REMEDIATING THE DATA:
A STUDY ON THE INTERACTIVE DIMENSIONS
IN NEW MEDIA

A THESIS

SUBMITTED TO THE DEPARTMENT OF

GRAPHIC DESIGN

AND THE INSTITUTE OF FINE ARTS

OF BİLKENT UNIVERSITY

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTER OF FINE ARTS

By

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May, 2005

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ABSTRACT

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A STUDY ON THE INTERACTIVE DIMENSIONS IN NEW MEDIA

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M.F.A. in Graphic Design

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May, 2005

This thesis analyses the role of interface in altering perception and customizing interaction in new media. It comprehends the correlation of theory and practice while probing into the current debate by means of examples and case studies. The general structure of this research is based on the objectives of interactivity in cultural and social levels. In each level, interactivity is analyzed through function, operation oriented and design-wise aspects of new media. This study focuses on the interactive dimensions in new media and their affects on the user's perception and engagement within a digitally framed work.

Keywords: New media, interface, graphical user interface, interaction, content, navigation, database, remediation, post-modernism, human-computer interaction and visual communication.

ÖZET

BİLGİSAYAR VERİLERİNİ YENİDEN MEDYATİZE ETMEK: YENİ MEDYADAKİ ETKİLEŞİMLİ BOYUTLAR ÜZERİNE BİR ÇALIŞMA

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Grafik Tasarım Bölümü

Tez Yöneticisi: Yard. Doç. Andreas Treske

Mayıs 2005

Bu tez arayüzün yeni medyada, algının değiştirilmesi ve kullanıcı deneyiminin özelleştirilmesindeki rolünü analiz etmektedir. Bu çalışma güncel tartışmaları örnekler ve durum çalışmalarıyla incelerken teorinin ve pratiğin bağıntısını kavramaktadır. Bu araştırmanın genel yapısı, etkileşimin kültürel ve sosyal seviyelerdeki amaçları üzerine kurulu olup her seviyede etkileşim, yeni medyanın fonksiyonuna, işleyişine ve tasarıma yönelik analiz edilmiştir. Bu çalışma dijital bir çerçevede yeni medyanın etkileşimli boyutları ve bu boyutların kullanıcının algısı ve katılımı üzerindeki etkilerine odaklanmaktadır.

Anahtar Sözcükler: Yeni medya, arayüz, görsel kullanıcı arayüzü, etkileşim, içerik, dolaşım, veri tabanı, medyatize etmek, post-modernizm, insan-bilgisayar etkileşimi and görsel iletişim.

ACKNOWLEGEMENTS

A technology is interactive to the degree that it reflects the consequences of our actions or decisions back to us. It follows that an interactive technology is a medium through which we communicate with ourselves... a mirror. The medium not only reflects back, but also refracts what is given; what is returned is ourselves, transformed and processed.

— **David Rokeby,** *Transforming Mirrors*

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INTRODUCTION

The technological developments in all through the history brought us a great deal of possibilities to form new associations between the systems within and in correlation of the media that we are using to communicate, express and share data. As a designer it is crucial for me to grasp how digital media operate and form new visual languages that shapes and is affected by the culture by reflecting the tendencies in postmodern era. The definition of visual culture is in continuous flux and this endless change becomes more visible with the introduction of digital computers. In order to comprehend and contribute in the theoretical and practical discourse of new media, defining characters of new media must be carefully examined.

The digital nature of new media and the possible interactions with it are the distinguishing characteristics that differ new media from others. New technologies enabled us to amalgamate different media in digital means. Digital media blend communication technologies, such as, text, image, sound, and video together by coding them digitally. These possibilities manifested themselves as a shift of paradigm of the visual culture, which we construct and live through.

Randall Packer and Ken Jordan states in their book *Multimedia: From Wagner to Virtual Reality* that,

> "In the wake of postmodernist practice, computer-based media has resisted definition—and for good reason: definitions are confining. They reduce the range of potential in the object defined by drawing attention away from what lies outside the wall of definition. This is a particular concern with new media, because one of its attractions is its fluid, multifarious character, its permeable walls".[1]

New media can be understood as the combination of the newly exposed visual languages and the representation of visual cultural conventions.

This research probes into the functional and design-wise variables and inputs of new media through the notion of *interaction*. Thereby, it is orbiting around this notion by means of the use of interface and pull/push technologies as used the digital media. Also, the research intends to take over the faculty of investigating how the behavior of the user is being shaped through case studies. The core question examined is *what is the role of interface in altering perception and customizing interaction in new media?*

Interface and interaction, as appear in new media, play an important role in this study. An interface is the way the user interacts with the computer. It defines the way we perceive, navigate through and experience the content. It shapes how we conceive the computer.

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[1] Jordan, Ken, and Randall Packer. Ed. Multimedia: From Wagner to Virtual Reality, 2001. New York: W.W. Norton & Company, 2002 xxxiii.

Pull technologies are the conventional information distribution applications that take request/reply model as basis. With pull technologies the user first request information then receives the reply; the user asks a server to send back the information of interest. On the other hand, with push technologies information is sent to the user without waiting its retrieve message; hence the information appears without being fetched. In order to picture it we can take search engines, ftp, gopher and WWW as the typical examples of pull technologies, whereas, flash animations exemplify push technologies.

Nowadays, these two technologies are even used together by operating through various components of the Internet as such: navigational structures, databases, programming and coding, content, and design. For both technologies, interaction and interface are the keywords. Nevertheless, as it is clearly seen, it is rather limited, most of the time pre-coded and even the expectation for the interaction is calculated. From this point, this is crucial for this research to investigate *interaction* as a notion, a function, a mechanism and a behavioral stimulator–in a perceptive level, and the concept and operational logic of the *interface* as a cultural object.

In the first chapter, considering technological developments visual communication and design are discussed. The cognition of mind and body in the digital realm and the theories, which are related to this subject matter are presented. The theoretical debates that define the operational systems of digital technologies and how these technologies are manifested through interfaces are displayed.

In the second chapter the nature of new media and its main forms are explored. This is done by following Lev Manovich's categories, which he mentioned in "The Language of New Media" as database, interface, navigation and spatialization, which are necessary for the organization of the new media products. Moreover, new media, and its relation with the postmodern era is studied. In order to grasp the logic of the digital media, this research refers to theoreticians such as Andrew Darley, Katherine Phelps, Lev Manovich, Lori Landay and Ken Goldberg. For the understanding of postmodernism and its reflection in digital media the statements of Marshall McLuhan, Richard Grusin, Jay David Bolter, Diane Gromala, Katherine McCoy, Philip Meggs, Jacques Derrida, Gilles Deleuze and Felix Guattari are taken into consideration.

The second chapter also probes into how new media shifted the way we conceive visual culture and how these cultural codes are shifted with the use of digital technologies. This chapter focuses on the *remediation* strategy, which was defined by J. David Bolter and Richard Grusin as refashioning or borrowing from other media. There are two strategies in order to achieve remediation, one is immediacy and the other one is hypermediacy. Immediacy is to erase the medium by making it seamless or transparent and leave the user, or the viewer, with the presence of the thing that medium represents. Whereas, the aim of hypermediacy is to represent the content in such a way that it always reminds the user of the media's existence he is using. Along with this visual cultural shift and remediation, the formulation of time and space construction in new media samples is examined.

