors as a medium for organisation and distribution of information in cyber-architecture, the designer must consider the fact that the meaning and understanding of architectural elements and artefacts of cyber-architecture are fundamentally different to traditional architecture. The wall, for instance, which traditionally defines space and encloses, is transformed into a medium for information broadcast. It has the ability to metamorphose, mutate, and change its appearance, character, role and features. The textures, light shades, shapes, material and colour are no longer static.

'Cyberspace is an architecture that dances or pulsates, becomes tranquil or agitated. Liquid architecture makes liquid cities, cities that change at the shift of a value, where visitors with different backgrounds see different landmarks, where neighbourhoods vary with ideas held in common, and evolve as the ideas mature or dissolve.' (Novak, M. 1992)

Cyber-architecture can be made to represent an architecture of alternative, irregular relationships, interdependencies and interactions in the context of an expanded conception of architecture. It is an integration of the changeable imagery of the media, the lively surfaces, liquid configurations in a hybrid of expanding colours, pneumatic rooms, and virtual sounds. This new media is capable of suggesting - visually, audibly, and tangibly - altered perceptions of space and time. Our relationships to architecture, and indeed of human relationships in general have been affected by the advent of television. The centrality of television to the everyday lives of many communities has been continually growing to the point that in almost every house the TV becomes a shrine. Meanwhile, global access to the Internet is doubling every 6 months. Cyberspace can become the extension and evolution of physical architecture. The primary distinction between digital and real space is that cyberspace embodies, and makes use of, the fourth dimension in a selective manner. In physical space, one can not escape from the linear process of time through space. Cyber-architecture can exist as any entity where the loci of art, music, architecture, science and language are interchangeable. Cyber-architecture can be so much more than the re-creation of frozen architecture. It can represent the visualisation of a symphony in space, one that never repeats and continues to develop. One can consider architecture to be an extension of our bodies, shelter and protector for the fragile self. Through exploring cyber-architecture, then, one is exploring the ability to control the changing shelter and the infinite variety of enclosures that the world of imagination and virtual production have to offer. Cyber-architecture will not replace real architecture any more than virtual reality will supplant real experiences. Technology affects everything but replaces little. When the telephone was invented people worried that personal contact would be obviated by phone conversations. It did not happen. Instead, another channel was opened for people to communicate. Lives in the current developed societies throughout the world are inconceivable without the telephone. Cyberspace is likely to become as essential as the telephone.

Cyber-architecture evolves in an expanding new landscape of conceptual and electronic complexity. In a physical environment, the concept 'wall' as a physical barrier, can not be altered. However, the walls of cyber-architecture can be opaque windows to other real or cyber worlds, with the ability to exhibit and broadcast art works, cinema, daily news, environmental scenes, virtual worlds and information at large. This significantly affects the function and experience of cyber-architecture compared with physical architecture. Real architecture in the future, interior design and perhaps even exterior facades can employ light as a building material, to articulate space. Light form could be used in conjunction with electronic noise proofing, making walking through walls natural, and the door obsolete.

Toyo Ito is a Japanese architect and poetic visionary. His Tower of the Winds in Yokohama (1986) is an early and superb example of the combination of cyber-media technology and natural environments, and of the aesthetic that can be derived from it. 'The tower facade reacts like an audio visual seismograph to every change in wind velocity, light intensity, and ambient street noise, whereby a computer program translates these random impulses in an incessantly scintillating light display.' This is a 'still' architecture, with fluid layers of representation. An architecture which has the ability to change its informational content, following changes in function, aesthetic or contextual demands; One which chooses information over matter and representation over presentation.

Fig. 3. 4. Tower of the Winds, 1986, Toyo Ito; (Ito:1995)

'Buckminister Fuller remarked that he was surprised that; in spite of all the advances made in the technology of building, architecture remained rooted to the ground by the most mundane of its functions, plumbing. Rooted by waste matter, architecture has nevertheless attempted to fly in dreams and projects, follies and cathedrals.'(Benedikt, M. 1991,1st steps)

'Architecture has never suffered a lack of fertile dreams. Once, however, in times far less advanced technologically, the distance between vision and embodiment was smaller, even though the effort required for that embodiment was often crushing. Most grand traditions began with an experimental stage of danger and discovery and did not become fossilized until much later. A Gothic cathedral was an extended experiment often lasting over a century, at the end of which there was the literal risk of collapse. The dream and the making were one. Curiously, the practice of architecture has become increasingly disengaged from those dreams. Cyberspace permits the schism that has emerged to be bridged once again.' (Benedikt, M, 1991,1st steps)

In the book Cyberspace, Benedikt (1991) tried to explain the evolution and meaning of architecture. Beginning with displacement to creative response to climatic stress, with the choosing of advantages for settlement, the internal development of social structures to meet population and resource pressure and etc. All this carried out in terms of time, materials and design and construction expertise. He brought up this theme of what it used to be and explained the self-dematerialisation of architecture.

'Architecture will no longer be a question of mass and volume, but of lightweight structures whose superimposed transparent layers will create form so that constructions will become dematerialized.' (Richard Rogers, 'Architecture Now', p.134)

In modern times, after a century of Industrial Revolution, the turn of the twentieth century saw the invention of high-tensile steel, steel-reinforced concrete, and of high strength glass. Under economical pressure to do more with less, architects seized and celebrated the new vocabulary of architecture. Towards the end of the twentieth century saw a need to relate cyberspace to architecture, thus finding new meaning for architecture. With the relationship between communication technology and architecture discoursing through this dissertation, cyberspace has related new ideas to it's parent architecture. To no one was this more apparent than to a group of architects in England calling themselves Archigram. Their dream was of a city that built itself unpredictably, cybernetically and of buildings that did not resist TV, telephones and airconditioning and cars and advertising but accommodated and played with them; Inflatable buildings, buildings on rails, buildings like giant experimental theatres with video cameras gliding like sharks through a sea of information, buildings in neon, projections, laser beams... These were presented in a series of poster-sized drawings called ARCHItectural teleGRAMs. The effects of Peter Cook and ArchiGram have been precedence for many great contemporary architects, and so the loop of relations

between cyberspace and architecture closes and we see that cyberspace is amongst reality already. The chain of events returning back into architecture is not so obvious. Theory, practice, and education are confronted with questions that have no dominance, necessitating that we turn elsewhere, Marcos Novak has proposed transmitting architecture.

'We are now able to exercise the most radical gesture: distributing space and place, transmitting architecture.' (Marcos Novak ,1992)

The strategies employed to generate a new architecture reflect our current understanding of physics and cosmology, in particular to new conceptions of Non-Euclidean space. Of regions of curved, higher dimensional space-time of the imagination. This new definition of a spatio-temporal architecture, replacing all constants with variables leads to the idea of liquid architecture.

'Cyberspace is liquid, liquid cyberspace, liquid architecture, liquid cities. Liquid architecture is more than kinetic architecture, robotic architecture, an architecture of fixed parts and variable links. Liquid architecture is an architecture that breathes, pulses, leaps as one form and lands as another.' (Marcos Novak ,1992)

The possibility of an animate, or at least animated architecture, containing varying elements is yet to be explored.

'Cyberspace calls us to consider the difference between animism and animation, and animation and metamorphosis. I us the term liquid to mean animistic, animated, metamorphic, as well as crossing categorical boundaries, applying the cognitive supercharged operations of poetic thinking.' (Marcos Novak,1992)

This morphosis is consistent with that of music and architecture. When time and space were considered to be separate, then architecture was the art of space and music was the art of time, but now in our spatio-temporal schema we have ArchiMusic.

'If we describe liquid architecture as a symphony in space, this description would still fall short of the promise. A symphony, though it varies in duration, is still a fixed object and can be repeated. At it's fullest expression liquid architecture is more than that. It is a

symphony in space, but a symphony that never repeats and continues to develop.' (Marcos Novak, 1992)

A liquid architecture in cyberspace is clearly a dematerialised architecture. It is an architecture that is no longer satisfied with only space and from and light and all the aspects of the real world. It is an architecture of changeable relations between abstract elements, an architecture that tends to music. Cyberspace has some inspirations from such as dreams, music, art, etc.

Dreams...

'We are such stuff as dreams are made of.' (Prospero. The Tempest, William Shakespeare)
'Dream is a second life.' (Gerard de Nerval)
'Cyberspace is poetry inhabited, and to navigate through it is to become a leaf on the wind of a dream.' (Marcos Novak)

Cyber-architecture has the ability to represent real space without the requirement to follow or refer to classical reality. The cyber-architecture of dreams has the capacity to inform and increase the understanding of many concepts. Such as abstraction and figuration, literality and symbolism, logic and magic, realism and surrealism, history and future, soul and mind, to name a few. Architecture in dreams, where it has subconscious meaning. The scope for recreating the architecture of dreams is widening with the use of computer technology. Although speculative research exists on transformation of dreams into digital environments, closer to reality is the ability to recreate fantastic spatial environments digitally. The major role of the cyber-architect is in the conceptualisation, organisation, and design of alternative realities. The function of this dreamed architecture is unrelated to the practical. Dream architecture recreates the fictional, mind-expanding, surreal type of environment.

'Dreams, too, give us the illusion that we are in control of them, or can delay their coming to their term. They even give us the illusion of being aware of dreaming, which is part of their mechanism.' (Baudrillard, J.1996, p.11)

The mind is a good analogy of cyberspace, since it has no physical space, no distance and no mass. Ephemeral thoughts o cannot be seen under the microscope. As one thinks and generates ideas, one does not run out of space. The thoughts and

feelings, which form the content and substance of the mind, are not in physical space as they are not physical objects. Hence mind is not a physical object in time and space. Similarly, cyber-architecture has no physical form or mass. Thus, cyber-space does not require to support to laws of physics.

> 'In dealing with vast arrays of data, a non-architectural approach to the organisation of information in the electronic real can be a liability' (Anders,P. The Architecture of cyberspace. Progressive Architecture Oct 1994, p.78)

Although the Cyber-Architect is freed from many constraints, it is not the elimination of the restrictions that cyberspace has to offer which makes it so appealing. The perceptual or physical aspects of cyber-architecture can be just as tangible and important as obtaining physical architecture. The design features allow for the distinction between optional choices that the user may make. The primary role of architecture is the creation of meaningful places which society inhabits and interacts in. Whilst the style or aesthetic of physical architecture is determined by the architect, often the context or setting in which the actual building rests already exists. Cyber-architecture has no site as such, since there are no geographical contexts. The context, if any, is an abstract, infinite space. Thus, one of the primary tasks of the cyber-architect will be the creation of context and thus a meaningful place. What is build-able and what is perceived to be build-able are growing further and further apart. New materials and construction are being invented everyday. Space-age materials have the ability to transform today's architecture, but what about architecture without Laws of physics? Where a threshold no longer needs to be a door in the physical sense, rather a metaphoric gateway to a multi dimensional spatial environment. A place where gravity becomes orientational.

> 'Like Shangri-La, like mathematics, like every story ever told/sung, a mental geography of sorts has existed in the living mind of every culture, a collective memory/ hallucination, an agreed-upon territory of mythical figures, symbols, rules and truths, owned and traversable by all who learned its ways, and yet free of the bounds of physical space and time.' Benedikt, 1st steps, p.3)

> In his essay, Jean Nouvel, states about today that 'what fascinates us is the absence of matter and expression. Nothing is more beautiful than the power of a pocket computer, than that image on the screen. The formal and spatial parameter is losing speed. We want a new kind of space which is once nothing and everything.' (Nouvel, J. Inv. In Arch. p. 320)

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Many interesting designs are never built, but when designs appear in cyberspace, the boundary between the built and the not built is confused. Cyber-architecture is space-time collapsed, beyond recognition, in so far as moving from one place/enclosure to another does not require the physical space-time journey. The physical manifestation exist only as electrons and the transceivers used in order for the user to exist within it, and the concerns are moved from the practical and economy to expression of intentions, interests and thoughts. It represents the design of experiences rather than objects, a paradigm shift in architectural consciousness. While traditional architecture has relied on object-centred, synchronic, and observer-independent, cyber-architecture relies closely on the design aspects of traditional audio-visual narratives, such as cinema, stage design, theatre, storytelling and installation art. The design of the space alone is not the most important consideration, communication across space together with a new language of symbols, which replaces the architect's portfolio of form and consideration of time and atmosphere, are the new parameters. In the past few years there has been an explosion of '3D viewpoint web worlds' on the Internet. These views have a small compass indicating that you can use the arrow keys to move around in the environment. In many cases, you have the feeling that you are in the centre of space and you can turn around in a circle and you can direct your gaze up or down. In some more complex environments you can move forward and backwards into many connected 3D scenes. These worlds are created by Virtual Reality Modelling Language (VRML). VRML, like HTML, is platform-independent, which means that the information can be transmitted easily over the Internet and received and interpreted by different machines.

Virtual Architecture in Cyberspace...

'Mental Transparency.Architecture, like the other time/space design disciplines, is constantly oscillating between what could be called a form of 'matrix' or 'hardware' architecture, and 'animation' or 'software' architecture.' (Wim Van Den Bergh, Architecture Now, p.21)

Virtual Museums, virtual/cyber cities, virtual shops, computer modelling, VRML cities and etc, are examples of virtual architecture in Cyberspace. The vital component of this architecture is the use of virtual reality . Using cyberspace as a tool to present or imitate an organisation of the actual physical self. Architecture in this space remains fundamentally changed in the sense that it is no longer concern with the design

of the physical parts and looking into the joints and the response to the climate and etc. What is termed building construction in cyberspace is not about brick and mortars but the programming language.

Architecture is the design of meaningful spatial environments. It is created by transforming the existing social, cultural and technological world through theoretical and technical skills. There now can exist an equivalent realm situated in an entirely new context: computer simulation.

An analogy can be drawn from architecture works presented in cyberspace. But the question is does that mean that there is also architecture in books and architecture in cardboard models? Or are they just presentational tools? This is by no means a conclusion.

> 'I am searching for an architecture that will express and celebrate the ever-quickening speed of social, technical, political, and economic change: an architecture of permanence and transformation where urban vitality and economic dynamics can take place, reflecting the changing and overlapping of functions; buildings as a form of controlled randomness that can respond to complex situations and relationships.' (Richard Rogers, 'Architecture Now', p.133)

Virtual architecture in cyberspace serves as an advanced tool for Paper Architecture. According to Lebbeus Woods: '...Drawing is for me a way of entering into architectural space and form and into thoughts...' Thus, drawing is a form of representation architecture. As drawing is a testing ground before actual construction, so is cyberspace. If paper architecture is to prove an architectural theory positive/negative, built/unbuilt, there is also cyber-architecture. If this is the case, architecture in cyberspace would be more than one dimensionally a better testing ground.

> 'Architecture still cannot be moved or transmuted. It cannot be captured in digital codes not duplicated, at least not if it has anything to do with location and context. After all, a photograph is not space. Architecture is always a one-off reality, inhabited and assimilated by its surroundings.'(Gunnar Daan, , Architecture Now, p.59)

> 'For me, technology is a means of giving expression to the age in which we live, and certainly not an end in itself; it is a means to develop new spatial concepts.' (Roberto Meyer, 'Architecture Now', p.111)

'Instead of Schelling's description of architecture as frozen music, we are looking for an architecture more like some modern music, jazz or poetry, where semprovisation plays a part: an indeterminate architecture containing both permanence and transformation. The best buildings of the future will interact dynamically with the climate in order to meet users' needs better and make optimum use of energy.' (Richard Rogers, 'Architecture Now', p.133)

'..The door to cyberspace is open...cyberspace will require constant planning and organisation. The structures proliferating within it will require design, and the people who design these structures will be called cyberspace architects...' (Richard Coyne, 1995)

Integration of Cyberspace into a Physical Space...

As cyberspace and cyberian lifestyle only came about in the 1990s, buildings and projects related to cyberspace is not many but they are increasing in number. The reason is that more business organisations are moving towards computerisation, therefore Cyberisation. With increased exposure to cyberspace, the perception of the building users is being tuned towards cyber-technology. Upgrading and changing of parts become common activities. Thus architecture, instead of creating something that is monumental and can withstand the period of time, now deals with relatively more temporary and easily reconfigurable. The city is seen as an enormous node of communications, a series of messages, storage and transportation facilities, a massive education machine of its own complexity. The idea of the modern city is not new.

In the late 1960s, Archigram dreamt of a city that built itself unpredictably, cybernetically, which did not resist television, telephones, air conditioning, cars and advertising but accommodated and played with them made up of inflatable buildings on rails, buildings like giant experimental theatres with video cameras gliding like sharks through a sea of information etc. Although Archigram's dream city did not become a reality, traces of this city can be seen from some of recent projects.

Glass Video Gallery...

The Glass Video Gallery was selected by the city of Groningen and the Groningen Museum as a public pavilion for watching music videos. It is at the centre of a traffic roundabout. Within the glass volume are six banks of video monitors. Tschumi's transparent structure signifies the immaterial nature of video images as flickering patterns of coloured light projected onto a glass screen. The elements of its

architecture consist of hardened glass plates held by metal clips. The barrier between the inside and outside has been minimised and thus improved the message of information bursting out of the built form. Compared to a cinema that has a single window looking outside, this idea is further multiplied by the multiple reflections in the glass planes. The luminous and rational function of glass as a building material is ultimately denied by moving the gallery out of the Cartesian grid in which it would otherwise seem to belong and leaning it on two axes. The glass volume of the gallery, the glass-screened video monitors and video's function as in instrument of observation are all inverted. The anonymous subjectivity of the visitor is rejected, instead, the signified becomes also the signifier. The spectator becomes the subject. The feasibility of private life in a media-suffused culture is being questioned. At night, the architectural volume disappears and cyberspace thus flows out into the surrounding that can be seen from reflections picked up by shiny surfaces round. By using multi windows and multi channels in cyberspace, the viewing of MTVs is changed. Architectural elements that use transparent material like glass instead of solid walls. The idea of universal accessibility in cyberspace is demonstrated. In the night, the idea together with the sense of placelessness is being emphasised by the sensuous floating TV screens. The focus of the public towards cyberspace is translated into the location, which is at the centre of a roundabout, enhancing the idea of importance and significance. By the use of materials and the layout of the elements, light from the TV monitors shines out of the built form and is reflected onto the surrounding. This is even more so at night. Thus, there is interaction between the internal and the external, and an integration of the two by multiple reflections, reflections of both internal and external surfaces superimposed and reflected by another piece of glass, echoing the success of the Internet that is about interaction.

Fig.3.5. Glass Video Gallery, Groningen, Tshumi, B.

D.E. Shaw and company uses sophisticated mathematical models running on Sun workstations to make high-volume trades in global markets. Steven Holl was asked to design the office to create an environment that represented the spirit of this high tech trading firm. In this project, Holl used planes and the reflection of light as a metaphor for reflection of information. Natural and artificial light enters the space from concealed windows and fixtures, after being reflected from surfaces painted in brilliant colours. The painted colour surfaces are invisible and thus rendered mystical in its sourcelessness. Holl's design uses light in some of its many manifestations. He uses the projected diffuse colour to announce the intangible nature of the client's business, which relies on computer links to telephone lines and satellites.

....Here, behind a fluorescent green facade in the sky, computer scientists and mathematicians monitor and respond day and night to electronic transmissions of minutely fluctuating numbers...

In this project, Steven Holl used cyberspace as a metaphor in architecture and thus combined both elements to produce a kind of cyber architecture.

Computer generated architects...

The developments in artificial intelligence are making it possible to create machines that will learn, grow, evolve and think. Complex tasks and calculations have been the main ability of computers. With the advent of knowledge based systems, it becomes possible to create a machine with the ability to assimilated and synthesise knowledge into patters of thought.

'Imagine a machine that can follow your design methodology and at the same time discern and assimilate your conversational idiosyncrasies. This same machine, after observing your behaviour, could build a predictive model of your conversational performance. Such a machine could then reinforce the dialogue by using the predictive model to respond to you in a manner that is in rhythm with your personal behaviour and conversational idiosyncrasies. The dialogue would be so intimate - even exclusive - that only mutual persuasion and compromise would bring about ideas, ideas unrealisable by either conversant alone. No doubt, in such a symbiosis it would not be solely the human designer who would decide when the machine is relevant.' (Nicolas Negroponte. The Architecture Machine.)

In theory it would be possible, to generate a computer based fully integrated design program from the works of any one of the world's greatest architects. The principle being that you would train a learning computer by feeding it all information relating to structural possibilities of all materials available, their costs, % of labour, environmental building science, etc. The information regarding all known buildings with regards to organisation of space, the use of materials, the decorations, the aesthetics, when and who built them will all be feed in. Together with the capability of highly accurate computer simulations it would 'in theory' then given a budget, type and requirements of the building, go away for a few moments and come back with perhaps dozens of different possibilities in various styles and the most environmentally efficient designs.

Perhaps it would be better to concentrate on the development of systems that would enhance the productivity of an architect and provide a wider scope for experimentation. These systems could take on some aspects of the evolutionary design process, thereby allowing the architect to check for limit-state structural requirements, environmental factors, services, spatial percentage and definitions regarding aesthetic. Allowing one to create a more elegant, greener, efficient and aesthetically more pleasing architecture. Intelligent software can be used to calculate the gradients and various elements of the site, from a series of photographs. This would enable the designer to maintain the views through the windows, as one alters the orientation, structural and the partitioning elements. At the same time, the shading devices can be automatically calculated to spec, with a comprehensive automated detailing process, which generates the drawings required to procure the building. The entire building based on any aesthetic and with the price tag can thus be created, in matter of days or hours rather than months. Smart software need not stop at the physical, the psychological aspects such as behaviour of people in an event of fire have already been successfully modelled to simulate and point out areas which could be of danger. Using networked VR helmets it would be possible to have team meetings, with the designer, developer, planner, councillor and even some users actually sing the development on site with the surrounding environment. Walking the site and placing shrubs and trees at will, altering the building's frontage to create a different spatial setting or discussing views in and out of windows or framing of the spatial compositions. Cooperative design process through

the virtual materialisation of the development can lead to collective design decisions and experimentation with various urban forms until a consensus is reached as to the appropriate direction of development for the site. Allowing the majority involved, including the users with a sense of power that was not available using conventional consultation techniques.

3. 2. 1. 1. Mediatecture

Every new art, including the media arts and media architecture, must orientate itself to existing traditions, for or against, and in this case must learn to master the technical difficulties involved in employing the electronic media. At present we are in a hybrid phase, a twilight between architecture and architectural fantasy. The term 'media architecture' is not even a generally accepted technical term. The architecture of our time is turning into the retinal art of the eye. Architecture at large has become an art of the printed image fixed by the tuned eye of the camera. The computer and it's digital networks are already beginning to exhibit previously undreamed of potentials for hypermedia, that promise to revolutionise design practise in architecture. The following architects have responded to that promise.


Fig. 3.6. Galeries, Lafayette, central media cone, 1994, Jean Nouvel; (Thomsen, C. 1995)

Jean Nouvel

In Nouvels hands, the traditional facade is replaced by an interchangeable, sophisticaltedly layered and screen image façade. He uses the technology, with light effects and facades made of grids, media screens as showpiece of technology.

The media are part of contemporary culture, as is architecture. One possibility that the new technology offers is the building with a virtual surface, a moving kaleidoscope of images projected electronically onto a glass wall. Jean Nouvel's Mediapark project in Cologne uses the exterior walls as screens this way. 'The volume and the density of the images and information compressed into the modern city', he argues, 'renders the traditional formal definition of the exterior of a building absurd. Even practical signage is a source of information on the functional essentials of a building, but, like all imagery it has a poetic and dynamic role, part of the complexities of the whole. At the Mediapark the programme of the images is part of the life of the building. Even the occupants are integrated into this programme, their movements across the building silhoutted onto the façade.' Such an idea extends architecture into media.

Rem Koolhaas

'He projects facades as hybrid surfaces, sensitively reacting integuments that at one moment can appear completely neutral and at the next, from the inside out, develop sign character, unfold an electronic narrative.'

Coop Himmelblau

The key aspect of the design, however was the employment of computer programs which, increased by searchlights, created on the great expanse of glass flowing, floating illusions recalling clouds or rolling waves. These effects produced a impressive contrast between dynamic statics and an continual flux of movement, which justified Coop Himmelblau in speaking of the principle of 'liquid architecture' in connection with the structure.- Media Tower 1992

Toyo Ito

Toyo Ito is currently developing complex, flexible space systems in which rooms, although left indefinite with regards to size and shape, have ceilings, walls and floors that serve as information transmitters. These generate a unique, media architecture aesthetic, an art of images and signs.

Fig. 3 7. Installation of Toyo Ito made for the Visions of Japan exhibition, Victoria and Albert Museum, London, 1991; (Thomsen, C., 1996)

'Room 3 is the simulated dream of the future world, combining to create a state of information-saturated bliss: the dream of a new relationship between man, machine and the future.' Ito conjured up his own version of cyberspace, yet chose to locate it in reality: the experience of being virtually immersed in another world was ensured by being literally enveloped in images of another place and time as you moved through real space in real time. Interaction was invested in your freedom to make personal readings and scret connections between the random and continually changing welter of urban scenes, meterological data, clouds, crowds and the colours of Japanese life. A screen made up of sheets of liquid crystal, whose transparency could be freely controlled allowed the boundries to the blurred between real images glimpsed through the screen and virtual images projected onto it. The floor was also luminous and semi-transparent, so that standing on it, one loses his/her shadow and sense of gravity. There was also a series of objects positioned in the space, designed to allow a more personal feeling of contact, which gave the opportunity to peer in the mind of a machine and see the space through digitalized eyes, thereby almost creating the illusion of looking back at reality from the virtual side of the threshold. Ito's creation of a new relationship between man, machine, and the future could be interpreted as an subtle example of what Wendy Kellogg has called 'augmented reality', where activities in real life are supplemented by actions carried out in a virtual or simulated environment. (Wendy K. John Carroll and John Richards, 'Making reality cyberspace', pp.411-432, Cyberspace, First steps) Cyberspace is thereby distributed, making it another fragment of our already fragmented postmodern existence. This is not in order to make cyberspace technology easier to relate to, or to widen its public appeal, but to enable mutual enchancement to take place between

reality and cyberspace, to set up a complementary situation, somewhere between fact and fiction, visceral and virtual. Here what is seen is where the two worlds may themselves coincide and interact, where hybrid realities can emerge, and where architectural dreams may be satisfied in and out of reality.

3.2.1.2. Visionary Architecture

The above architects have created spaces with a direct link to electronic media and relationships between the two have been established. Visionary architects point out new ways of doing things, experiment in their heads, on canvas, drawing board and increasingly on the computer. The link between visionary architecture and electronic media are not so obvious and need further investigation, that their language has evolved from electronic communications and will relate to future communications technology. As the cubist and futurist languages related to photographic and image technologies of their time, so too have the languages of contemporary architects. Who design paper visions of unstable or deconstructive architectures call to mind the coming break between the architects of the real and virtual space.

Peter Cook

Archigram and Peter Cook played a material part in breaking ground for rising international architects, like Fosters and Rogers, James Stirling, Grimshaw and Herron,
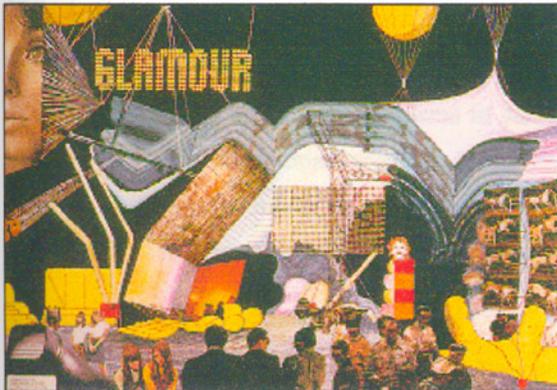
Future Systems and Zaha Hadid. Archigram was the only architectural movement to question the repertoire of modernism that came on like a counterculture.

Fig. 3.8. Instant City, Ron Herron and Peter Cook, 1969; (Thomsen, C. 1996)

Coop Himmelblau

Wolf Prix (1942) and Helmut Swiczinsky (1945), apart form Frank Gehry, have probably contributed most to creating for the deconstructivist aesthetic. Ever since the group was founded in 1968, they have stood for aesthetic provocation, demonstrations, happenings and an interest in new developments in the media and technology. Prix and Swiczinsky employed superimpositions, intersections, shifts in perspective, projections, fissures, sudden breaks, and aggressively protruding frameworks to create an incredible range of innovative spatial effects.

Lebbeus Woods

What came out from Woods' drawing board was so strange, unusual and fantastic that some conservative architectural establishment ignored him. Forms recall domes, spherical deep-sea research submarines, pyramids, or airships like flying arcs, gliding, architectural bodies that ignore laws of gravity. One important description of his works in terms of cyberspace being a new visual space. An analogous comparison of virtual space and Lebbeus' work comes from Peter Nouver (1991):

> 'It sets up extreme problems in statics and risky load-distributions, produces daring visual effects, suggests enigmatic purposes, and evokes a new sense of time and space.' (Thomsen, C. , 1996, p.125)
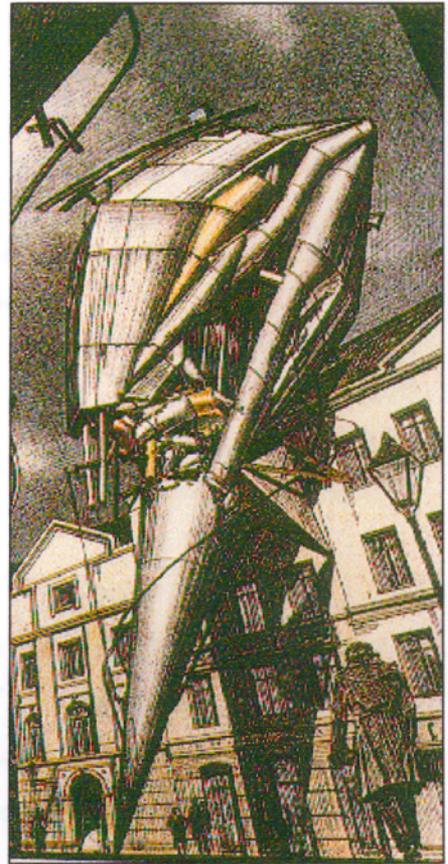
Fig. 3.9. Zagreb Free Zone, Lebbeus Woods, 1991-2; (Thomsen, C. , 1996)

Bernard Tschumi

One of his theory is that contemporary life is basically disjunctive, dissociated and discontinuous. Tschumi is convinced that our lives will be increasingly and irrevocably influenced by developments in the media and electronic communications. Therefore, from the earliest design stages on, he translates his cinematic experience of architectural spaces into what might be termed 5d aesthetic of media-produced, computer simulated and animated architecture.

Zaha Hadid

Tschumi talks about the deconstructivist follies, the individual components of Zaha Hadid's design seem to scatter into tiny particles to form new spatial situations without finite borders.

3. 2. 2. Cyberception
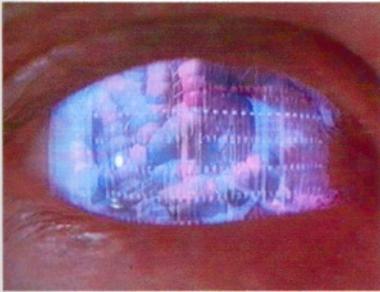
'We are computer-mediated and computer enhanced.' (Michael Benedikt 1992)

Fig. 3.10. simulation of the eye

Cyberception raises transpersonal experience and is the defining behaviour of a transpersonal art. It might mean an awakening of our latent psychic powers, our capacity to be out of body, or in mind-to-mind symbiosis with others. But cyberception means getting a sense of a whole, acquiring a bird's eye view of events, the astronauts view of the cosmos, the cybernauts view of systems.