The third chapter focuses on interface and human–computer interaction in new media samples. This chapter is the core of the thesis in which the role of the interface in customizing the user interaction and experience and its affects on picturing the content will be investigated. This section discusses why an interface should use both remediation strategies; immediacy and hypermediacy together in order to achieve a successful experience with the user. Here Jay David Bolter's and Diane Gromala's book *Windows and Mirrors: Interaction Design, Digital Art and the Myth of Transparency* is regarded as a reference point. Along with the core question, sub-topics inspected are, the meaning and significance of content in new media, interaction in new media, the function of unpredictability in the process of interaction, the role of the user/audience/receiver for the operation.

In the fourth chapter the research results gathered from the evaluation of the previous chapters are applied to some case studies. These case studies cover three WWW examples, the official Web site of *Donnie Darko* (2001), an online game, *Banja* and *Sodaplay* an online interactive perspective modeling site. Based on the studies on these examples, assumptions are made.

In the conclusion part of this research, the results are presented in relation to the arguments and debates related with the role of interface and interaction in formulizing and conceiving the data in new media. This chapter tries to propose options to increase the level of interaction through the use of the interface in new media. This thesis' main focus is on *interaction* and *interface* as the identifying characters of new media.

The first objective of this research is to study the on going development of digital media. Thereby, the history of the communication technologies does not only guide the research, it also maintains links to various disciplines. New media appear as the mixture of various media such as printed media, television, computer games, and software and hardware related fields. In that respect, the general structure of this research is based on the objectives of interactivity in cultural, ideological, and social levels. In each level, *interactivity* is also analyzed through function/operation oriented and design-wise aspects of new media. This study focuses on the interactive dimensions in new media and their affects on the user's perception and engagement within a digitally framed work.

CHAPTER 1.   DESIGNING FOR AND WITHIN AN INTERACTIVE MEDIUM

1.1   VISUAL COMMUNICATION AND DESIGN

Communication technologies dominate our culture and affect many aspects of our lives. As they emerge and develop they both effect and are affected by the cultural issues as well. Communication was and is always at the core of human life as he is a social being. It is the exchange of information. It can either be interpersonal or through systems. We communicate in different modes such as gestures, written or spoken language, and so forth. The media that we use to communicate are in relentless change and development. Most common media are newspapers, magazines, telegraph and telephone networks, radio, sound and music records, film, television and computers. From cave paintings to the invention of writing, from writing to printing, telegraph, telephone and fax machines, radio, TV and digital computers are all results of man's needs for communicating that are reshaped by culture.

With the recent developments in technologies and with the changing structure of the society instant access to information became the main goal in communication technologies. Marshall McLuhan, *the* media theorist, was concerned with the interaction of each new medium with each other media,

and the society. He examined as a consequence of how this involvement reshapes our individual experiences and the social structure of the society. He called the period from 18th century to the mid-20th century 'the age of print' since the dominating technology was printing. In *Understanding Media, The Extensions of Man* he stresses that with the new technological developments there is a shift from speech to writing in the sense that in a literate culture the spoken word is also reduced to visual forms. According to McLuhan the basic function of the media is to gather and to accelerate the access to the information. The print has some consequences on human perception and experience of space and time, moreover with the print there grew a need for maps or schemes that would easily store information. With print, the information became portable and can easily be transferred within space.

He states that everything is gaining more iconic feeling, even the headlines of the newspapers transformed into more iconic forms, which shows the shift of the reliance of the society towards visuality. McLuhan stresses the idea of repeatability with the mechanical era that started after Gutenberg technology. By the process of print the handicrafts are also mechanized and became fragmented actions. McLuhan argued that the age of print is replaced by the electronic age. Hence, the communication speed is at stake and it is becoming faster together with every technological enhancement.

All these media emerge by borrowing from older media while adding up new properties to themselves. As technology enhances and traces newer media, the media are shaped by the expectations and need of the society. As Bolter and Gromala explain in *Windows and Mirrors,* a new medium is "a technology that is transmitted and created experiences in a way unlike any other".[2] New technology must have references to the older one in order to be accepted easily by the society while offering new possibilities by challenging the older media.

In this respect, graphic design is a powerful visual communication discipline for conveying messages. It aims solving problems with concept development, effective visualization and presentation of visual materials. Because of the reason that the main objective of design is to communicate messages as clear as possible, it relies on articulated set of rules for organizing design elements on a surface. As Philip Rawson stated in *Design* "[i]t arises at the interface between human-kind and raw environment and expresses human intentions, desire and hopes"[3]. Graphic design heavily relies on the notions of control and planning.

A design work reflects and carries the traces of socio-cultural, economic, technological, and political changes. Each design movement effects and is effected by the society. Therefore it reflects the structure of the era in which it was manifested. Katherine McCoy, who is a graphic designer and one of

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[2] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency.* The MIT Press, 2003, 92.
[3] Rawson, Philip S. *Design.* Englewood Cliffs, N. J.: Prentice-Hall, 1988, 10.

the co-founders Cranbrook Academy of Art claimed that, "[i]t does seem that graphic design should reflect its cultural milieu if it is honest to its time and its audiences".[4] The essential changes in a design movement manifest themselves through the shifting relations between the graphic elements and the changing forms of the visuals, especially typography and the new meanings that the visual language creates with the altered dynamics.

Philip B. Meggs highlights in "The Politics of Style" that,[5]

> "Form (style) and communication (message) have a yin-yang relationship. Each should be formed by, and reinforce, the other. Radical shifts in graphic style often signify that times are changing".[6]

After the Industrial Revolution and the expanding mass production, the tendencies in design shifted through a universal and objective notion that privileged the function over form that covered the modernist approach. This route became most apparent in the beginning of the 20th century within Bauhaus, International Style and New Typography that aimed seamless and timeless design which were based on clarity, rationality and universality. However, the social and cultural changes and the technological developments found their echo in the design works since, like culture, graphic design is always interconnected with technology. "Since the Renaissance, the culture of modernity has been fundamentally shaped by

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[4] Poynor, Rick. *Design without Boundaries: Visual Communication in Transition.* London: Booth-Clibborn Editions, 1998, 49.
[5] "The Politics of Style", was published in *Print* in 1995
[6] Bierut, Michael Ed. *Looking Closer 2: Critical Writings on Graphic Design.* New York: Allworth Press, 1997, 55.

technologies of mechanical reproduction, from the printing of texts to the replication of graphic images".[7]

Philip B. Meggs states that,

> "Along with music, drama, and fine art, design is a manifestation of the values, concerns, and fantasies of a time and place. Ultimately, graphics belong not to the designers who bring them into being, but to the audience they are aimed at and the society at large. After their days have passed, graphic designs quickly become cultural artifacts signifying an era".[8]

Today, computers, as being digital technologies, have become the medium that the designers are working with. With the technological possibilities that they offer, the process of visualizing a concept is moved into the digital realm. Digital media first acted as a tool for designers that eliminated lots of craftsmanship undertaken by the designer and offered new possibilities for juxtaposing image and text through different layers. The rise of the Internet and the WWW offered designers a new realm in which they design for.

The Internet was first used by the government, for strategic purposes then it spread into our lives and became an irreplaceable phenomenon like the other technological developments. It became a mass commodity we spent our hours in front of. The Internet reflects notions

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[7] Lupton, Ellen. *Mixing Messages: Graphic Design in Contemporary Culture.* New York: Princeton Architectural Press, 1996, 30.
[8] Bierut, *Michael Ed. Looking Closer 2: Critical Writings on Graphic Design.* New York: Allworth Press, 1997, 55.

of traditional culture that shapes behavior. Life on the Net is in high speed and in a flux of change of information. Nowadays, the Internet is everywhere, every company, schools, banks, artists, bands, individuals; everyone has a Web site of their own. The Internet has opened a new domain for communication and marketing. As Ellen Lupton stated, "public has used the Web to fulfill a mix of agendas, from the Net's traditional function of providing e-mail communication and access to information, to such new activities as advertising, shopping, and commercial publishing".[9] This uncovered as a new medium for the designers to explore. They are trying to have full control over it to equip and to update themselves for the interactive medium that they design with and for. The developments in the digital realm are quite rapid that almost twice a year, new versions of the softwares are marketed and the designers are confronted with new possibilities that would adjust the contemporary visual language. Like other digital media "[t]he Web is an ephemeral medium whose audience seeks constant change".[10]

Electronic media let us to store, share and distribute data in a digitally coded way. The digital nature of computers altered the way we perceive the world today. Developing along with the postmodern era, digital media is shaped with its rhizome-like structure and highlights the framework of the cultural structure. It blends text, image, sound, video and animation and offers new possibilities with its interactive nature. Digital media proposes a

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[9] Lupton, Ellen. *Mixing Messages: Graphic Design in Contemporary Culture*. New York: Princeton Architectural Press, 1996, 138.
[10] Idem.

bricolage-like structure by combining different media and elements from different cultural and historical backgrounds together.

As Bolter and Gromala points out "[t]he computer is not a neutral information space: it shapes the information it conveys and is shaped in turn by the physical and cultural worlds in which it functions".[11] As the authors suggest every message is shaped by the medium that it is transmitted through. Underlining his well-known statement "the medium is the message", McLuhan states that not what the medium communicates, but the medium itself also has a message. This statement is essential for the designers, because by juxtaposing texts and images, they set out new compositions, which can be interpreted independently from the content of the works.

Our minds do not work in a sequential way. The associations that we form follow a nonlinear fashion. In that respect, digital media is closer to how our minds work. With the invention of alphabet, the Cartesian mind is shaped as a sequential manner. Accordingly, this approach caused us to form linear associations within the old media that we use to communicate. Alphabet is the main signifier of how Cartesian mind works. It derives from the first two letters of Greek alphabet, alpha and beta that signifies this linear progression from a to z. Digital technology, however, offers random access that reinforces nonlinear organizations that objects to the Cartesian thought.

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[11] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency.* The MIT Press, 2003, 87.

Digital media is a new kind of media that emerged from the remediation of TV and computer technologies. It borrows from the past and adds new features onto it (for instance the digitality of the computer technologies), in order to become a new medium. Digital media dominates our contemporary culture in the sense that it imposes new ways of forming associations with our environment. It can be considered as revolutionary media that affects many aspects of our lives because of its characteristic of interactivity, its remediation and its endless flux. In order to get most of this media, cultural conventions that shape old media must be prevented, and new possibilities must be searched relying on the key issues that Bob Cotton and Richard Oliver have stressed such as, semantic compression, metaphor of bricolage, copywriting, and developing a new rhetoric.

World Wide Web's structure acquires different dynamics; therefore it is one of the inviting features of it. Because it is a digital realm, it acquires a non-hierarchical and a non-linear structure. It seemed as a big challenge for the designers to design within a non-hierarchical structure. Because graphic design is set on organizing information by forming a hierarchy within the visuals, but the data in digital media is non-hierarchical and decentered. Ellen Lupton labels magazines, which became popular within culture by the mid-nineteenth century, as the prototype of multimedia publishing because both possess non-linear and fragmented structure.[12] That is one of the reasons why the Internet looks very much like a compilation of magazines.

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[12] Lupton, Ellen. *Mixing Messages: Graphic Design in Contemporary Culture.* New York: Princeton Architectural Press, 1996,135.

Interchangeably this new medium affected the visual language of desktop publishing. Jessica Helfand points out in "Electronic Typography: The New Visual Language" that, "[m]ultimedia has introduced a new visual language, one which is no longer bound to traditional definitions of word and image and form and place".[13] Hence, graphic style has adapted itself to this rhizomatic structure that reflects and refracts the society. The radical differences in the process and the end product of the design works are visible in the contemporary visuals. The result was a contemporary hybrid visual language that mirrors the culture and criticizes the older ones.

1.2   PERCEPTION OF MIND AND BODY
IN DIGITAL REALM

New media, with its multidimensional interrelations blurred the mind and the body dichotomy that was imposed by Cartesian mind. Classical understanding has its basis on the Cartesian episteme. It is the philosophical system of Rene Descartes, depending on his famous axiom "Cogito; ergo sum" (I think; therefore I am). Cartesian logic focuses on dualism, namely the binary oppositions. Binary opposition is mainly a structuralist concept, which uses language to describe the world. Binary oppositions depend on each other and one subordinates the other. Mind/body, culture/nature, male/female and truth/illusion, self/other are among the most

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[13] Bierut, Michael Ed. *Looking Closer 2: Critical Writings on Graphic Design.* New York: Allworth Press, 1997, 51.

debated binary oppositions. Cartesian understanding privileges mind over body. In the 20th Century Cartesian logic is challenged with different approaches like post-structuralism, feminist theories and deconstructive readings. Michel Foucault, Jacques Derrida, Deleuze and Guattari were among the theorists that questioned the static system of the Cartesian logic. This section concentrates on the tendencies regarding classical and modern thought models in order to understand the positions of mind and body and the roles assigned on them in the postmodern era.

In Classical understanding body is treated like a container in which the mind rests. Mind subdues body; hence knowledge is directly associated with mind and it is only connected to body through representation. In Classical understanding there is a clear distinction between the mind and the body, whereas in Modern understanding this split between mind and body blurs. They are connected and in a mutual relationship. According to Foucault in classical episteme there is hegemony of words over things but in modern this hierarchy disappears. Cartesian thought indicates that knowledge is sensed through mind; however modern understanding asserts that the senses are dictated through bodily matters. So there is an interaction between body and mind. Foucault claims that the concept of *memory* is built on the levels of unconscious through discipline and punishment. In Classical episteme the memory is engraved onto bodies but in Modern it is discourse that creates the memory. Likewise Derrida argues that the perception is based on the past experiences. These experiences leave traces on the unconscious. Derrida analyses everything within the context of text and he regards body as text.

He criticizes Cartesian dichotomy of the reason that it is constructed on and privileges speech. According to Derrida's deconstructive reading there cannot be fixed and stable signifiers. Because the self is fragmented and there is an endless chain of sliding signifiers, which can never reach to a signified since the language is mutable and changes with the culture. Instead of one solid signifier, the self is outlined by the chain of signifiers. Therefore, the body's identity is lost as a whole as assembled by the Cartesian mind.

Deleuze and Guattari state that there are two thought models. The first one is arborescent thought and it addresses Cartesian mind. This model is structured like a tree, which branches from a starting point and is a unified, centered and a hierarchical one. The second model that Deleuze and Guattari asserted is the rhizomatic thought that implies the postmodern deconstructive reading. As addition to the tree metaphor this model has also roots that nullify a starting point by inserting a non-hierarchical organization. This model relies on the deconstruction of the binary oppositions by proposing a decentered and fragmented formation.

Vicky Kirby, feminist cultural theorist, restructures the binary oppositions by embracing nature and body into the culture, which were formerly excluded from. The body was rejected from the cultural ground because it was seen as fixed and stable, whereas the culture is accepted as a changing and a dynamic entity. The subordinating pole shapes the culture, however, as Kirby explains, the body is mutable and there is certainly an interaction with the culture and the body. The binary oppositions need each other as

their reference points, so although the division between them blurs, it never disappears.