3. 2. 3. Cybercities

'Cyberspace has been called a huge megalopolis without a center, both a city of sprawl and an urban jungle.' (Heim; 1st steps p.77)

'The town is a phenomenon of transconsistency, a network, because it is fundamentally in contact with other towns. It represents a threshold of deterritorialization, because whatever the material involved, it must be deterritorialized enough to enter the network…to follow the circuit of urban and road recoding…Towns are circuit points of every kind, which enter into counterpart along horizontal lines; they effect a complete but local, town-by-town, integration.' (Deleuze, G.& Guattari, F. 1980,p.432)

The city of the digital era according to William Mitchell, will position increasingly to the logic of the network ,'The virtual city of the 21st century –of A.D. 2K –will not be a 'City of God' or even a 'City of Quartz', but a 'City of Bits''.

'If we explore the architecture of the emergent digital city, a virtual environment that has begun to render common space irrevelant, synchronicity obsolete, and the materiality of life (the historical concern of architecture) increasingly problematic. Do libraries still need reading rooms (or even books?) Do classrooms still need blackboards (or even teachers)? Do museums need walls (or even paintings)? Do banks need vaults (or even money)? Increasingly argues, Mitchell, the answer is 'no''. (Mitchell, W. City of Bits) We are leaving the era in which the meaning of architecture was to provide physical sites for simultaneous, 'real time' interactions. The simplest model of this maybe the comparison of a face-to-face meeting, a telephone conversation (which negates spatial but preserves temporal synchronicity), and e-mail, which dispenses with both. Denizens of cyberspace live as physically isolated monads in an electronic global village, a city as small as the self and as large as the universe. The important question through the cybercity is 'how we will structure our collective experience in a place where software is more important than hardware, where bodies don't matter, and where 'design' means user interface? How shall we shape the City of Bits? 'Who shall be our Hippodamos?''

What is the future of architecture and cities described by the words like 'fragmentation', 'dehierarchization', 'chaos', 'melancholy', 'paranoid', and 'fascism' ?

Fig. 3.11. House in the clouds

'Both the machine of the Machine City and the computer of Cybercity are metaphors that become ingrained in the way we represent and imagine the modern and postmodern city. It

is easy to see the metaphors of the Machine City as being linked to representations of and reflecting attitudes towards modernity and the metropolis at the turn of the millennium. The metropolis in the early twentieth century was believed to be an inorganic and fabricated environment, produced by mathematics and created by the engineer. 'Boigon and Kwinter borrow from Le Corbusier, transforming his five points of architecture into five appliances: time, screen, sleep, information, site/domain. Quite clearly, these appliances reflect a shift from the machine city of modernism to the CyberCity of postmodernism where theoretical architecture becomes a set of diagrammatical acts –radical machines that internalize an abstract mechanism (a computer code or program) for producing (in unspecified ways) political and social change'. (Boyer, C. , 1996, p.32)

Harvey's postmodern city echoes the cyberspace metaphor found in Kurokawa's work, in a more unusual (equally ironic) manner, 'when he speaks of the 'maze of little streets and squares, of old and new houses, and of houses with additions from different periods; and this surrounded by a multitude of new boroughs with straight regular streets and uniform houses.' (Harvey 1989: 46) His evocations reflect some of the darker maze-like qualities from Kurokawa's inadvertent musings on cyberspace when he quotes Jonathan Raban regarding Raban's '...city as we imagine it, the soft city of illusion, myth, aspiration, nightmare (which is) as real, maybe more real, than the hard city one can locate in maps and statistics, in monographs on urban sociology and demography and architecture.' (Harvey 1989: 5)

A thoughtful, profound, and more direct cyberspace/cybercity definition found in William Mitchell's City of Bits is noting that: 'In a world of ubiquitous computation and telecommunication, electronically augmented bodies, postinfobahn architecture, and big-time bit business, the very idea of a city is challenged and must eventually be reconceived. Computer networks become as fundamental to urban life as street systems. Memory and screen space become valuable, sought-after sorts of real estate. Much of the economic, social, political, and cultural action shifts into cyberspace. As a result, familiar urban design issues are up for radical reformulation.' (Mitchell, City of Bits, Chapter 5)

Now with the growing number of Internet communities, the real city is being challenged by the virtual city of the World Wide Web. In the historic city, a body is necessary to sustain oneself, in the new city of the Internet, only a mind need function.

'The sky above the port was the color of television, tuned to a dead channel' (Gibson Neuromencar, 1984, p.3)

'The contemporary metropolitan environment is like a web that hugs the ground- drawn to but also alienated from it, a reticule containing the earth.' (Raoul Bunschoten, 'Architecture Now', p.31)

Fig. 3.12. Diller and Scofidio, 1998 (L'Arca 123)

'The CyberCity is an artifice that is meant to be looked at, it is a city of exhibition flaunting its image as if in the theatre, the museum, the photograph, or the cinema. The spectator travels across the city's surface by following routes on the map, or simply transporting from one place to another in moments'. (Benedikt, 1st steps)

The notions of city, square, temple, institution, home, infrastructure are permanently extended. 'The city, traditionally the continous city of physical proximity becomes the discontinuous city of cultural and intellectual community. Architecture, normally understood in the context of the 1st, conventional city, shifts to the structure of relationships, connections and associations that are webbed over and around the simple world of appearances and accommodations of commonplace functions.' (Benedikt, 1st steps)

The mixture of urban dystopia and cyberspace, cybercities, turns the reality of time and place into an imaginary matrix of computer nets electronically linking together distant places around the globe and communicating multilinearly and nonsequentially with vast assemblages of information stored as electronic codes. With an electronic infrastructure, the dream of perfect forms becomes the dream of information. Filtered through the computer matrix, all reality becomes patterns of information. Consequently, the absorption of architectural theory and architectural fascination into the language of computers may be founded on a categorical paradox: one side of the equation in Cybercity is immaterial, while the other remains material; one side of the analogy is about the construction of information networks, the other about the construction of space. Perhaps this confusion undermines many of our postmodern architectural theories as they apply themselves to architecture in the city.

'The really interesting problem for architecture is determined by its relationship to the city as it is today. The city is no longer designed, it is modified by contemporary means.' (Mecanoo Architects, Architecture Now, p.106)

The hegemony of the city over the individual is weakened and left its place to private cities of people meaningful for his own. Architecture took its place as it defined in its early days in this communication mass. There isn't any architecture example to define today's city. It is preserved in our past, or more meaningful, in our present architectural products. This preservation understanding has slowed down the ongoing process of architecture and in result of this the virtual city and a community has emerged. The borders between private and the public space can not be overcome because of the absence of the creative architecture.

3. 2 .3. 1. Disappearing city

According to Paul Virilio, geographical space has been replaced by chronological topographies, where immaterial electronic broadcast emissions decompose and eradicate a sense of place. The city has lost its form except as a connector point or airport, or as a membrane or computer terminal; it has become a two-dimensional flatland in which the city can disappear. The city is now; with labyrinths of accident, disorder, and uncertainty. Images of the city are continually destabilized, dematerialized, and erased.

If we take up a postmodern travelling narrative Italo Calvino's *Invisible Cities*. Calvino's character Marco Polo reveals, 'Travelling, you realize that differences are lost: each city takes to resembling all cities, places exchange their form, order, distances, a shapeless dust could invade the continents.' Calvino's *Invisible Cities* bears a similarity to travel within the informational matrix of CyberCity, where borders are crossed by a hypermedia navigator who guides travellers in riding, traversing, browsing, playing the links between different texts, images, words, and graphs as they move across the grid of the electronic screen establishing new relationships in unpredictable ways. (Boyer, C. Cybercities, p.30)

Cyberspace is a new electronic, invisible space that allows the computer or television screen to substitute for urban space and urban experience. That our perception of space has become increasingly dependent on the simulated zone- a predigested, encoded digital box of algorithms- is visible in the manner in which the physical form of the city is displayed, in the mode in which information is formatted. In the disappearing city that has been fragmented into pieces, gaps and holes and where reality is no longer used as a referent, space and time take on multiple profiles, nonlinear relations and recursive linkages. In cybercities, we fail to distinguish between experience and a reality that has been manipulated by media images; in fact images become substitutes for direct experience.

At the end of the twentieth century, urban space loses its geographical reality to the exclusive advantage of systems of instantaneous deportation whose technological power continuously reversed all of our social structures. The city is no longer governed by physical borders, but by systems of electronic surveillance. In the traditional home too, physical traditional window gives way to the interface of the screen. Everywhere architecture is going through a crisis as the hegemony of physical presence is being eroded and notions such as near and far have lost their traditional authority.

'The city and its architecture lose their symbols-no more monuments, no more axes, no more anthropomorphic symmetries, but instead fragmentation, parcellization, atomisation, as well as the random superimposition of images that bear no relationship to one another, except through their collision.' (Tschumi, architecture and disjunction p.218)

During the nineteenth and twentieth centuries, cities have been transformed by the waves of transportation and communications technology. At each stage, new combinations of buildings, transportation systems, and communication networks have served the needs of the inhabitants. 'Now, as the Infobahn takes over a widening range of functions , the roles of inhabited structures and transportation systems are shifting once again, fresh urban patterns are forming, and we have the opportunity to rethink received ideas of what buildings and cities are, how they can be made, and what they are really for. The challenge is to do this righto get us to the good bits.' (Mitchell, W. The City of Bits, p.162)

The present cybercities are the physically disembodied communities that merge with each other in large Internet live Chat rooms.

Virtual worlds should not be seen as an alternative to the real world or a substitute, but as an extra dimension which allows us a new freedom of movement in the natural world. In other worlds the transcendence of physicality in the virtual world allows us to extend our mode of operation in the physical world.

'In 2028, the town squares will have been supplanted by web sites, road networks by the internet, walsk in the woods, and city streets by zapping, shopping by telemarketing, our mother countries will be virtual, our identities will be classified by number codes. The city will be a land without frontiers; the domestic environment will expand to include the whole world, personal culture will expand to interbreed with all the cultures on the planet; everyone will be physically immobile and intellectually nomadic at the same time.' (Domenico De Masi, 'Quality Versus Quantity', Domus 800, January 1998)

3. 3. Virtual Reality

'This will represent the greatest event in human evolution. For the first time, mankind will be able to deny reality and substitute its own preferred version.' J.G.Ballard.

The term virtual reality was first coined by one of its inventors and promoters, Jaron Lanier. 'The creation of this simulated body of experiences, which is being developed in conjuction with the military-industrial complex, generally involves the donning of goggles or a helmet with tiny video monitors and a glove containing elements that allow the wearer to see and apparently to touch and manipulate objects not present in the same space or not existing in the real world. (Various developers are hoping to get rid of the wires.)' (Benedikt, M. 1991)

Actually the concept of virtuality has been with us long time. It is a coherent and functional idea already in Plato's writings, where both ideas and simulacra exist in some state of virtuality. Since there has been writing, there has been some idea of the virtual. The Story so far Virtual Technology is not a new idea, rather it can be shown that it is a technology which has evolved from other technologies. In order to understand that VR is not a new idea, the following timeline was gathered:

- Late 1920s -Edwin Link worked on vehicle simulation, the first forerunner of Virtual Reality technology/ 1940's -Teleoperation technology began/ 1954- Cinerama was developed using 3-sided screens/ Early 1960s- Development of teleoperation displays using head-mounted, closed-circuit television systems by Philco and Argonne National Laboratory & Morton Heilig's ill-fated 'Sensorama' / 1966-Flight Simulations, NASA/ Late 1960s-Development of synthetic computer-generated displays used for virtual environments, pioneered by Ivan Sutherland/ Mid 1970s - Krueger coined the term 'Artificial Reality'/ 1984- William Gibson published the term 'cyberspace' in his book, 'Neuromancer'/ 1989- Jaron Lanier, founder

of VPL Research, coined the term Virtual Reality to encompass all of the virtual projects eg. virtual worlds,. virtual cockpits, virtual environments and virtual workstations/ 1990... - Continued research for the specific use of VR in modelling, communication, information control, arts and entertainment.
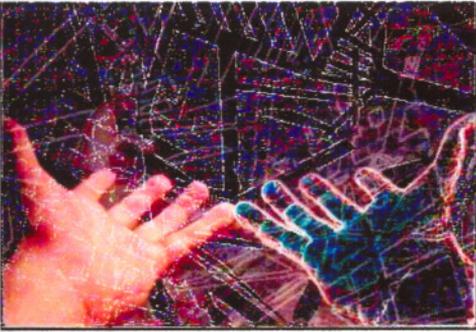
Fig. 3.13. Virtual reality experiences

Virtual reality is also known as 'artificial reality', 'virtual worlds', and is also taken to represent 'a visual form of cyberspace'. According to Howard Rheingold (in Virtual reality, 1991), 'Virtual reality is the revolutionary technology that immerses you in a computer-generated world of your own making- a room, a city, an entire solar system, the interior of a human body. Within the aid of computer gloves, a Star Wars helmet and some super-sophisticated software, you can now explore the uncharted territory of the human imagination with all your senses intact.'

There are two forms of operational systems: immersive and non immersive. Non immersive technologies involve screens with trackballs. Immersive systems of the dataglove, helmet and now datasuit provide further contact with the virtual space. This virtual world is either generated in Real Time by the computer, or it is pre-processed and stored, or it exists physically elsewhere and is 'videographed' and transmitted in stereo, digital form. VR plays a dominating role in the history of the techniques of spatial representation. Further proof of this development is the spread of photography, of film techniques, of television, and , in recent years, of computer graphics and holography.

Fig. 3.14. Virtual reality

Fig. 3.15. A film, Lawnmoverman

'Our culture is described as a culture of images, a culture of the visual simulation.'(Bernard Meurer 1994)

'Used today in architecture, engineering and design, tomorrow in mass-market entertainment, surrogate travel, virtual surgery and cybersex, by the next century VR will have transformed our lives.' (Howard Rheingold, 1992)

Virtual reality is a computer-generated place which is viewed by the participant through goggles but which responds to stimuli from the participant or participants. A participant may walk through a house that is being designed for him or her to get a feel for it before it is built. Or s/he may walk through a museum or city whose paintings or streets are computer-generated but the position of the individual is relative to their actual movement, not to a predetermined, computer program or movie. In addition, more than one individual may experience the same virtual reality at the same time, with both persons' movements affecting the same space. What is more, these individuals need not be in the same physical location but may be communicating information to the

computer from distant points through modems. Further 'movements' in virtual reality are not quite the same as movements in 'old reality': for example, one can fly or go through walls since the material constraints of earth need not apply. While still in their infancy, virtual reality programs state to the increasing 'duplication'. But the duplication gets an alternation: virtual realities are fanciful imaginings that, in their difference from real reality, evoke play and discovery, instituting a new level of imagination. Virtual reality takes the imaginary of the word and the imaginary of the film or video image one step farther by placing the individual 'inside' alternative worlds. By directly tinkering with reality, a simulational practice is set in place which alters forever the conditions under which the identity of the self is formed.

Virtual Reality can be seen as a fusion of three other technologies - the telephone, the television and the video game.

'In this age of postcolonialism we seem to have no place in the world but the virtual to transplant our cultures. When we talk about the virtual or the virtual city or virtual space, it seems we are trying to find another place to colonialize. We are now trying to fabricate a kind of virtual space and people are talking about how our bodies transcend to this virtual space. Is it possible that virtual space is a new kind of colonial space?' (Arata Isozaki Discussion 3, Anybody, p.144)
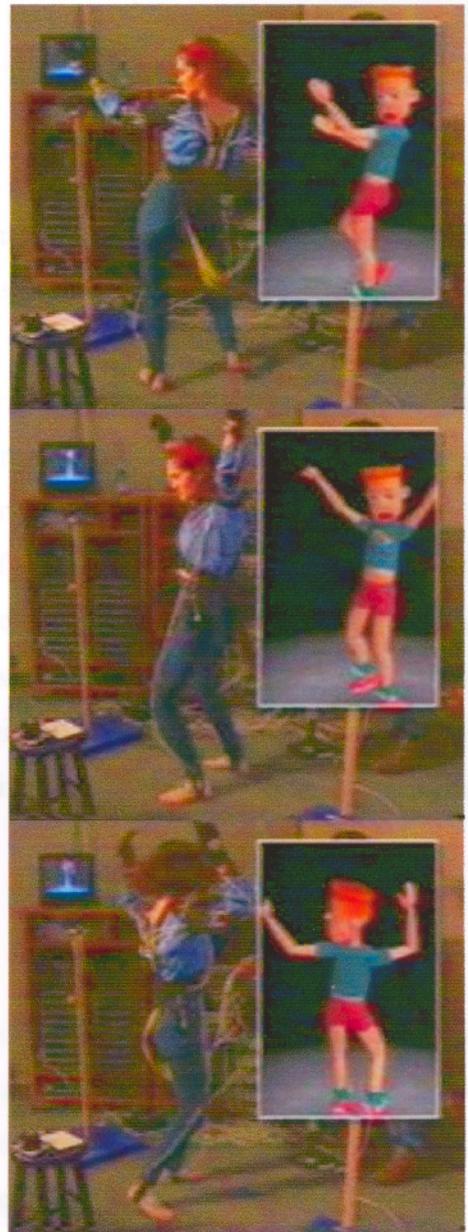
Fig. 3.16. Telepresence

Virtual worlds represent labyrinths that confront our bodies and our experiences of space with paradoxes of a new order. In the past, labyrinths were always spatial in conception, as they were metaphors of disorientation, while in 'the virtual' they become meta-labyrinths. These meta-labyrinths are abstract and formal, not material; they are constantly moving and changing into structures that cannot even be imagined. It is not so much a matter of disorientation or of losing one's way as of actually developing entirely new languages with which to move between the formal models and generated images of 'the virtual' and the sensual experiences they provide as we walk through, touch, see, and hear synthetic aspects of these virtual worlds. Full immersion in the virtual means that everything in it relates to the synthetic reality of cyberspace, and not to exterior physical space.

Virtual reality is a computer technology that presents sensory information and feedback to give the illusion that the technology user is immersed in an artificial world- a world that exists only inside the computer. The technology is sometimes termed as immersion technology. It uses specialized computer hardware and software to provide a highly sophisticated level of human/computer interaction. Virtual reality currently uses special helmets that place binocular images before the eyes of the technology user (stereopsis). The helmet also allows the position of the viewer's head to be tracked so that the images of a three-dimensional scene change according to the viewer's movements. Various devices, such as the control stick, three-dimensional mouse, and data glove, permit touching, moving and feeling virtual objects. Using this technology one can move through and manipulate a three-dimensional environment, such as a building interior.

3. 3. 1. Simulation

The idea of using first, mechanical methods, and then computers to simulate events or locations is not new. It received considerable support from the military, who saw that such techniques could provide ideal training for tactical battle situations without using expensive military hardware or risking life.

'The main difference between a computer simulation and a VR experience is that VR makes an attempt to map many more of the human senses on to the machine, creating a more convincing representation of real life experience.' (Robin Baker 1993)

The most used techniques of VR are the headsets and datagloves, which allow the user to cut off from the everyday world and enter the virtual world, creating a natural interface to the computer. Through such interfaces the operator can explore and interact with the realistic 3d world.

3. 3. 2. Experience

'I do not see VR as a set of technologies but as an experience...primarily an imaginative rather than sensory experience'. (Steven Jones 1995)

'Cyberspace will not merely provide new experiences...it will change what humans perceive themselves to be, at a very fundamental and personal level. In cyberspace, there is no need to move about in a body like the one you possess in physical reality.' (Howard Rheingold, Virtual reality)

VR is a simulation in which computer graphics of the synthesised world are not static but respond to user inputs, a key characteristic is real-time interactivity - instantaneously. But, VR pushes this even further by using all human sensorial channels.

Chapter 4

THE RELATIONS BETWEEN
TOOL & THE END-PRODUCT

A new consciousness, a new mode of thinking is emerging with profound implications for architecture. A new generation is shaping up the architecture profession with impressive digital designs. But a question comes up that: How many of the cyberarchitects' buildings will ever be built? What is the break-through? Is the break-through in technology only not in architecture? The breakthrough is the incredible tool the computer provides. With the aid of this tool, architects will be able to achieve higher levels of integration in their designs than ever before.

Peter Eisenman-considered as the master of our today's architectural avant-garde said 'The day the look of my buildings is determined by the computer is the day I leave architecture.' Then perhaps it was time for him to quit. 'You can tell from looking at their buildings that Peter is using Form-Z and that Frank Gehry is using Catia,' Lynn explains. 'Each software has a very particular way of making shapes. You can tell a curve in Form-Z from a curve in Alias, the program we use'.

form·Z mixes wire-frame renderings with fully rendered building components, allowing viewers to see elements of Peter Eisenman's Wexner Center for the Visual Arts that would otherwise be obscured.
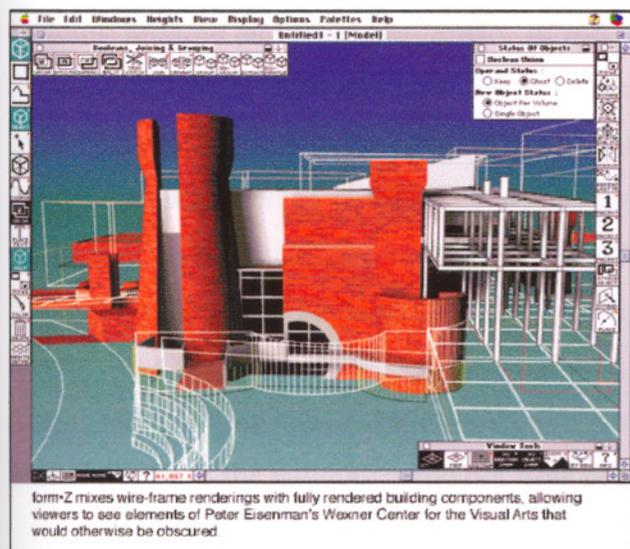
Fig. 4.1. Wexner Center (software Formz), Eisenman

Today, for the first time, architects are designing wild curves and complex non-Euclidean shapes that would have been virtually inconceivable without animation software. Some architects are using the computer to mimic dynamic forces, such as tornadoes and traffic flows.

Others are producing designs that they describe as mutable or interactive-buildings with liquid-crystal skins that function like giant computer screens for

broadcasting art, news, or advertisements. As a practical matter, can architecture, a conservative art grounded in the strict realities of a physical site-walls, roofs, corporate clients, and a fixed budget-be rendered liquid or animate? The computer may allow the architect to turn complex algorithms and some theoretical ideas into parabolas on the computer screen, but will all this intellectual work make any difference in the built world? Some says, like Roger Sherman that 'Architecture is very physical. I think that for a lot of the people involved in poststructuralist theory, the more building becomes about actual construction the less it is about architecture. In the course of every project, there is a moment when a workman, who may not even have a high school education, comes and tells you that there is a pipe in the way and asks whether he should move the toilet over or not.' It is true that most of the new cyberarchitects are busier making theories than buildings. One of them, Perrella says 'It takes a great deal of strength to resist the temptation to build, 'I'm a licensed architect, but I decided to take ten years to think about this culture, to build a discourse.' Instead of making buildings, Perrella has devoted his works to designing on the computer, reading French theory and philosophy, and writing.

In fact, the idea of the architect as someone who thinks and writes about architecture but doesn't actually build anything is not a product of the computer age. There is a long tradition of architects' designing paper projects that went unrealized-from the ideal cities of the Renaissance architect Filarete to the fantastic spherical monuments of the Étienne-Louis Boullée-but it's only recently that the idea of not building became an ideological credo. In this regard, many of today's cyberarchitects have been heavily influenced by Peter Eisenman, who has always emphasized the importance of theory over building. While, as Eisenman and his numerous colleagues in New York followed the canon of French theory for new sources of inspiration, Frank Gehry was using the software created by the French aerospace manufacturer Dassault Systèmes to demonstrate how titanium steel could be manipulated to resemble ocean waves. This was the architect's latest project, the Guggenheim Museum in Bilbao, Spain. Many critics hailed the building as Frank Gehry's-and the decade's- best work. More important, the building could not have been completed without the computer.

In the past, Gehry's career carry from his reputation as a dreamer, someone more artist than architect, whose buildings either could not be built or would simply take too much time and money to make. For several years, his commission to build the

Walt Disney Concert Hall in Los Angeles had been held up because of widespread doubt about its feasibility. 'What Bilbao proved was that he could build a complex building and build it on time and on budget,' says Perrella. 'He will now get a chance to do the Los Angeles concert hall.' What's changed is not Gehry's vision so much as the technology necessary to reproduce it. Thus, from Eisenman the cyberarchitects inherited a passion for theory, and from Gehry proof that the computer could indeed produce architecture of a sort no one had seen before.

4. 1. Tools

Several years ago in a visit to an architectural office, we would have observed a series of drawing boards, pencils, paper, erasers, stencils, and other drawing tools. Computer was more than likely used for administrative and accounting purposes. The scene today is quite different in the architects' workspace, the drawing board is accompanied by a computer. Drawing boards and drafting equipment have begun to lose their importance. Computer monitors, keyboards, diskettes, and printers are the work tools for the architectural offices. All this transformation can be summarized in the word; CAD (computer aided design). But while regarding these transformations, a few question comes up to minds that; does the replacement of the drawing board with the computer monitor or the holding of the mouse instead of the pencil really mean a different way of designing? Or, what is the outcome of this change of media, from tangible materials into bits? How will this affect the actual design or the actual built architecture? These are the inevitable questions that we face in today's architectural situation, considering that architecture is going through a major transformation- Not only is cyberspace invading the territory which was once the property of architecture, but also the use of the computer is revolutionizing how architects design and draw.

For centuries, 'drawing' was the central foundation upon which most traditional visual skills intimately depend. Artists and designers have long stressed the importance of drawing, considering it a basic skill without which the development of creative ideas would be exceptionally difficult. It is the tool that designers use to talk to themselves, as well as the means by which they externalize their ideas and communicate them to others. Today drawing, still occupies a central position in art and design as an

instrument for externalizing thought and giving form to the imagination. But cooperated with computer, it extended its unmatched world of imagination. With the softwares, Autocad, Archicad, 3D Max, Alias Poweranimator, Alias wavefront, Formz, Catia, etc. architects are able to turn their ideas in the paper into reality. For the past 20 years, a cultural debate has raged in the world over the formal system of architecture, beginning with Robert Venturi's 'Complexity and Contradiction' in architecture and continuing with Colin Rowe's Collage City and Deconstructivism by Philip Johnson and others. In the latter half of the 90s, due to the architectural depression, transformation, this debate seems to have wandered into a labyrinth without exit. By means of digital simulation and other advanced defence technology to private industry has led to an unexpected boom in the computer and entertainment industries.

With the entering the digital era, with the speed of information, a question comes up that how have the developments in technology affected architecture? Since architecture has traditionally housed value as well as fact, one would imagine that architecture would have been greatly transformed. But this is not the case, for architecture seems little changed at all. Architecture is a more conservative profession than most would like to admit. New methods are slow to be incorporated and perfected. Whereas science and industrial design quickly adopted digital technologies, the profession of architecture has only begin to explore the vast potential of these new tools.

When we gaze at the recent examples of the architecture at the end of the millennium, we see fiction, fragmentation, collage and eclecticism dominating the discipline of architecture. The form, structure, program, and the material are all have metaphorized. Form started to behave as an organism skin, building as an alien; space as folded to articulate a new relationship between vertical and horizontal, figure and ground, inside and outside. Computer, digitization steered the design process so as to form liquid, folded animated structures. The traditional architectural elements; wall, ceiling, floor have all confused, mixed up with each other. Buildings are dressed up with the glass material so as to disappear. Architecture has been routed to the formless, indeterminate. We can face with these latest architectural behaviour in the works of Greg Lynn, Peter Eisenman, Frank Gehry, Ben Van Berkel, NOX Architects.

While some accept it as the revolutionary progress and think of these transitions cause new perceptions of objects and the world, some accept it as an architectural fashion that give no extraordinary experience, but just representations and say this is not architecture. Undoubtedly, there is no definite result.

Peter Eisenman, who in the past created his complex forms using paper models, now creates them on a computer. The computer is a way of radically breaking with traditional design processes.

The mediation techniques enabled by the computer signify a complete overthrow of many architectural assumptions. The computer attaches a radical rethinking of the valuations implicit in architectural design. In this sense, computational techniques could represent the first important development in architecture since modernism. Computer technology has affected not only the way in which we perceive architecture, but also the way in which architecture is conceived and experienced. With the use of CAD applications, computers gradually became part of the design process and eventually came to play major role in the presentation of architecture through computer-generated renderings. One of the notable features of a design process steered by CAD is that information changes the output, which changes the input, and so on, the essence of this type of transvaluation is that everything becomes unfixed, floating, or liquid. Structures are loosing their specific, separate properties, and are defined more by how they relate to the organisation of the whole and how you relate to them: you zoom in to solids, you fluctuate along transitory distances, space opens up around you; any variety of mutations is possible, all unquantifiable, orderless, dimensionless.
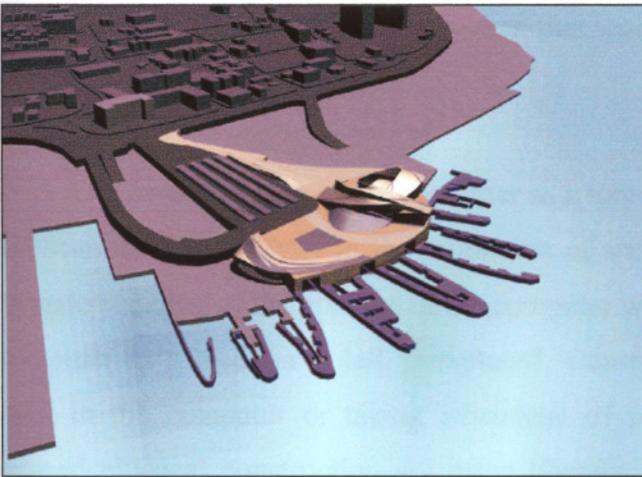
Fig. 4.2. A Competition Project, Eisenman

The process that we call design is an analogous operation. We have an idea however fuzzy it might be and we struggle to transform it into a concrete form so that we can communicate it to others or ourselves. Design is a process that guides the construction of an artefact from a fuzzy idea to a concrete form. This process can take place in writing, drawing, photography, film, video, sculpture, etc. Each of these applications or media announce a unique perspective of the design process. Architects are good at representing objects and spaces in different media; on paper in the form of plans, sections, elevations, and perspectives; with models of chipboard, wood, plaster, plastic, and glass; or with the computer in the form of spatial and temporal models. Architects have used the computer as a means to an end since its induction into the profession in the 1970's. The computer was understood as a tool, an electronic pencil. It promised the creation of intelligent drawings which would automate many of the heavy aspects of construction documentation. Slowly, use of the computer began to be understood as a creative process as well. This was encouraged by new software (solid modelling) that allowed architects to work in ways which were much closer to how they thought about form, not just how they drew it.