In the second half of the 20th Century, especially in the 60's, body art and performance art started to challenge the significance of the body in the society and in the art scene. Body art started as a reaction for the consumerist culture, in the sense that the art works became products of commodification. The body is used as the medium for the expression. The body seen as a tool for the artworks became the essence of art. Body's relation to culture is being questioned in contemporary art scene. With the introduction of computers, for the science and the art disciplines, the mind/body relationship became inevitable subject to be investigated. The new approaches in reading the mind and the body also manifested themselves in new media as well. Digital media offers rhizomatic thought by deconstructing the mind/body dichotomy.

Marcos Novak, who introduced the concept "liquid architecture" a dynamic landscape that exists in a digital realm, claims that in the electronic era the computerized knowledge is exterior to man but with cyberspace man merges into the information itself.[14] Thus, he argues the weakness of the Cartesian dichotomy that asserts the body as a vessel for the mind.

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[14] Novak, Marcos. "Liquid Architectures in Cyberspace", Ed. Jordan, Ken, and Randall Packer. *Multimedia: From Wagner to Virtual Reality,* 2001. New York: W.W. Norton & Company, 2002, 273.

In "Liquid Architectures in Cyberspace" he states that:

> "The trajectory of Western thought has been one moving from the concrete to the abstract, from the body to the mind: recent thought, however, has been pressing upon the frailty of that Cartesian distinction. The mind is a property of the body, and lives and dies with it. Everywhere we turn we see signs of this recognition, and cyberspace, in its literal placement of the body in spaces invented entirely by the mind, is located directly upon this blurring boundary, this fault"[15].

Donna Harraway, the cultural theorist, claims that the electronic era calls into question the binary oppositions that were presented with the Cartesian understanding. Man uses technology to extend his limits and to have control over it. Harraway asserts that the dualities don't represent the situation in postmodern era because of the reason that with the prostheses that technology implanted we are no longer pure biological beings and we became *cyborgs*, half human and half machine.[16] We are living in an era that it is impossible to reach, store or navigate through any kind of information without an external assistance, technology. This vision is evident and manifests itself in information directed media such as new media, science fiction movies, animations and novels, the World Wide Web, and in contemporary art works.

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[15] Ibid, 275.
[16] Harraway, Donna. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century", *Simians, Cyborgs and Women: The Reinvention of Nature.* New York: Routledge, 1991.

Dena Elisabeth Eber, in her essay "Virtual Imaginations Require Real Bodies", critically rejected the Cartesian dualism in digital realm, especially in virtual reality works.[17] She stated that "The mind cannot be separated from the body, rather the two are inextricably interwined" and added that the perception of a VR results with a real experience that references to the body.[18]

As Mischa Peters draws in "Exit Meat", there are two main approaches in digital realm concerning the role of mind and body. One is to discard and leave the body behind and to create brain-machine interfaces, hence privilege the mind. The second one is to use technology to enhance the possibilities and limitations of the body to cope with the shifts in techno-culture.[19] Both approaches aim to form a correlation between user/viewer and the media that would lead efficient information convey. These approaches manifest themselves through the interfaces that are structured in regard to the methodologies used in the electronic era.

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[17] "Virtual Imaginations Require Real Bodies" was published in the context of Siggraph 99.
[18] Eber, Dena Elisabeth. "Virtual Imaginations Require Real Bodies" March 2004 <http:wwwsiggraph.org/artdesign/gallery/S99/essays/denafull.html>.
[19] Peters, Mischa. "Exit Meat", Ed. Everett Anna and John T. Caldwell. *New Media (AFI Film Readers)*. Routledge: January 2003, 59.

1.3   INTERFACE AS THE SIGNIFIER

Interface is anything that mediates the user with the system she is interacting. It creates a unique experience for the user. It shapes how we conceive, interpret and navigate through the data and it creates a vision for how we perceive the world. Thus, the Interface has socio-cultural impacts on the how people communicate with each other and with systems. Digital computer technologies and culture is in a mutual interaction and they both effect and are affected by each other.

The interface is at the spot of this interaction and it relies on visual metaphors. The visual metaphors transform textual and computational data into graphics and remediate media forms that we are familiar with in our everyday life. As J. David Bolter and Diane Gromala States in *Windows and Mirrors: Interaction Design, Digital Art and the Myth of Transparency,* "[a] digital metaphor should explain the meaning and significance of the digital experience by referring the user to an earlier media form".[20] Because of its significance, based on its impacts on the culture by reflecting and reshaping it, Lev Manovich regards interfaces as cultural objects.[21]

As also stated by Steven Johnson in *Interface Culture: How New Technology Transforms The Way We Create and Communicate,* the interface possesses a

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[20] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency.* The MIT Press, 2003, 90.
[21] Manovich, Lev. *The Language of New Media.* Cambridge, MA, London: The MIT Press, 2001.

semantic relationship that shapes meaning.[22] In 1968 when Douglas Engelbart introduced the modern computer interface, he assigned the computers information space as a spatial environment. Alan Kay's *window* metaphor added the illusion of the 3rd dimension into the computer space. The numerous windows that are opened on a screen overlaps on each other and this creates a kind of illusion of 3D. The introduction of the *desktop* metaphor by Macintosh in 1984 brought a new understanding to the signification of the interface in digital realm. Navigational space is one of the most important characteristics of digital media. The user interacts with the system via an interface by navigating through that space. "The desktop metaphor obeyed the double logic of remediation: it depended on the importance of past media, and yet it asserted that the computer could improve on the past".[23]

The visual language of the interfaces is affected and in return effects the cultural transformations in the sense that it reflects the structure of the era in which it is manifested. The interface as a concept highlights graphic representation over text. It is the key element of any system. An interface acts like a theatre stage. It welcomes the user, gives information about the content and context of the data and it presents the content to the user. Interface is a very powerful tool in the sense that it sets the limits and the options to access the content.

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[22] Johnson, Steven. *Interface Culture: How New Technology Transforms The Way We Create and Communicate.* San Francisco: Harper Edge, 1997, 14.
[23] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency.* The MIT Press, 2003, 90.

By using the same metaphors, graphical user interfaces (GUIs) dissolves the boundaries between work and leisure by inhibiting similar actions taken to access any sort of data. A Graphical User Interface is mostly picture oriented, hence, it is considered as being user friendly. Interface gains importance when it is a part of a generative system, in which the content is produced in real time. The design of each interface carries cultural connotations in itself. Although the development of computer interfaces is a recent subject matter and goes back only few decades, it is the symbol that represents the digital era.

Manovich summarizes the significance of the development of HCI (Human-Computer Interface) for culture as:

> "The modern Human-computer interface has much shorter history than printed word or cinema – but it is still a history. (…) Since then, they have become accepted conventions for operating a computer, and a cultural language in its own right".[24]

Thus, interface is a cultural signifier-with its understructure and visual language-which summarizes and highlights the characteristics of digital media.

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[24] Manovich, Lev. *The Language of New Media*. Cambridge, MA, London: The MIT Press, 2001, 71.

CHAPTER 2. REMEDIATING THE DATA

2.1 THE STATE OF THE CONTENT IN DIGITAL MEDIA

The definition of new media is difficult to label because of the reason that it is still in its infancy and is developing everyday. But there are some characteristics and principles that distinguish new media from other medium. Jordan and Packer state five characteristics of new media. These are integration, interactivity, hypermedia, immersion and narrativity.[25] The medium should integrate technology and the artistic forms together, it must have the option of interacting with the system, there should be a linkage between media elements that forms new associations, the work has to offer the experience of entering into simulation or in a virtual 3D environment and these characteristics should add the media the result of a non-linear narrative experience. In addition to those characteristics Manovich defines five principles that a new media object tends to manifest, these are not absolute rules but generalizations. They are numerical representation, modularity, automation, variability, and transcoding.[26]

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[25] Jordan, Ken, and Randall Packer. Ed. *Multimedia: From Wagner to Virtual Reality,* 2001. New York: W.W. Norton & Company, 2002 xxxv.
[26] Manovich, Lev. *The Language of New Media*. Cambridge, MA, London: The MIT Press, 2001, 27.