With the computer it is possible not only to simulate and improve a given medium such as drawing or painting but to go beyond the metaphor of pencils and paintbrushes to combine media. In doing so a new medium is born in the virtual environment of the computer. Simulation made possible by the computer opens up new areas of exploration in design, new areas that would be impossible to explore outside a virtual environment.

The conception of the computer as a tool has contributed to its limited range of application and creativity in the profession of architecture. Schools have finally begun to understanding of the position of the computer within the design process but use of the computer as a medium is left unexplored. Constructing environments that could only exist in the computer or taking advantage of processes that can create complexity beyond physical construction are often liberated as fantasy or play. These activities should not be discouraged because they come closer to effect the design possibilities of a digital medium.

The computer can be seen as both tool and medium, depending on how it is used. It is now possible for artists and designers to begin to estimate what the last two decades have meant in terms of the application of computing to their disciplines. The traditional relationship between technology and art has often been instructive, fertile and productive, but the computer goes much further, by challenging many of the boundaries of art and the practice of design. This challenge is part of a broader pattern involving culture, society and technology, and above all brings to the fore the choice that confronts us, either we design our future, or we have it determined for us.

There has been a deep metaphorization in the architectural elements: form, structure, program. Architecture has been routed to the formless, indeterminate and unform. Today, buildings present the presence of absence with the use of materials, glass, steel, fibre-optical cables.
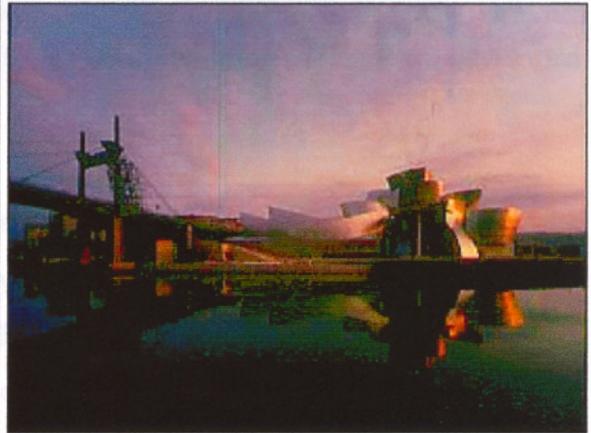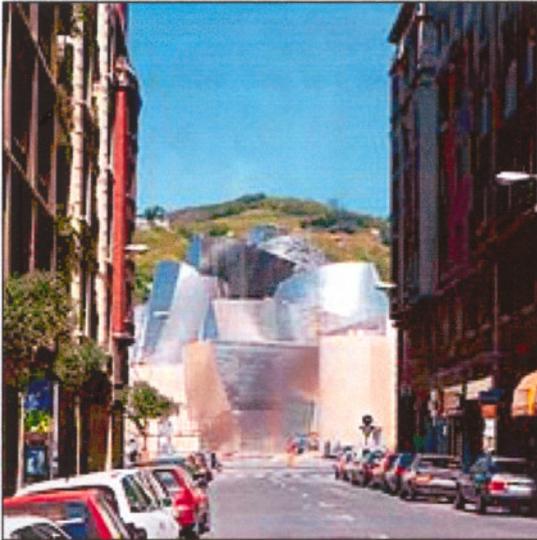
Fig. 4.3. & 4.4. Bilbao, Gugenheim Museum, F. Gehry; (Lotus 98)

4. 1. 1. CATIA at Frank O. Gehry & Associates, Inc. (FOG/A)

'Frank Gehry's new Guggenheim Museum is a shimmering, Looney tunes, post-industrial, post-everything burst of American optimism wrapped in titanium.' Herbert Muschamp (Herbert Muschamp is the architecture critic for The Times.)

The Bilbao Gugenheim, according to many architectural critics, stands out as Gehry's finest work to date and has been hailed by some as one of the greatest masterpieces of this century.

Gehry's choice of titanium, along with his creation of a design marking an arrangement of liquid complex shapes, was made possible by the application of a computer program known as Catia, a highly-advanced, three-dimensional modeller originally developed for the aerospace industry to map curved surfaces with finite numerical control. Catia provides the ability to place in sculptural explorations while maintaining control of the relationship of the geometry to the constructability of the shape by the contractor in a manner not possible with conventional two-dimensional architectural drawings. Catia has freed Gehry's approach to design. In developing these architectural forms, Gehry first works with paper and wood models at different scales, allowing him to direct and refine the shapes that make up the building. Each point on the model's curved surface is then mapped through a digitizing process, and the resulting computer data is transferred into Catia where building systems are developed and coordinated.

Fortunately, this technology that may support architect's position in the industry promises to encourage creativity. By translating complex design through CATIA, Gehry believes that curved forms in building will become more feasible. 'I'm excited about them because I like to sense of movement. They feel genuine, accessible, joyful. If I do a lot of buildings with curves, and people enjoy them, then clients will begin demanding them, and more architects may follow.'
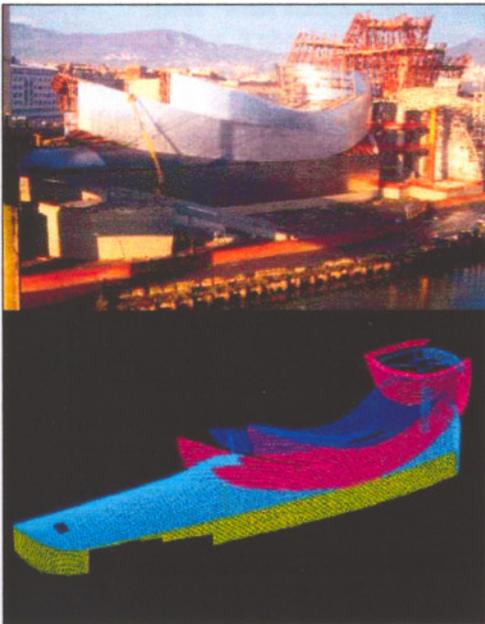
Gehry explains that the new technology 'provides a way for me to get closer to the craft. In the past, there were many layers between my rough sketch and the final building, and the feeling of the design could get lost before it reached the craftsman. It feels like I've been speaking a foreign language, and now, all of a sudden, the craftsman understands me. In this case, the computer is not dehumanizing; it's an interpreter.'

Fig. 4.5. Bilbao, screen modelling, F. Gehry, 1997

The design of the titanium sheets was carried out by Permasteelisa directly on the 3D computer modelling software 'CATIA' used in the aerospace industry. Without the use of this sophisticated software, it would have been impossible to define the high number of different panels, control the horizontal order of the panels due to the constant change in the walls' curvature, and control the construction management, in such a short period of time. Actually, the application of a computer program borrowed from the aeronautics industry, the building does not make use of the technology of aircraft manufacture. Rather, it is used as an important tool in order to represent expressionistic aspirations of the architect.
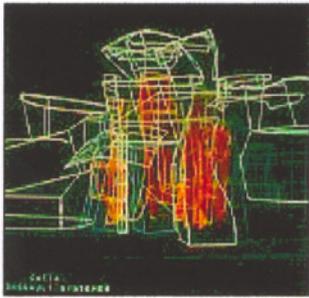
Fig. 4.6. Bilbao, screen modelling, F. Gehry, 1997
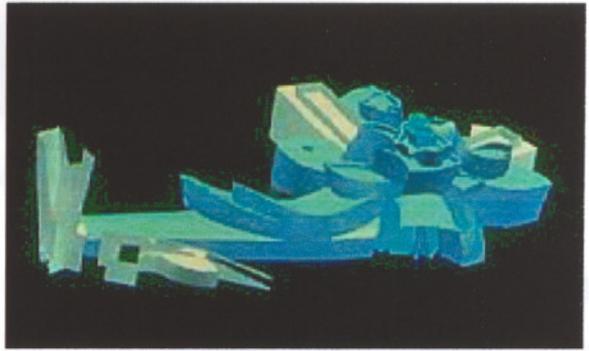
Fig. 4.7. Bilbao, solid model, F. Gehry, 1997

'Gehry has divined some essential aspects for the construction of a new architecture, but does not seem to have the necessary theoretical grounding to develop and refine them. Gaudi's unconventional envelopes had a quite different, more complex value.' Joan Sabate has said on the oppositions between form and structure by arguing that 'what statics was for Gaudi, the construction understood in terms of assembly is for Gehry. It shouldn't be forgotten. Gaudi is exploring other directions as well.'

The dressing of the museum and architecture carried out in Bilbao, represents a limit: any further action would lead architecture to disappear, to fade away toward a point at which it can vanish altogether.

The idea that architecture-performance has reached a turning point is borne out by two considerations. The first depends on a projection that can be reached by following the line of development of computer-based design. This permits the entry into a new dimension, that of so-called trans-architecture, which radicalizes the contemporary architectural experience, as is apparent from Gehry's performance. Cyberspace turns everything into landscape and introduces an extraordinary and unusual dynamism the notable characteristics of contemporary architectural research,

from the abandonment of every structural prejudice to the event of transit, from spatial continuity to inorganic character, they receive an unlimited support and intensification.
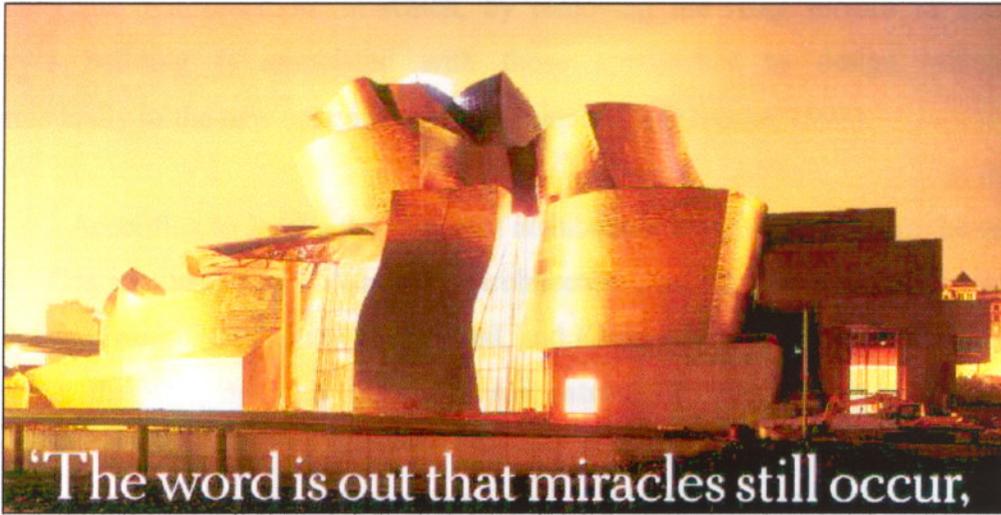

Fig. 4.8. Bilbao, Gugenheim Museum, F. Gehry, 1997

Peter Eisenman has reacted to the expected flow of this condition by asking what is the function, in this context, of architecture that by its nature appears static, incapable of supplying images suited for consumption. 'In matter and memory', recalls Eisenman, 'Bergson suggested a different mode of expression for architecture that has little to do with the projection of images. Bergson treats the concept of virtual as something that contains the memory of the past as an active condition of the present, an era in which we are seeing an attempt to project the concept of the virtual as a condition of electronics that proposes to transform the reality of architecture. In Bergson, the concept of virtual represents an alternative to the current one of virtual reality. He suggests that architecture, rather than presenting images, could present the memory of its own condition of existence, i.e., the memory of the process of its becoming.' Eisenman's stand against interactive multimedia and the drift toward exchange between the arts (by which Gehry's museum should be considered a self-possessed work, being in itself a self-referantial and all-inclusive, total work of art), indicates a curious exchange of roles that has led him to don the guise of the conservative in defence of architecture. The second consideration leads us to introduce a different frame of reference to describe the dynamic character of a work of architecture like the museum in Bilbao. Instead of referring to the themes of performance, this other point of view is based on a scientific approach, putting forward such notions as complexity, entropy, and

the formless. 'Anticipated in Vitra Museum, the liquidity of the new Gugenheim in Bilbao suggests to a critic like Charles Jencks a scientific and biological, 'anti-architectural' interpretation, in which, by removing the risky themes of seduction, Gehry's building is associated with those approaches to design which refer optimistically to the new complexity of the sciences.' (C.Jencks, 1998)

According to Jencks the emergent architecture has implications on the quantum level. 'Cosmogenic design, Nonlinear Architecture', as the new architecture of Peter Eisenman, Frank Gehry, Daniel Libeskind, and Kisho Kurokawa, based on complexity, is called, mentions not only organicist and naturalistic analogies, but also a certain suggestion in the use of the notions of entropy to describe a cosmogenic process. The rehabilitation of the writings of George Bataille, in which he attacks the notion of the hierarchic form in architecture, in composition with this revival of the informal, or formless. Whether it is a question of organs without a body, or a body without organs, it is hard not to recognize in the charm exercised by Gehry's work an attempt to escape from the disciplinary constraints of architecture.
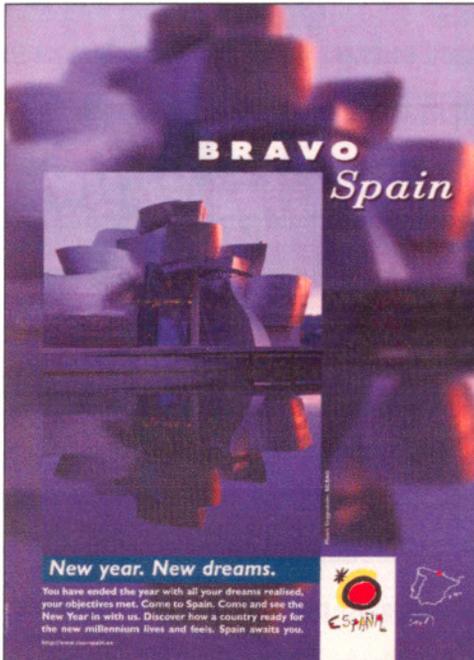
Fig. 4.9. Bilbao, Gugenheim Museum, F. Gehry, 1997, an advertisement in Newsweek.

Frank Gehry's Guggenheim has not only become a popular building, but also a marketing tool for Bilbao.

4. 2. Metaphorisation of Form & Structure & Material

4. 2. 1. Animated (dynamic) design

Historically, architecture, in both its realization and its conception, has been understood as static, fixed, ideal and inert. Themes of motion and dynamics in architecture are typically addressed through pictorial views of static forms. Not only have buildings been constructed as static forms, but more importantly architecture has been conceived and designed based on models of stasis and equilibrium.
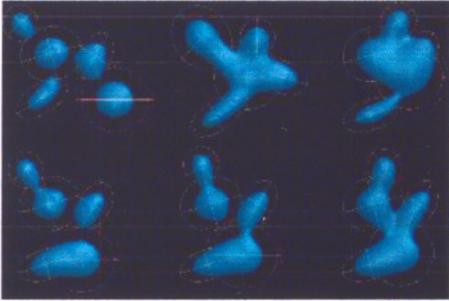
Fig. 4.10. Blob, animate forms, G. Lynn, 1997, (http://www.archINFORM.de)

Typically, computer animation software reinforces this standard assumption that architectural design belongs in static cartesian space waiting to be animated by a mobile view. Classical architectural metaphors of stasis and equilibrium are replaced with more vital architectural design process that are literally and conceptually animated. Building forms and organizations are evolved through the interaction of disparate forces and gradients of influence in time based environments within which the designer guides their often undecidable growth, transformation and mutation. The development of these projects proceeds through the development of provisional prototypes that are chosen for their flexibility and adaptability. To initiate transformation and mutation, external constraints are exerted on these internally organised prototypes. The result of this interaction between a generalized flexible organization and particular external constraints is a design process that has an undecidable outcome. This process of increasing creation through the incorporation of external constraints order an innovational design manner. This shift from determinism to directed indeterminacy is central to the development of a dynamic design method. The use of topological geometries that are capable of being bent, twisted, deformed and differentiated while maintaining their continuity is also necessary.