A new media object is represented digitally coded by the numbers, which means it is programmable, and it can be stored separately. The automation of the operations of accessing, manipulating and creating the objects are enabled by the first two principles. New media object's digital nature makes it available to be found and represented in variable ways, sizes, or versions. The digital nature of a new media object allows the computer's operational logic to have effect the cultural layer. These are the characteristics and principles that define a new media object.

The content of any work is stored, organized, collected, and processed in the database of the computer. Instant access to any information has gained importance and is privileged in the computer age. Because of that reason Lev Manovich marks *database* as one of the important cultural forms of new media. A database is the structured sets of digitized data, which the user can navigate through, search or view. As Manovich states, "[o]nce digitized, the data has to be cleaned up, organized, and indexed".[27] Databases may contain various types of media objects. Search engines, design portals, photographs, music files, texts which are stored in CD-ROMs or Web sites, online dictionaries, virtual museums, and multimedia encyclopedias are among the examples of computer databases.

Based on how a story is told, how it unfolds and structure their cause and effect trajectory, novels and films privilege narration,. Whereas, new media privileges database over narration and assigns narration as a way to access

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[27] Ibid, 224.

data. The content in digital media, the way it is stored, navigated through, accessed, and processed outlines the principles and the operational logic of new media.

The interface and the navigational space of any database, structure the significance of any content, its hierarchical relationship with other data and the way it is conceived by the user. Without the interface, new media objects own no order of significance in relation to other data. "Instead they are collections of individual items with every item possessing the same significance as any other".[28] Without an interface, a database is never a closed structure. Moreover, databases of Web sites are never complete works; they can always be edited afterwards. The author of the Web site and the users (if they have enough privileges to manipulate the content) can always add, subtract or alter the collection, hence the database.

Manovich explains it as:

> "… Web sites never have to be complete; and they rarely are. They always grow. New links are continually added to what is already there. It is easy to add new elements to the end of a list as it is to insert them anywhere in it. All this further contributes to the anti-narrative logic of the Web. If new elements are being added over time, the result is a collection, not a story".[29]

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[28] Ibid, 218.
[29] Ibid, 220.

Computer database manifests itself as a new cultural form, in which our cultural memory is organized and stored in and it represents human experience. Because of the reason that the database has no cause and effect trajectory, The interface and the navigable space offer access to the database of the new media work. By following the structure of an interface, we experience the content in a sequence. The interface here is the element that gives the content its significance and outlines the hierarchical relations in new media samples. Since the structural access of information is at stake in the computer age, a database becomes the core of any digital media object.

The traditional way of understanding the world, events, our thoughts, statements, plans, and environments that we live in, is through the use of narration. Likewise, a classical painting, a photograph, a comic book, a novel, a play or a film that represents a story, is expressed with narrative acts. These narratives occupy a cause and effect trajectory that unfolds the events in time, and this trajectory binds the interface (the telling of the story) and the content together. Therefore, we experience these events in a linear sequence. However, because of the reason that there is no cause and effect trajectory in the structure of a database, the interface and the content of a new media object are separated.

Consequently, this enables the system to have differently designed or structured interfaces to access the same content. Therefore it becomes possible to create new meanings for the same data and customize the user experience by juxtaposing the content in different ways and enabling the

user to interact with the content through an interface in various ways.

As Roy Ascott mentions,

> "… meaning is not something created by the artist, distributed through the network, and received by the observer. Meaning is the product of interaction between the observer and the system, the content of which is in a state of flux, of endless change and transformation."[30]

2.2 VISUAL COMMUNICATION IN DIGITAL MEDIA

Technology shapes how the images are seen and perceived. With the technological developments, the perception of human brain and eye has also evolved. Our brain perception is trained by the visual landscape that we are surrounded by and everyday our digital literacy is being developed. In today's culture the visual language gains more significance and it dominates communication practices. Digital media generates new varieties in the visual context whose meanings are dependent on the technological, historical, cultural, and economical aspects. As the society moves ahead to a visually tensile one, the construction of the evolving visual language becomes more dependent on the expectation, memory and habituation of the society. Most of the people start to use camera integrated cellular phones, digital photograph cameras, Web cams in their everyday life. Visual communication

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[30] Jordan, Ken, and Randall Packer. Ed. *Multimedia: From Wagner to Virtual Reality*, 2001. New York: W.W. Norton & Company, 2002, xxxi.

assembled at the hearth of communication methods.

As the technology develops we are exposed to vast amount of images in our everyday life. Paul Virilio calls these images *phatic images,* the images that we cannot *not see.*[31] One important and distinguishing character of postmodern era is that it is governed by digital imagery. With the mechanical reproduction the images became reproducible, with the digital age they became numerically representable, hence independent from an original image. [32]

Photography played an important role as they served as evidences in the modern age, but there is also the fact that they can technically be altered, so their notion of reflecting the reality or not has always been questioned. William J. Mitchell mentions in "Intention and Artifice" that we accept the reality of an image if it meets the conventions of photography and if it is also consistent within its framework in relation to other things. Otherwise we fell suspicious about its reality and we cannot justify it.[33] With the technological opportunities for manipulating images, their significance competes with and even replaces with the significances of objects or ideas that they are representing. Now, we are living in an era that is ruled by simulation as stated by Jean Baudrillard.

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[31] Virilio, Paul. *The Vision Machine (Perspectives).* Indiana University Press: 1994, 62.
[32] Benjamin, Walter. "The Work of Art in the Age of Mechanical Reproduction", *Illuminations.* Schocken Books: 1969.
[33] Mitchell, Williem. "Intention and Artifice" October 2004
<http://www.stanford.edu/class/history34q/readings/Mitchell/
MitchellIntention.html>.

Andrew Darley explains the notion of simulation in accordance with digital imagery as such,

> "This is Baudriallard's by now famous thesis that, whereas media representations (images included) were once held to refer to an objective reality, today as their technologically based proliferation, reproducibility, mobility and 'realist capabilities' intensify, so they come to compete with, to confound and eventually to volatise reality, replacing it with a new mode of experience which he terms 'hyperreality' or 'the more real than the real'".[34]

The postmodern era calls into question the very notion of the *origin* in relation to the developments of the technology in the realm of reproduction. Baudrillard states that simulacrum is reproduction of a thing that no longer has an original or never had one. Simulation has no referent and it is the formulation of real through *mythical* models that has no connection with the reality.

Plato tries to make a distinction "between the thing and its images, the original and the copy, the model and simulacrum".[35] Myth is the story of foundation and it provides with a model. According to the Neo-Platonic triad, the unsharable, shared and sharer, the unsharable is the primary possessor, the shared is the possessed and the pretender and the sharer is the possessor as a secondary in the hierarchical order and there is no end to the pretenders. At the end we find the simulacrum, the false pretender.

[34] Darley, Andrew. *Visual Digital Culture: Surface Play and Spectacle in New Media Genres.* London; N.Y.: Routledge, 2000, 65.
[35] Delleuze, Gilles, and Felix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia.* Minneapolis: University of Minnesota Press, 1994,46.

According to Plato, simulacrum is not only a false copy, but it also questions the notions of the model and the copy. Platonic dialectic rivalry and the purpose of the division are to select the correct lineage. The question is to distinguish between two different kinds of images and if there are no two different kinds of images to question it is to create a distinction. The copies are the secondary pretenders and the simulacra are the false pretenders.