In their search for systems that can simulate the appearance of life, the special effects and animation industry has developed a useful set of tools for these investigations; as contemporary animation software utilises a combination of deformable surfaces and physical forces. The connection of computer aided technological processes and biological models of growth, development and transformation can be investigated using animation rather than conventional architectural design software.
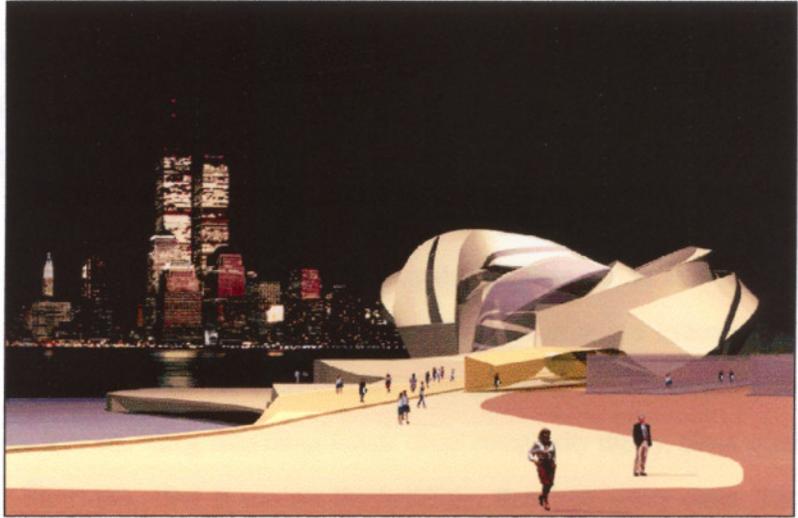

Fig. 4. 11. A Competition Project, Eisenman Associates

Rather than being designed as inert forms, space is highly plastic, flexible, and mutable in its dynamic evolution through motion and transformation. In animation simulations, form is not only defined by its internal parameters, as it is also effected by a mosaic of other fluctuating external, invisible forces and gradients including: gravity, wind, turbulence, magnetism and mass of moving particles. These gradient field effects are used as abstract analogies for; pedestrian and automotive movement, environmental forces such as wind and sun, urban views and arrangements, and intensities of use and occupation in time.

'The computer is a way of radically breaking with traditional design processes. The mediation techniques enabled by the computer signify a complete overthrow of many architectural assumptions. The computer entails a radical rethinking of the valuations implicit in architectural design. In this sense, computational techniques could represent the first important development in architecture since modernism.' (Van Berkel, Inv. In Arch., p.231)

4. 2. 2. Animate Form, Blob architecture

Unlike most of his companions, Greg Lynn has also had an opportunity to test his theoretical works in the real world. He begins the design process by feeding his computer a series of numbers that relate to a proposed site-average wind speeds coming in from the ocean or the flow of traffic from a nearby highway. Then he watches the computer translate these numbers into a series of algorithmic curves. Using animation software, Lynn allows the curves to unfold themselves and interact in order to suggest a possible design for the building; when they take on an interesting configuration, he freezes the computer frame. The computer's ability to generate unexpected shapes introduces an element of randomness into the architect's conscious aesthetic choices. 'The architect is not so much a form giver as a form director,' Lynn says. 'The computer brings both a degree of discipline and unanticipated behaviour to the design process,' he adds. But where Lynn sees his mathematical efforts as creative innovation, his critics see undistinguished results or an architecture that is far more interesting to design than it is to look at or live in. 'Greg talks about forces, about complexity theory, about wind and tornadoes,' says Roger Sherman. 'But if you see the buildings, they look pretty static. The critical question to me is one of legibility. If you are in a building, are you going to understand that its design has something to do with the weather? I don't think so. Do you need to read the book before you can understand the building? These people are too smart. They are so smart that the world as it is not interesting enough.'


Fig. 4.12. A Project of Greg Lynn
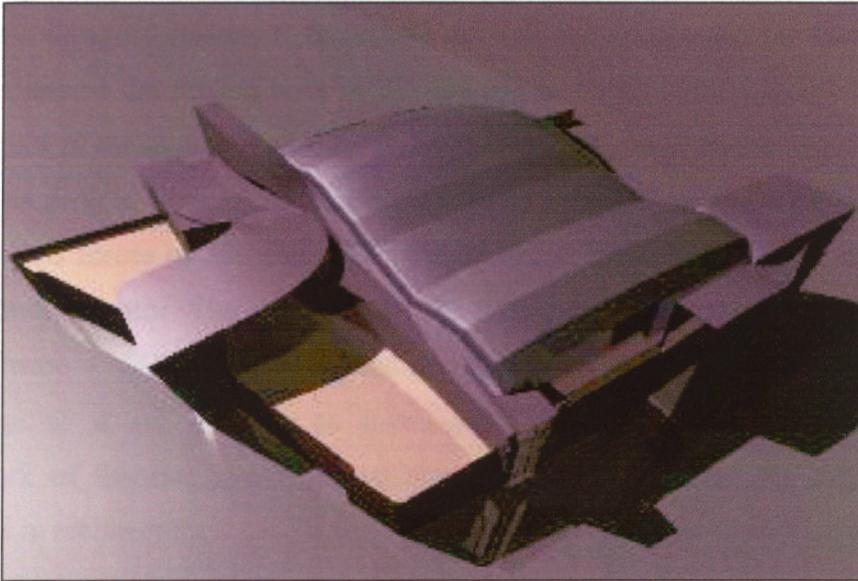
Fig. 4.14. Church Project, G. Lynn, 1997

Lynn's most noted project to date, a Korean Presbyterian church, illustrates his working method as well as the difficulties of applying Deleuzian notions to building in the real world. The project was a converting an old Art Deco factory in Queens into a massive church. Lynn decided to erect a new building right on top of the old. Accordingly, he took the measurements of the existing factory and plugged them into his computer along with projected measurements for the church he planned to build on top of it. In this way, he was able to generate a series of visual ideas from the mathematical relationships between new and old structures. 'You are not sure if you are in the new or old part. That kind of fusion is very Deleuzian,' Lynn says. 'We used the old as a kind of chrysalis, to create an alien structure out of an existing logic.' Even as the project moved into active construction, the design continued to evolve dramatically. In the past, Lynn

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explains, architects tended to start with a dominant visual motif-the spiral in Frank Lloyd Wright's Guggenheim Museum, for example-and make it the organizing principle for the whole building. 'One of the big assets of the computer,' he says, 'is that you don't have to make a decision about the form in the first stage. We found with the Korean church we were still changing the design during the construction because of input from the contractors. The architect's role is to put these decisions together, to connect them, and let the form result from that process.'

The office of Greg Lynn FORM has produced projects that challenge traditional ideas about architectural design methods. The work has integrated the computer in its design process in an increasingly innovative manner. Used as a tool to investigate design decisions dynamically through animations and the moving section, and to represent the project both in 2D and 3D in Cabrini and Cardiff, the computer plays a part in the generation of forms in response to programmatic exigencies in the Yokohama project. Finally, in the Port Authority competition, the most recent project, Lynn models forces on the site, using the advanced inverse kinematics capabilities of Alias Poweranimator. The office views the incorporation of state of the art hardware and software - SGI Indigo and Indigo Extremes, running Alias, Wavefront and SoftImage as a set of tools to investigate architectural performance within the framework of theories based on performance parameters that are only now being theorized in architecture.


Fig. 4.15. H2O House, G. Lynn

Lynn's built projects have made him unprotected to criticism from other cyberarchitects. The problem, argues Hani Rashid, lies in the architect's uncritical reverence for technology. 'Greg is kind of at the mercy of what the software tells him to do,' he says. 'Alias consulted with Reebok to help the company produce new shapes in running shoes. Now it's

in the hands of architects who are producing buildings that look like running shoes.' According to his critics, Lynn has failed to realize the truly radical implications of the information revolution. He uses the computer to generate curved shapes and grand discourse but ignores the explosive potential of interactive technology and the World Wide Web. Buildings shouldn't merely be designed differently with computers, they should be beating with information. Stephen Perrella designs buildings with thin plastic skins of liquid crystal, like enormous computer screens. A version of this already exists in Las Vegas, where an entire street is enclosed in an enormous television screen with constantly changing imagery. For some cyberarchitects, this stuff of consumer culture's busy aesthetic is a politically charged act. Perrella believes that a media-saturated culture like ours gives us the tools to free ourselves from constricting social forces. The Internet, he says, is a good example: 'Something started by the military has become one of the most liberatory forces in history.' He believes architecture can achieve the same thing; 'TV screens are getting bigger and bigger, and the home is going to be more intertwined with electronic imagery. I'm trying to distend the television imagery into the wallpaper and drapery.'
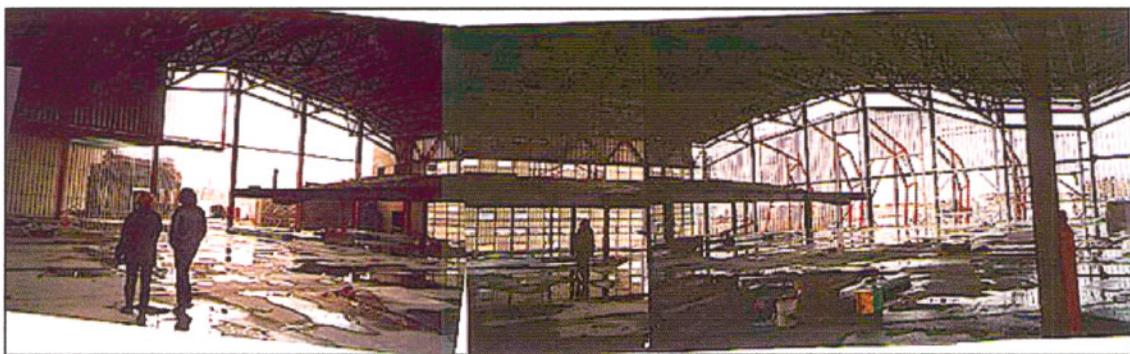
Fig. 4.16. Korean Presbyterian church, G. Lynn, 1997

On the contrary, in Anytime Conference (Ankara,98), Greg Lynn had presented his speech, his architectural projects with the support of slights of his late projects. Then, it was assumed from looking at these slights that we were going to get a rather extraordinary interior, but what was felt that an ordinary interior. Here, in the church project the form acted as a skin, surface, seemed to be the decoration because the function seemed to be totally intact.

4. 2. 3. Liquid Architecture

In the same vein, Marcos Novak dreams of creating buildings that incorporate interactive technology. Combining virtual reality and intelligent computer sensors that respond to the wishes of a building's inhabitants, Novak envisions something he calls 'liquid architecture.' He explains liquid architecture as 'A liquid architecture is an architecture whose form is contingent on the interests of the beholder; it is an architecture that opens to welcome you and closes to defend you; it is an architecture without doors and hallways, where the next room is always where it needs to be and what it needs to be.... Liquid architecture makes liquid cities, cities that change at the shift of a value, where visitors with different backgrounds see different landmarks, where nighborhoods vary with ideas held in common, and evolve as the ideas mature or dissolve.' Novak's writings all sound the same lyrical, utopian note, in which virtual space and the Internet allow individuals to create their own communities. But for now these projects exist only on Novak's computer screen. For the moment he remains more of a performance artist than an architect, creating virtual utopias on the Internet or in exhibitions.

'Liquid architecture: an architecture that breathes, pulses, leaps as one form and lands as another.' (Novak, M., Liquid Architecture)

Marcos Novak originated the study of liquid architecture, navigable music, habitable cinema, and other extreme intermedia. He investigates the architecture of virtual and intelligent environments and employs algorithmic techniques to compose actual, hybrid and virtual worlds. He refers to his Virtual Reality art-works as 'liquid architecture and navigable music'. He uses computer algorithms originally intended for music composition to 'compose' architecture: four-dimensional architecture which moves around in space, shifting color, shifting form. And these abnormal liquid structures play melodies all the while, melodies controlled by the movements of whoever happens to be in there.
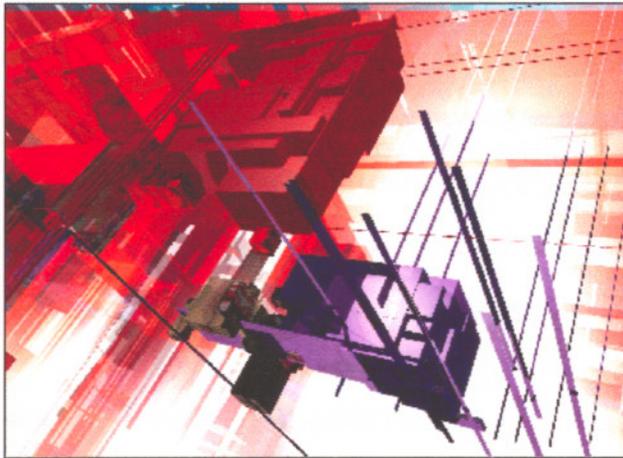
Fig. 4.17. Liquid Architecture, M. Novak

According to Novak; 'What is fascinating about this new physicality and tactility is the possibility of literally, though 'virtually,' touching ideas and abstractions that were previously entirely untouchable. My term 'dis/embodiment' has everything to do with this new capacity to embody, or re-embody in a new form, what was previously beyond reach.' 'Dis/embodiment' - the slash is very important, because it states that there is no actual state of disembodiment, but that there are only alternative states of embodiment in media that are more or less solid. With the slash, it is metamorphosis, transportation, reincarnation. In either case the components of embodiment continue exist, but in one the signature of the self in maintained and in the other it is lost.'

Fig. 4.18. Liquid Architecture, M. Novak

'Finally, as far as examples are concerned, I am fascinated by the idea of 'intelligent space,' space itself become active. I am looking into alternative geometries and constructing models of non-Euclidean or non-perspectival spaces.' (Novak, M. Liquid Architecture, 1991)
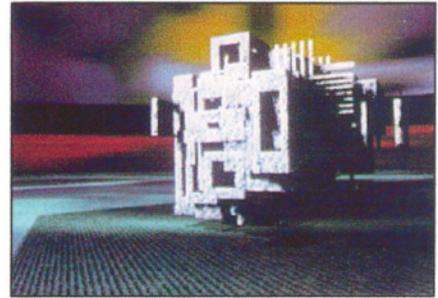
Fig. 4.19. Liquid Architecture, M. Novak

TransArchitecture: Transmitting the Spaces of Consciousness...

'The invention of technologies that transmit signal, image, letter, sound, moving image, live sound, live image, sense and action, intersense and interaction, presence, interpresence, telepresence, underscores our desire to transcend the narrow here-and-now. However, until this moment, the technologies that would allow the transmission of space have been unimaginable. A barrier has broken: not only have we created virtual communities within nonlocal, transphysical, public realms, we are now able to exercise the most radical gesture: distributing space, transmitting architecture.'

For the first time an architect is called upon to design not the object, but the principles by which the object is generated and varied in time.

4. 2. 4. Virtual Los Angeles Project

Even as the cyberarchitects discuss about the advantages and disadvantages of taking their politics and ideas to corporate clients and the real world, another computer-

based architectural project at UCLA is proving that the computer can transform the practice and execution of architecture. This project, directed by Bill Jepson of UCLA's Urban Simulation Laboratory, is titled Virtual Los Angeles. Although it has none of the metaphysical pretensions of liquid architecture or animate form, the program may significantly affect the relationships among architect, client, and public. Jepson's long-term goal is to reproduce all four thousand square miles of greater Los Angeles in three-dimensional cyberspace so that developers, corporate clients, and community boards, as well as the ordinary citizen, can see the design impact of new construction before the ground is even broken. Because it uses virtual reality technology rather than simple two-dimensional photography, Virtual Los Angeles allows for movement and shifting perspectives. Directing a mouse or joystick, Jepson steers a car through the Los Angeles streets drawn on his computer screen.. But here the Silicon Graphics machine creates an experience of incomparably greater realism, capturing detail down to the graffiti on walls and cracks on the sidewalk. By flashing thirty images per second-the rate of a typical television broadcast--the program allows you to move through the cityscape in what feels like real time. In this way, if you look up as you turn west at a particular intersection, you might see the imposing skyline of downtown Los Angeles, and if you turn around you can see how the new facade of one building harmonizes with the other buildings on the block. Jepson has already digitized about six hundred blocks, or fifteen square miles, of the city. Just as developers now have to perform an environmental-impact study before getting approval for a project, Jepson would like them to use Virtual Los Angeles to obtain a proposed building's visual impact on the cityscape. Already, he says, developers and architects are coming to him on a private, voluntary basis. By plugging their specifications into his computer, they can get a glimpse of what their buildings will look like within the larger urban context. And the results don't always work out in favour of the developer or the architect.

Predictably perhaps, the radical cyberarchitects in academe regard Jepson's project with contempt, as part of a tradition of social engineering they find highly suspect. Says Perrella: 'Even with the most humanistic of intentions, I can see this as an easily instrumentalizable technology'-one that can readily serve the interests of corporations or the government. The same complaint, however, could be made about Perrella's conception of hypersurface architecture. A few years age, Philip Johnson presented his latest

proposal for two corporate towers in New York City's Times Square: sheathing the buildings in plastic or other synthetic material that would serve as a constantly mutating surface for advertising. Thus while Perrella sees hypersurface architecture as revolutionary, the kind of media-saturated building he dreams of could just as easily play into the hands of corporate forces as aneffective means of extending their reach.

> 'You can't separate a building from its cultural and political context. The same building can change its meaning when the institution that occupies it changes. You can't solve political problems with new forms.' Greg Lynn

4. 2. 5. Hypersurface architecture

Here, Stephen Perrella offers an argument with a hypersurface geometry. A hypersurface is a new theory of liquid-embodied architecture to displace the nostalgia and re-realization being carried into the spatial conceptions of new-media technology. Hypersurface comes after deconstruction, but continues the critique of Cartesian assumptions embracing anti-humanist/anti-logocentric discourses. Further, it is the receipt and re-deployment of the architectural telegrams sent in the 60's by the group Archigram. (Their dream was of a city that built itself unpredictably).

> 'Hypersurface architecture is a way of thinking about architecture that does not assume real/irreal, material/immaterial dichotomies. It is to consider an architecture prior to those assumptions, that entails a condition also prior to the assumption of a split between body-subject/building. To think this architecture is not an act of construction or deconstruction but a nearly self-generating between-state. The generation of it occurs in an interplay and interaction between the delimited forces, energies and desire/life in substance (Deleuze) and language (Derrida). The architectonic translation of surface is structure/substrate. HYPER regards reconfigured manifestations of subjectivity/desire not over and above but as a having-risen-within. Hyper-surface is the delimited combinatorics of bodies/building as an interactive substrate configured by intersubjective digital praxis. If the hypercommunications of virtual culture/capitalism were exhumed from the non-space of VR and set into play within the substrate of an architectonic of hypersurface, the resultant distortions, disfigurations, and radical abstractions left open to interpretation would effect not only a return of the repressed of Western discursive logocentrism but new forms of intersubjective interactivity. Prior to any empirical dealing with technology, we are already televisual.' (Perrella, S. Hypersurface Architecture, AD Arch. in Cyb. II)

Fig. 4.20. Hypersurface architecture, S. Perrella

In the meantime, virtual building in cyberspace-where strong choices may be endlessly postponed -will continue to move. 'I think there is a problem with imagining buildings where the technology is so extraordinarily expensive that it is out of sync with reality,' says Roger Sherman. 'That is why a lot of these people are content to remain in the virtual world. I'm not sure that much of this will be buildable. And a lot of it will end up going the way of visionary projects from the past. But even if any of these projects are built, I'm not sure anyone would be able to perceive them as being the fulfillment of true democratization.'

3.2.5. Kolatan/Mc Donald Studio, animated design

Translating the spatial complexities of the virtual world back into a built reality, the Kolatan/ Mac Donald studio used different three-dimensional computer mapping systems to generate a spatially and programmatically animated design for the O/K Apartments in New York City. The project called for the integration of two formerly adjacent apartments into a corporate residence and entertainment space for a single, or two separate parties of guest depending on the situation. This required that the space function both as one and two apartments. By tracking the interface between domestic and professional systems already in place, the apartments acquired the same kind of flexibility as a computer desktop. 'The computer's paradoxical capacity to be both instrumental and spatial' calls for a radical revising of the principles of architectural design and, at the same time, of the nature and limits of space. 'our work mainly focuses on the way networks make it easier to make easier to make criss-cross and transversal combinations between different categories and different scales, using the initial systems to form new hybrid identities rather than just relegating them to the role of mere interconnections.' As the

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architects themselves pointed out 'a premise for this project was the adoption of an operative model making it possible to avoid adequacies as far as possible and create inadequacies, evoking Goethe's remark that 'inadequacy is productive.' In relation to the various parts of the flat, this suggested either splitting the satisfactory entities into smaller particles or to enlarge them into bigger combinations. These particles across the flat in a similar way to co-citation mapping'. This means that the topographic relations inside the flat do not create any clearly marked distinctions between spaces and programmes, the way the usual dividing up into rooms does. All the spaces are in a borderline state, the codes marking the interior surfaces-floors, walls, ceilings- are no longer of any value; continuing within difference, the unavoidable transition from one function to another, are the real guideline for design.

4. 2. 7. H2O Pavillion (NOX Architects)

NOX has, by a sort of genetic engineering where architecture has been met with other media, been able to put design on a different route, a route where modern science, non-linear electronic media and theory have become integrating - becoming especially clear with H2O EXPO, the water museum designed for the Dutch Ministry of Water Management, of which construction started in March 1996. Bringing in the computer at the first stages of the design process proved to be a way for the invention of an other architecture, a flexible architecture that has settled itself in the transitional area of two, often thought of as parallel, worlds: one of biological organisms and the other, as diverse as the first, the metallic and electronic world of modern technologies.


Fig. 4.21. H2O Pavillion, NOX Architects
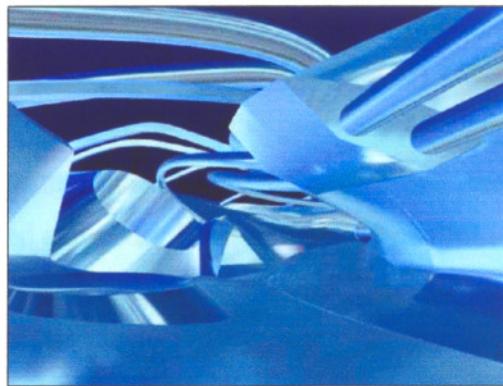
Fig. 4.22. H2O Pavillion, NOX Architects

'Imagine an architecture that speaks to all the senses, on that 'has more, an architecture that bleeds, that exhausts, that turns, and even breaks, an architecture that illuminates, that pricks, that tears, and rips when stretched' an architecture that is 'gorge-like, or that is fiery, smooth, hard, cornered, brutal, round, delicate, colorful, obscene, excited, dreamy, approaching, distancing, wet, dry, heart-beating', an architecture that affects us physically, draws us into itself, allows us to fuse with it, and even represents the ultimate hallucination.' For NOX, this desire appears to have become stronger, while the expansion of technical possibilities has made it seem closer.

In the H2O pavilion, visitors move over sloped and uneven floors, and are

confronted in the freshwater section with actual water in all forms of collection: ice, cold water, flowing to boiling water, and steam. In addition, there are numerous interactive computer simulations of waves, light, sounds, and the like, in the form of projections supplementing this animation.

Fig. 4.23. H2O Pavillion, NOX Architects; (L'Arca 123)

'The liquid in architecture not only means generating the geometry of the fluid and the turbulent, it also means dissolving all that is solid and crystalline in architecture, ' writes Spuybroek. 'The fluid merging of action and form which is called interaction because the point of action lies between object and subject, starts out from the orthogonal basis of perception with the horizontality of the floor perpendicular to the verticality of the window. By merging floor and wall, by merging floor and screen, surface and interface, we will leave the mechanistic view of the body of a more plastic, liquid, and haptic version where action and vision are synthesised.' 'we regard the omnipresent artificial world, the global synthetic system, as one immense complex organism.' The organism of the pavilion not only reacts in numerous ways to programmed algorithms, but also to the public and the environment. A weather station records wind speed and water level around the pavillion and transmits this data to a computer, which uses it to calculate the emotive factor of the pavilion. This emotive factor, in turn, affects the computers that control the light and sound in the pavilion. The pavilion is marked by the continual play of real and virtual environments, the one passing into the other, the building expanding into virtual space.

H2O Pavilion has been held by the concept of liquid. The design of this interactive installation was based on the metastable collection of architecture and information. The form is shaped by the fluid deformation of 14 ellipses spaced out over a length of more than 65 meters. The building has not so much been placed on the ground as dug out of the ground. The essential instability is achieved through the concept of the ground as being all around. The floor becomes hyperdimensional and tries to become a volume. When dealing with a haptic, three-dimensional body-a body without the distinction between feet and eyes-the difference between floor and ceiling becomes irrevalant.

The interactivity is not only in the geometry: the action moves through the material-not a form with a certain speed or on the move, but action in the form. The design does not distinguish architecture and information as separate disciplines. The project is not restricted to materials such as concrete and steel, which were considered to be liquid, but utilises cloth and rubber, ice and mist, fluid water, in addition to electronic media, interactive sound, light and projections.

4. 2. 8. Virtual House (Eisenman)

The program for the Virtual House begins from the memory of the spatial concept of Peter Eisenman's House IV, for which he wrote a text in 1987 titled 'The Virtual House'. The Virtual House is abstracted into nine cubes. These nine cubes constitute a potentail field of internal relations and conditions of interconnectivity. Each potential connection can be expressed as a vector. Each vector has a field of influence that actualizes its virtual movement through time. This actualization is visualized through the effect of each vector on the lines within its field of influence. The lines and their geometric properties become forces. For each vector, attributes were optionally set to describe its field of influence. The movements and interrelations were produced by these attributes, now seen as constraints, which influence the location, orientation, direction, and repetition of any vector within the space. These constraints operate on each other as local forces. Each constraint acts and reacts according to three types of fields of influence-points, orientation, and direction.
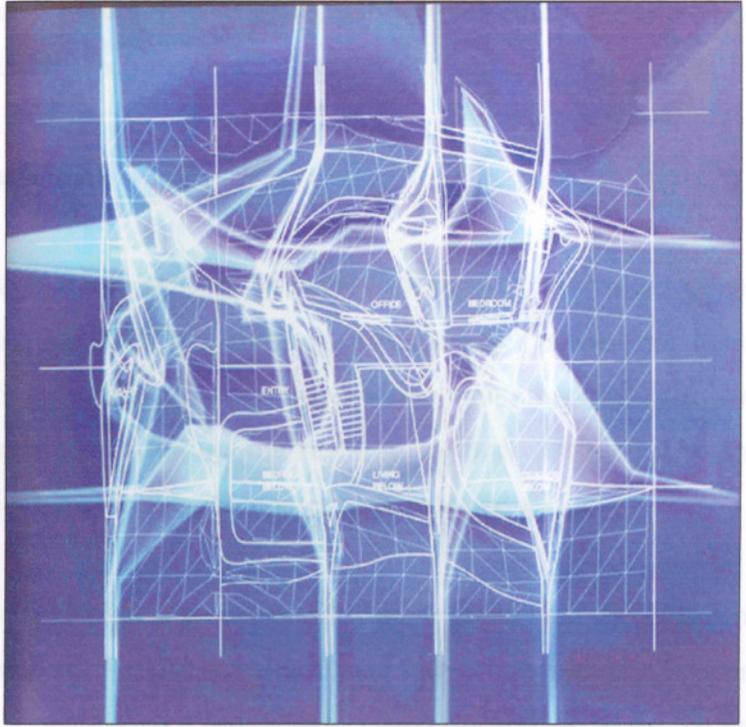
Fig. 4.24. Virtual House, P. Eisenman (Borusan)
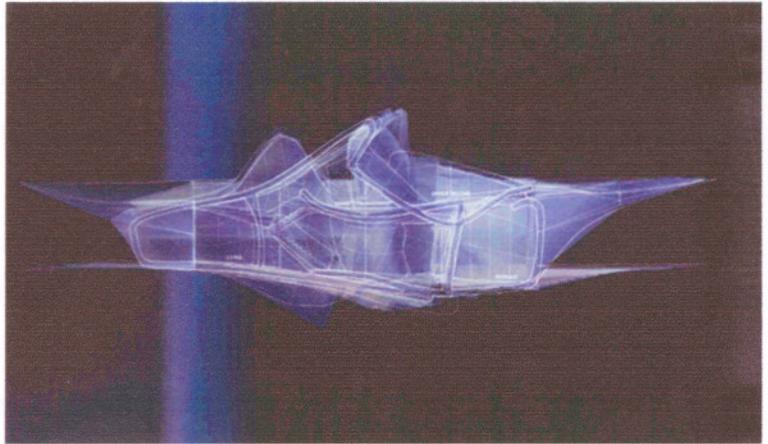
Fig. 4.25. Virtual House, P. Eisenman (Borusan)

4. 3. Metaphorization of the Program

Digitization can mediate a building's presence into the future. In particular, the program, the architect's term for the clients' needs that drive the design of a building is becoming increasingly like a computer program. It describes not just where a building is

and what people and activities it is supposed to serve, but how the building will behave as time passes and what it will be capable of becoming.

4. 3. 1. Reconfiguring Architecture

As we are being morphed into cyborgs, the space we inhabit, the buildings and the entire urban environment are also transforming. Circulation systems are being replaced by telecommunication systems. Traditional building types become obsolete. Office floors raised, old copper wires dug up and replaced by fibre optical cables, as catalogue shelves in libraries are replaced by computer terminals and so on.

Traditionally, architecture played an important role in organising the functions and relationship between activities. Landscape affects the interaction between spaces. For instance, the Berlin wall was a dividing line between the East and the West. To get money from a bank 20 years ago, one will have to travel physically to the bank. To have guest lecture, one has to travel for almost a day. There is a close relationship between the physical environment and us. As Winston Churchill once pointed out 'We make our buildings and our buildings make us.' Today, spaces in general are being taken up by telecommunication and computer systems. Book shelves and catalogue shelves are filled with computer disks and CD-ROMs. The digital, electronic, virtual side is increasingly taking over the physical. Instead of looking at a thick dictionary, one would rather use the MS Word 7.0 spelling, thesaurus and grammar check. To transfer cash from bank to bank, I could do it through the telephone, which is much faster than signing a check and depositing it through an ATM machine. Although book stores can be replaced by bit store, museum reading rooms and library stacks and catalogues replaced by servers, galleries replaced by virtual museum, theatre replaced by entertainment infrastructures, schools replaced by virtual campuses, it is not happened yet. The idea was not new, back in the 1980s, Alvin Toffler has already written it in 'The Electronic Cottage' . The success of technology is failed when it does not address the social issue about this kind of living. The extreme end of cyber technology is isolation. Isolation as been clearly illustrated in E.M. Foster's 'The machine stops' It is a time where there is no desire to touch or feel another human being, a time when the physical element is boring and reinterpretations of what is considered interesting and

reinterpretations of the interpreted are considered even more interesting. A time whereby information is paramount and physical form redundant. Unless the society has been transformed so drastically, social aspects became so differently, only then, will architecture become obsolete.