The copy resembles the original and the resemblance is not external. The pretender must be modeled on the idea. On the other hand, simulacrum does not pass through idea and it conceals its dissimilarity because of the fact that it is an image without resemblance. What simulacrum creates is an external effect of resemblance. Simulacrum is abysmal; it is something, which cannot be mastered. "The simulacrum implies great dimensions, depths, and distances which the observer cannot dominate".[36]

The model of the Plato is the model of the same. But Deleuze insists on the idea that disparity becomes the unity of communication in the postmodern era. The copy is limited with its model but the simulacrum is not. Because there is the differential point of view included in simulacrum, even the observer becomes the part of the simulacrum. The more the spectator is in it, the more different it becomes. In simulacra the identity and resemblance do not have any hierarchical order. Hence, Deleuze suggests overthrowing the Platonism, in other words asserting their rights over icons or copies. The distinction then operates in the world of representation; it is no longer a

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[36] Ibid, 49.

question of the distinction between essence/appearance or model/copy. Thus simulacrum "contains a positive power which negates both *original and copy, both model and reproduction*".[37]

Walter Benjamin is concerned with the relation between the copy and its original that shaped the mechanical reproduction age. Works of arts all through the history are reproduced by imitation, but mechanical reproduction brought new perspectives and enlarged the limitations of this process by adding new meanings to it. Benjamin in "The Work of Art in The Age of Mechanical Reproduction" points the changing essence of the work of art by becoming reproducible. The art works started to be designed for reproduction and it put the work of art in the reach of the masses. He stresses the fact that the copy in the age of mechanical reproduction is independent from the original itself.[38]

Benjamin claims that works of arts lose their authenticity and *aura* when they are taken out from their presence in space and time. Aura is the sense of distance, the uniqueness. Uniqueness is the first condition for aura and authenticity. The reason for decay in the aura is because of the desire of the masses to bring the artworks closer as can be. According to Benjamin all reproductions are lacking aura, because of the reason that their lack in original time and space and their original presence. With the mechanical reproduction, we got used to the idea of the equality of the things. The

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[37] Ibid, 53.
[38] Benjamin, Walter. "The Work of Art in the Age of Mechanical Reproduction", *Illuminations*. Schocken Books: 1969, 224.

images, objects etc. became in the reach of mass culture. This separation of copy from its original manifests itself also in the electronic age and its effect on the visual imagery is more apparent. Furthermore, a digital image manipulates reality, and besides the ability to refer to the past as in photographs, it can also create the illusion of what possibly could be. The viewers' perception in the postmodern era is dependent on the cultural knowledge and digital literacy. Digital imagery encloses image manipulation, generation and distortion. These modes of image processing present unfamiliar visual experiences.

2.3 REMEDIATION

Jay David Bolter and Richard Grusin, used the word remediation to express the strategy that is used to engage the user with the media that she is using. "Remediation is the making of new media forms out of older ones".[39] It means to borrow from or to refashion other media. Bolter's and Grusin's main concern lies in the idea that the new media is entitled by remediation. In this sense they share McLuhan's theory that the content of each medium is another medium. All media forms carry the traces of prior media. The reason for that is, people feel comfortable when they are confronted with familiar media and metaphors that act with the same principles as commonly exposed media.

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[39] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency*. The MIT Press, 2003, 83.

Such metaphors help the user to acknowledge new media forms that carry the traces of the old while adding up new features onto them. For instance, news Web sites remediate newspapers in order to provide a user-friendly navigation for the viewers while adding up interactive options such as searching a particular news by entering a keyword in the appropriate search bar (see figure 1).

Figure 1. *The Washington Post* and *CNN.com*.

Some of the examples that McLuhan gives to demonstrate this statement are, "[t]he content of the press is literary statement, as the content of the book is speech, and the content of the movie is novel".[40] Remediation does not only occur by borrowing from older media. Other media forms also borrow from newer media, for instance, TV first remediated cinema and then it remediated WWW.

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[40] McLuhan, Marshall. *Understanding Media: The Extensions of Man.* The MIT Press, 1964, 307.

There are two strategies to achieve remediation, one is immediacy and the other is hypermediacy. Immediacy aims to leave the user with the presence of the thing represented by providing a seamless and transparent medium. In other words, it aims to erase the medium between the user and the content. Hypermediacy, on the other hand, aims to remind the user the presence of the medium that mediates him/her with the content. These two strategies are heavily used in new media and are mutually dependent on each other.

The desire for immediacy is not a new one. We can see the examples of it throughout the western representations, such as Renaissance paintings, photography or films. The purpose of immediacy is to put the viewer/observer in the same space with the content. The artists in Renaissance paintings tried to achieve an immersive experience with the usage of linear perspective. The artists used the canvas as a window that opens to another space and they even tried to erase the brush strokes to achieve a photo realistic representation.

Meadows states that "Giotto's ideas of perspective suggest that a viewer must be in a particular place at a particular time for an idea to be properly conveyed".[41] For instance, Leonardo da Vinci's *Trinity,* which has a photo realistic technique, is one of the profound examples of this approach. In these examples the viewer is fixed in her place. Likewise, photography used perspective to achieve immediacy. It freed the dependence on the

[41] Meadows, Mark Stephen. *Pause and Effect: The Art of Interactive Narrative.* Indiana: New Riders Press, 2003, 157.

craftsmanship, and skill of the artist. Photography inserted fixed first person point of view to reach immediacy.

Bolter and Grusin explains this as,

"The photograph was transparent and followed the rules of linear perspective; it achieved transparency through automatic reproduction; and it apparently removed the artist as an agent who stood between the viewer and the reality of the image".[42]

Likewise, theatre stage assigns the user a fixed point of view. However, it was cinema that created the illusion of changing point of views with jump cuts and close-ups. With the moving camera the viewer is located in the scene that created a higher level of immediacy.

Mark Stephen Meadows explains this relocation of the viewer and its psychological effect as,

"The essential distinction between theater and movies dwells in the camera. The location and movement of video camera is what separates movies from theatre. This is because it provides both dimensional and emotional perspectives. It affects the viewers understanding of the space in question". [43]

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[42] Bolter, Jay David, and Richard Grusin. *Remediation: Understanding New Media.* The MIT Press, 2000, 26.
[43] Meadows, Mark Stephen. *Pause and Effect: The Art of Interactive Narrative.* Indiana: New Riders Press, 2003, 165.

The main goal in reaching immediacy is to dissolve the media by making it transparent. This is the same promise as Virtual Reality's. To achieve immediacy, Virtual Reality must create an experience, which is close to an everyday life, or to put it simply, it must create an experience without mediation. VR took film as a reference point for remediation. But because of the head-mounted display and the data gloves-that user wears to see and to touch virtual objects screened-the users are always pulled back to the surface by reminding them the presence of the media that they are using. Other common examples for the usage of immediacy are live broadcasts of television channels, and web cameras.

The other strategy for achieving remediation as I mentioned above is hypermediacy. Hypermediacy's main goal is to recall the presence of the medium. Hypermediacy is not a distinctive character that only belongs to new media. There are a lot of examples that belong to older media. For instance, manuscripts, Dutch paintings with all the mirrors and reflective surfaces, Dada works, and especially Pop Art examples are among the examples that hypermediacy is most commonly seen (see figure 2). There is a certain fascination with hypermediacy because there is a fascination with the media that are being used to represent any kind of content.

Figure 2. Jan van Eyck. *Portrait of Giovanni Arnolfini and His Wife*, 1434.

As we move onto the computer age wee see that Alan Kay's *window* metaphor for computer screen is a reflection of Alberti's window. Alberti's window depends on the pictorial representation by using perspective methods that were theorized in the early Renaissance. The window always signifies a clear distinction between inside and outside. If there is a window, it implies that there is more to see beyond it. Hypermediacy's most important characteristic is that it depends on multiplicity of media. WWW pages, graphical user interface, software interfaces, video games are all

examples of hypermediacy. For instance, games like Myst and Doom are explicit examples of hypermediacy. Their interfaces, which try to create the illusion of 3D, pull the user back to the surface of the media, by recalling the medium itself.

Replacement is an important factor in achieving hypermediacy. For instance, Web sites and hypertexts provide replacement by offering links. When the active link is clicked a new browser window pops up or the current one is erased and the information space is replaced by a new one. Multimedia CD-ROMs confront the user by replacing different media types. Replacement is a powerful agent in assuring hypermediacy in achieving remediation. If the user interacts with the system in the process of replacement, her experience becomes more engaging. Moreover, rock and hip-hop music clips also demonstrate the fascination with the media with fragmented scenes, rapid movements and jump cuts that demonstrate the pace of life lived the in electronic age.

2.4 TIME AND SPACE FORMATION IN DIGITAL MEDIA

Artists all through the history tried to create representations by working on the time and space organizations in their works. Creating the illusion of reality was and is always at core of art scene. In this sense like cinema, new

media challenged the Euclidian notion of time and space construction, which was absolute, and stable.

Until 20th Century time and space were considered as separate notions. The artists tried to represent the moment in their works. There was a certain hierarchy, which privileged the absolute, infinite space and placed it over time. Especially in Renaissance paintings the desire for representing the absolute space with the usage of the linear perspective and light is clearly visible. "[I]t was seen that Cartesian space was continuous and complete, that lines in space were composed of an infinite set of dimensionless points, each of which corresponded to one real number".[44]

At the very end of 19th Century and at the beginning of 20th Century the artists under the influence of the developments in physics, tried to represent the space in relation to the body/matter located in it. "Time is incorporated into the notion of multidimensional space by its addition, as a forth coordinate, to the spatial dimensions of length, width, and height; in this way, we are able to integrate time and space into the unified concept of spacetime".[45]

Cubist painters tried to depict subjects by drawing them from different points of views and with abstraction, while aiming a gestalt on the whole canvas. Futurism, which was an Italian movement that had its roots in

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[44] Bolter, J. David. *Turing's Man: Western Culture in the Computer Age*. Penguin Books, 1993, 93.
[45] Strate, Lance. "Hypermedia, Space, and Dimensionality", *The Emerging Cyberculture : Literacy, Paradigm, and Paradox* , Ed.Gibson, Stephanie B. Hampton Press, 2000, 271.

politics, was concerned with machinery in the 20th Century. It aimed to emphasize the dynamism, motion and power the machinery and inserted a dynamic notion to the art scene. For instance, Marcel Duchamp with his famous work *Nude Descending a Staircase (1912)* represented a continuous movement by painting overlapping numerous cubist figures of a descending nude into one frame. Afterwards, painters like Piet Mondrian decided to concentrate on the canvas and painting itself, rather than the subject represented on the surface. That approach brought a fascination with the material used. Action painters, especially Jackson Pollock brought that approach one step further and tried to represent the dynamic relation of time and space, which were mutually dependent on each other for explanation (see figure 3)

Figure 3. Jackson Pollock. *Number 32*, 1950.

Rene Magritte was among the painters that dealt with the interrelation of time and space. "Magritte evokes the essence of 20th Century's pivotal negativity: that truth is hidden in the eye of the beholder, but that it does not make any sense to proclaim the foundation of this very visibility. In other words: space is deceitful. Space is not to be grasped *in itself*; rather, it must be *explored*"[46] (see figure 4).

Figure 4. Réne Magritte. *The Human Condition*, 1934.

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[46] Walther, B. Kampmann. "Space in New Media Conception – With Continual Reference to Computer Games and Game Graphics", March 2005 <www.sdu.dk/Hum/bkw/space-in-new-media.pdf>, 7.

It was film that depicted time as a notion that acted as a dimension which adds depth to space. Film producers are alike with Renaissance painters in the sense that they try to create the illusion of reality. With film, the viewer is freed from the fixed perspective that was inhabited in paintings and in photographs. In 20th Century speed gained importance with the technological by announcing an electronic age after the mechanical developments that followed the industrial revolution. Time was no more subordinated by the space. In that sense, Virilio's emphasis was on that speed and technology overlap each other. Technology is the aspect that causes interruption. With these interruptions we become aware of the time in respect to technology.[47]

Audio-visual speed, video-graphic effect and effect of duration have same effects, therefore the subliminal speed is interrupted, hence, it produces a perception of time. With the developments in telecommunications time spent for accessing information is reduced and the space is condensed. These changes are apparent in MTV style music videos with their jump and rapid cuts, fragmented pieces of shots that emphasize hypermediacy along with postmodern era. The notions of time and space in new media are considered as mutable and fluid.

Space as Manovich mentions became a media type in the electronic age. With the digital revolution "[j]ust as other media types-audio, video, stills, and text-it can now be instantly transmitted, stored, and retrieved; compressed, reformatted, streamed, filtered, computed, programmed, and

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[47] Virilio, Paul. *The Aesthetics of Disappearance.* Semiotext(e): 1991.
---. *The Vision Machine (Perspectives).* Indiana University Press: 1994.

interacted with".[48] Time and space concepts became fluid and mutable in digital media. New media spaces in contrast to painting and photograph are considered as spaces of navigation. In new media because of its digitized and interactive character assigns the user within the space depicted. The user becomes a part of the work, which is situated in the space. The space of new media is no more a space for observation and contemplation, but a space for navigation.

Lev Manovich, while talking about navigable space in new media, refers to *Myst* (1993). *Myst* is a computer game that highly honors navigable space in new media. It is a slow paced game where the user is dropped into a world, out of the four, in which she has to navigate around and unfold the narrative. The user has the option of moving towards any direction. The whole game can be considered as a "spatial journey"[49]. The game does not open up if the user stops navigating. It is a game that the user has to navigate and explore the worlds (see figure 5).