> 'The process of design changes by the introduction of computers, which does not simply mean that plans drawn on tracing paper with pencils are replaced by images displayed on computer screens. We can erect a virtual building and experience it in the designing process. We later experience another building as a physical existence. The process of shifting from virtual to physical architecture is continous.' (Ito, Domus 800)

4. 3. 2. Programmable Places

The function and circulation of the original spaces will not change drastically. When we enter a library to look for the physical embodiment of knowledge, the book, the process is still the same although it could also be available on an electronic webpage. Viewing something virtually will not completely erase the need to see the real thing. It will only decrease the number of visitors visiting physically and increasing the number of virtual visitors. Buildings nowadays not only have to relate to the urban context but also to the cyber context. Instead of huge roller coaster rails, they will be replaced by rooms with excellent audio and video facilities with mechanisms to defy Newton's law of gravity. Rooms and buildings will forever become the links between the body and bits.

Building these spaces is not about putting in fibre optics cables because these equipment will decrease in size every day. In the end, the only obvious piece of equipment is the keyboard and the mouse. Display devices and effectors will multiply. In the end, building could become the computer interface and vice versa. The architecture of the past, based on pen and ink representations and the computer generated world of the present, made of brilliant colored pixels, are centuries apart and seem to represent two completely different universes, both valuable in their own times, but with nothing in common. For its proponents, the new cyberarchitecture represents nothing less than a social and spatial revolution, an opportunity to liberate us from the constricting buildings of the past and drive us into a future in which ordinary people

control their experience of the world around them. 'For the most part, architecture has been a prison, because it defines our subjectivity,' explains Stephen Perrella. 'The house domesticates the subject, imprisoning it with traditional values. It sets up hierarchies, just as the kitchen has traditionally assigned a domestic role to women.' According to Perrella, conventional architecture is unfortunate because it invites us to see ourselves in rigid, reductive ways.

> 'Design in architecture will refer not only to traditional hardware, but also to a more flexible software design that includes programs. We will be designing time just as we design space.' (Ito, Domus 800)

> 'Out of the terminus of history, which is nothing other than the Holocaust with its concentrated space of annihilation and complete burn-out of meaningful redevelopment of the city, and of humanity - out of this event which shatters this place comes that which cannot really be given by architecture. The past fatality of the German Jewish cultural relation in Berlin is enacted now in the realm of the Invisible. ... The new extension is conceived as an emblem, where the invisible, the void, makes itself apparent as such.' (Daniel Libeskind, Invisible in Arch.)

> 'The museum is a zig-zag with a structural rib, which is the void of the Jewish Museum running across it. And this void is something which every participant in the museum will experience as his or her absent presence.' (Daniel Libeskind, Invisible in Arch.)

Architecture will continue to stand up, to deal with gravity, to have four walls. But these four walls no longer need to be expressive of the mechanical paradigm. Rather they could deal with the possibility of these other discourses, the other affective senses of sound, touch and of that light lying within the darkness.

4. 4. Future of Architecture

> 'The future of architecture will no longer be architectural.' Nouvel, Jean

In the latter half of the 20thC we have witnessed the progressive dematerialisation of architecture - a search for singular lightness and mutability. Architecture is buried away somewhere in the genes of the profession, in other words in its whole history. Everything that is going on in the world at the precise movement is that a new architecture is produced.

> 'We are driven by something metaphysical that overtakes us, that we cannot reach. Rem Koolhaas, in his postulate whereby a 'generic city' would exist, seems to admit that any situation is possible and that context is not necessary.' (Jean Nouvel, Inv. In Arch.p.177)

Bernard Tschumi describes that a 'continuing transformation of buildings...from material to immaterial... from the heavy stones of the Egyptians to Roman vaults, then gothic arches, then iron construction, the curtain wall, structural glass, immaterial light screens, Albert Speer's Cathedral of Light, Holograms, and now virtual reality'. (Bernard Tschumi, 'Ten Points, Ten Examples,' ANY, no. 3 (November-December 1993):41.

Today architecture is 98% problem solving and 2% expression. Architecture in Cyberspace reverses these percentages, dedicating most of the effort to expression, communication, or meaning. Cyberspace will be a far more designed and objective space than anything in the physical environment. Here lies an fresh opportunity to refocus architectural efforts, to band the attempt of it's most earthly and limiting aspects, by focusing directly on the fashioning of experience itself.

'Architecture not only reflects a different paradigm of thought but itself becomes a discipline of unfolding knowledge. Another issue is whether the paradigm is consciously pursued or not; are we seeing merely a parallel between science and architecture or something deeper? Is it only a question of using computers and designing curved buildings – a fashion- or a change in the mental landscape? Can architects furnish a new iconography, a new style and set of meanings? Can one design a whole city fabric in their image? Architecture to be true to the spirit of contemporary life and the life of forms in art, must explore new languages. Further innovations, or mutations in this emergent tradition, include the land-form building. The landscape as building has emerged as a new complex type .' (Charles Jencks, 1995, p.122)

Chapter 5

CONCLUSION

In the scope of the study, the transformations of digital age in culture and architecture, and the impacts of information age on individual have been studied, the new architectural discourses in the turn of the millennium have been disccussed. In addition to that, while questioning the latest thresholds and visions; the concepts 'cyberspace', 'virtual reality' in shaping of the new architectural agenda and the transitions in the design process by the introduction of computer technology (architectural softwares) have been questioned by means of the works of some New York architects. The framework of the cyberarchitecture has been studied in both theoretical and practical examples of Eisenman, Kurokawa, Greg Lynn, M. Novak, etc.

In this regard, the conclusive assessments have been viewed as the follows:

Against the purist discourses of modernist tendencies at 30's; nowadays contemporary architecture relates to the determinants of the informational age which are 'information', 'virtualization', 'ephemerialization', 'energy', 'communication', 'interaction', and 'liquidization'. An architecture of transformation has been created corresponding to virtualization.

For centuries, space was treated as concrete and always regarded as a monument adding a value of timelessness. When coming to the modernist ages, time is decomposed from space and history from geography. Today we are witnessing the birth of a new architecture universally recognised. But, with the advent of electronic communication technology, such as TV, fax, computer, architectural space has lost its locality, and it became eclectic. Since we live in a time that representation predominate over existence, architecture is reduced to images. Space lost its three-dimensionality by reduction to an image. This thesis showed us that we live in an age of simulations. Since reality hide behind the simulation, image become the most important thing. Event and situation design versus product design. Hegemony of the media created an excess of shared-used architecture. Today, architecture isn't seen as the carrier of a symbolic/ideological value. Because media has taken over the role of architecture.

In the turn of the millennium we have seen an explosion of styles and methods for representing and expressing concepts and exploring perception with nontraditional, unusual materials. Knowledge has never been so important than ever before that to generate a figure in art and society. When everything is being accepted, 'the absolute truth' up to now is being questioned towards a new century, the discipline of architecture is also living a similar process both in theoretical and practical production. Today knowledge is power. However, easy handling of knowledge has dispersed architecture from its local ancestors. The problem here is not the alienation or deterriolization, but the lost values and meanings.

The thesis emphasized the power of individualism,the liberalization in every sense of the terms that we face today and in addition asks the question of 'can we really talk about the freedom, or is it totally a pseudo-liberty?' Up till now, art and architecture have been ruled by the common interests , but now individualism, in addition to that abstraction, alienation, interpretation gained importance. Architectural discipline, for many years has been dominated by such –isms, now seems to celebrate its freedom.

With the crisis of modernism, architectural discipline has freed its chains and defined itself within such tendencies that, structuralism, postmodernism and deconstructivism. Architectural theory and practice have been transformed to the formless, complexity, contradiction, randomness, to the indeterminate. Today, the traditional elements of space made up of floor/ceiling/border/ground is melted into each other and form becomes filigran, the massivenesss is loosen, and it is extended from traditional, rational forms.

In the turn of the millennium by means of digital technology we have been liberated from all our senses; in art, politics, economy, social life, in short, in all fields of our life we have been moved to liberalization (or far beyond, virtualization). All the meaning and values we have deformed, obscured, uncertainified. Architecture couldn't keep itself from this transformation, and carry on its existence and meaning to virtual dimensions in so try to define itself with a new dialogue. In all these rapid and radical transformations, few important questions come up to minds. One is; 'Do all the transformations announce the coming end of architecture?' Or will the term

'architecture' be transformed to mean something different than we understand it today ? 'Is architecture reduced to computer programmes?' Do we think so because that architecture is transferable, experienced by people form all timezones and cultures simultaneously, dynamic and open to change? Undoubtedly, architecture has sustained its development process starting from the caves, bamboo houses to intelligent buildings equipped with automatic electronic systems. (today, with the cooperation of NASA, architects have an opportunity in designing a life on Mars). So that, architecture never loses its faith, existence; but only changes its dimension and in addition to this gains importance that it had never been before.

What role do computers play in architecture? Does computer technology imply a particular modality of the visual simulation of lived and mobile space (the space of cybernetic planning and design), which remains in principle no different from drawings and plans in their more conventional forms? These particular modalities and usages seem to preserve complete the fundamental structures of design, marketing, client refinement, and interaction with the profession., speeding up the time of communication while visually enhancing the experience of design. Computer opens up new areas of exploration in design.

The thesis leads us to a hot discussion topic of whether all the projects/ideas produced and stayed on the computer screen are called architecture or not. Today, it seems unnecessary to accept such works as nonarchitectural. We know that there are plenty of buildings which are part of the architectural canon though they have existed hardly at all, never existed, or do not yet exist, from Speer's Hall of the German People to Jean Nouvel's Tour Sans Fins. Design has always been for architects not merely the process of creating an actual project, but also for exploring ideas and concepts for which no client or even no building technology exists. Such images offer a challenge, inviting the viewer to consider new possibilities, new strategies.

The technology that will be at the disposal of the virtual architect will help to express these new concepts and communicate them better and more completely. The convergence of virtual reality, active databases and open systems in the vision of

intelligent architecture to regain its role as an arbiter of the future, and it is for architects to seize that opportunity.

With the introduction of computers to the world of design, architects have seized new opportunities to generate new worlds. Virtuality offers architecture the idea of a disembodied, nonmaterial, or transendental notion of design, design disembodied from the matter and the idea of a simulation, reproduction, enchancement, or augmentation of the senses and materiality.

With the loss of reality, cultural dislocation and virtualization; one can think of the defensing points of locality against the hegemony of information architecture. It is inevitable that architecture can't avoid itself from this cultural and technological transformation. But here the problem is not the virtualization of architecture, but its loss of meaning and genuis loci. The answer lies in the sentence 'think globally, act locally'. But since the world is getting bigger and smaller at the same time, it will be inevitable that a city in Asia will be the same as a city in America. For a while, one won't be able to distinguish the differences. Because there won't be any difference.

By means of, loss of geography, annihilation of space by time, globalization (virtualization), advances in transportation and communication technology,(supersonic jets, fast trains), cultural dislocation, media (TV, fax, computer, internet), virtualized market and economy, consumer society, easy handling of knowledge; architecture faced diverse challenges in both functional, and formal ways. Form becomes filigran, the massiveness is loosen, and extended from traditional, rational forms.

Today, architects design wild curves and complex non-Euclidean shapes that would have been virtually inconceivable without animation software. The computer allow the architect to turn complex algorithms and some theoretical ideas into parabolas on the computer screen, but will all this work make any difference in the built world? Each software (Form-Z that Eisenman is using, Catia F. Gehry using) has a particular way of making shapes. Design is very much related with the rapid developments in the computer technology. What determines in figuring the borders and possibilities of architecture is the computer program, we can say. Software indicates a particular

architecture which is generated upon by the libraries of the programs. Complexity, the characteristic of the program determines the value of design.

While regarding these transformations a few question comes up to minds that, does the replacement of the drawing board with the computer monitor or holding of the mouse instead of the pencil really mean a different way of designing, or what is the outcome of this change of media? Does architecture reduced to architectural programs?... Considering that architecture is going through a major transformation, these are inevitable questions. Use of the computer is revolutionizing how architectural design and draw.

The enourmous expansion of migratory movements, the universalization, the rapid developments in virtual reality techniques and spatial simulations formed an explosion in the concept of space. Thesis, tries to obtain the answers of the questions mentioned above.

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GLOSSARY

Cyber: It comes from the Greek word 'kuber' which means to navigate.

Cyberpunk: a science fiction movement in 1980s; known as different names such as; 'Image on the mirror', 'Radical Science Fiction', 'Waves of 80's', 'Movement', 'Anarchic Technologs', and 'Neuromentics'. This literature movement where high tech and modern pop underground culture has been integrated with each other, expresses a certain aesthetical sensibility and a life style. Cyberpunk is the term given to a particular genre of 20th century science fiction.

Cyberspace: (also called as net, web, matrix) is a networked sustained computer memory, telecommunication and digital virtual space and telephone network throughout the world, satellited communication computer networks, interactive cabled-TV and ISDN; on the other hand, a quantum space in a microchip and electromagnetic/digital optic data storage technologies. A commonly held understanding of the virtual in relation to space is the notion of cyberspace. Cyberspace is the term for the non-existent world on the other side of the computer, the world of programs, data, interconnections, and hardware. There are some phrases used synonymously with cyberspace: cyberia, virtual space, virtual worlds, dataspace, the digital domain, the electronic realm, the information sphere.

Cartesian coordinate system: (x,y,z, coordinate system) is the standard method of the correlation between the two or three variable qualities. It is based on series of points placed in axes. (coordinates).(x, apsis; y, horizontal; z, ordinate; coordinates) cartesian coordinates are the basic elements in 2 & 3 dimensional computer graphics and CAD.

Computer animation: is the demonstration of a series of images created by computer with the speed of simulation of persistence of vision.

Dataglove: is a data-record tool developed by Thomas Zimmerman & Jaron Lanier from VPL Industries. It transforms the movement of hand and fingers to a code that can be readable by computers. It is donated by sensitive perceivers and cable of fibre optics surrounding gloves.

Digital: indicates datas shown in different signals. In digital, telecommunication and computer systems' two numbers (0 or 1) are used in order to generate groups and show the numbers or the alphabetical characters.

Head-mounted display unit: It is a stereoscobic monitor pinged onto a cap or visor. It generates three-dimensional computer graphic images.

Hypertext: is a programme that multi-pass from one text to another, it allows the user connect the texts and allows to see the hyperlinks with random access method.

Simulacr: is a thing on its own, which does not have a referance to reality, is a product of the non-existed. It gets out of from the concrete, copy/original, is the production of the non-existed reality.

Simulation: an activity, environment/system's representation with the model created in computer. It is the generation by models of a real without origin or reality: a hyperreality.

Virtual: the word 'virtual' is derived from the Medieval Latin 'virtualis' itself derived from 'virtus' meaning strenght or power. It indicates a process or a simulation of an instrument in computerization.

Virtual Reality: also known as artificial reality. The term was first coined by one of its inventors, Jaron Lanier. It is a simulation of the reality. By using three-dimensional real time modelling stereo visual techniques, it accuses the traditional user-monitor interface; surrounds by a realistic environment generated by the computer. There are two forms of operational system; immersive, non-immersive. Non-immersive technologies involve screens with trackballs. İmmersive systems

of the dataglove, helmet and datasuit provide further contact with the virtual space. Virtual reality is a computer-generated place which is viewed by the participant through goggles but which responds to stimuli from the participant or participants. A participant may walk through a house that is being designed for him or her to get a feel for it before it is built.

VRML: In the past few years there has been an explosion of "3D viewpoint web worlds" on the Internet. These views have a small compass indicating that you can use the arrow keys to move around in the environment. In many cases, you have the feeling that you are in the centre of space and you can turn around in a circle and you can direct your gaze up or down. In some more complex environments you can move forward and backwards into many connected 3D scenes. These worlds are created by Virtual Reality Modelling Language (VRML). VRML, like HTML, is platform-independent, which means that the information can be transmitted easily over the Internet and received and interpreted by different machines.

Telepresence: is a variation on visualising complete computer generated worlds. This technology links remote sensors in the real world with the senses of a human operator. The remote sensors might be located on a robot, or they might be on the ends of tools.