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[48] Manovich, Lev. *The Language of New Media*. Cambridge, MA, London: The MIT Press, 2001, 251.
[49] Ibid, 245.
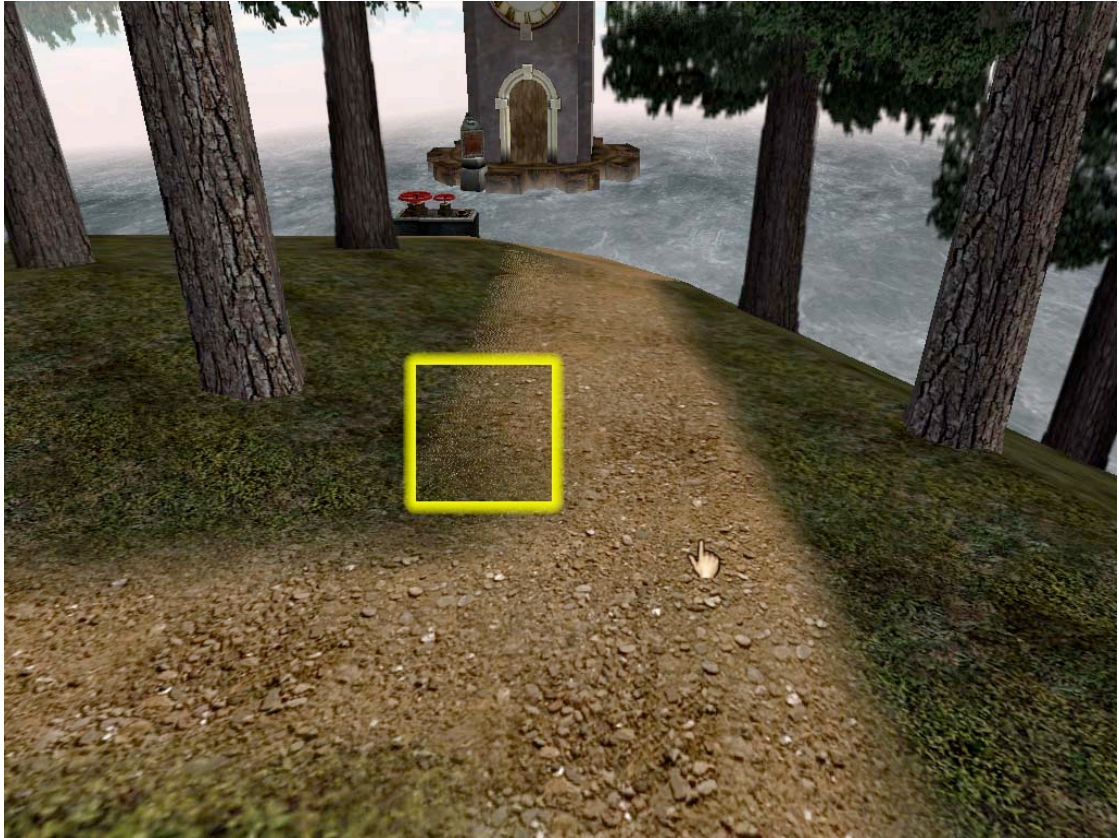
Figure 5. *Myst*.

Navigation in the space acquires and leads to narration that unfolds in time. Hence the user is now immersed and spatialized at the same time in new media works. The classical understanding of time and space relation has changed drastically in electronic age.

CHAPTER 3. INTERFACE AND HUMAN-COMPUTER INTERACTION

3.1 INTERACTION AND INTERACTIVE ART

One of the most important defining characteristics of new media is that it is an interactive medium. Interaction is the ability to exchange information between the systems or between the user and the system. The interaction actively engages the user with the system. Interaction can be thought occurring on different levels as psychological, intellectual, physical etc. It can immerse the user emotionally and/or bodily. It may immerse the user by addressing his thoughts while being limited with clicking the mouse button or scrolling a Web page or it may try to engage the user by offering an experience that focuses on her bodily senses. An interactive work in new media, which claims to be immersive, most of the times, concentrates on an active interaction that embraces a bidirectional information exchange between the user and the system.

Mark Stephen Meadows expresses interaction in *Pause and Effect: The Art of Interactive Narrative* as such,

> "Interactivity is a continuing increase in participation. It's a bidirectional communication conduit. (…) It's indeterminate behavior, and it's redundant result. It's many things, none of which can be done alone. Interaction is a process that dictates communication. It can also be a communication that dictates process. It provides options, necessitates a change in pace, and changes as you change it".[50]

New media requires high level of participation in comparison to other media. In all types of media the viewer/observer has to pay attention to receive information. But in some the user has be more active to access the content. Marshall McLuhan separates media into two; hot and cold. By definition, hot medium is filled with numerous amount of information and requires low amount of participation of the observer. Cold medium requires high amount participation and needs fulfillment from the audience. McLuhan named photography, movie, and radio as examples of hot media and telephone, cartoon and TV as the examples of cold medium. With regard to this classification new media manifests itself by bringing together various media and adding up interactive dimensions to them and proposes an experience of a cold medium.

The user interacts with the computer mainly with keyboard, mouse, pen tablet, track pad, touch screen, and to VR with head-mounted display and

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[50] Meadows, Mark Stephen. *Pause and Effect: The Art of Interactive Narrative*. Indiana: New Riders Press, 2003, 39.

data gloves. In new media works, the user is not a simple observer anymore who contemplates the work. Instead, she is a part of the work who leaves traces on the outcome of the work. She interacts with the work and creates responses and makes the system react on her actions. Thus, she becomes an irreplaceable element of the new media sample.

There are two aspects necessary for the operation of interaction in digital media. One is a software or a script that runs on a system and the other one is a mechanical response provided by the user. The user interacts with the system through an embedded interface. Thus, new media puts the user and the interface in the heart of interaction. In order for an interactive new media work to be successful, the user must be immersed into the work. The user interacts with the computer first by using learned and pre-conditioned methods. If the interaction system is a pre-conditioned and habitual one, the piece will less likely to be immersive. This is one of the challenges that the programmers and artists trying to cope with. The interaction system is designed by an author, a designer or a programmer, and it depends on the predicted human interactions. Apart from the author who sets the rules and the boundaries, new media work is always dependent on the technical and technological aspects of the system. In most of the new media works there is no exchange of data between the two sides. The user just navigates through the data who is confronted with. The user doesn't form a dialog with the computer that would generate a new action-reaction chain, she only acts within the options that are offered. Her interaction level is a passive one.

Because of those reasons the user doesn't generate or develop any content, instead, she acts like an automatic response that fulfills the work.

Science and technology fields highly appreciated interaction and interactive works and contributed a lot to the conceptual and theoretical discourse of interaction. Douglas Engelbart, Alan Kay, Billy Klüver, Norbert Wiener, J. C. R. Licklider, Myron Krueger, Vannevar Bush, Ted Nelson, Roy Ascott and Tim Berners Lee are among the people who saw the possibilities that computer as a medium can offer. After the dense studies on the nature of computer, artists saw the potential of hyperlinking and human-computer interaction that represents cultural shifts and which changes the classical approach towards the artworks. Digital media gave birth to new ways of storytelling by challenging the ways in which narratives are told and how they are used in new media. Art scene and science field are in great collaboration for expanding the promises that new media can achieve.

Meadows defines three principles necessary for an immersive human-computer interaction; input/output, inside/outside and open/closed.[51]

The principle of input/output indicates that input and output should create each other mutually. The response between the input and output should be as quick as possible. The user's attention must be kept within the work and the user must be offered the ability to control the input. The principle of inside/outside depends on the idea that there should be a mutual

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[51] Idem.

relationship between the user's interactive experience and her knowledge. In this respect the user can grasp the operational logic of the work and respond in that sense. The principle of open/closed systems depict that, if a system is closed the response is a predicted one and it repeats itself. It is constructed on easily identifiable structure. On the other hand, if the system is an open one it's underlying structure is more complicated. Then it can generate new data, thus create new responses and actions. The appropriate usage of these principles results in more immersive and qualified interactions.

As these principles are fulfilled, the role of the author and the observer changes. The observer becomes an active agent within the system that operates as an integral part of the interactive work. Within new media works the role of the author and the observer is relentlessly questioned. Although the user is given the opportunity to act like an author, her impact is always dependent on the limitations the creator sets. So she can never truly become an author, but acts as a co-author instead. Janet Murray, explains this matter in "Agency" as follows, "We could perhaps say that the interactor is the author of a particular performance within an electronic story system, or the architect of a particular part of the virtual world, but we must distinguish this derivative authorship from the originating authorship of the system itself".[52]

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[52] Jordan, Ken, and Randall Packer. Ed. *Multimedia: From Wagner to Virtual Reality,* 2001. New York: W.W. Norton & Company, 2002, 397.

The level of interaction of the user can be summed up in two groups of participation; one is passive and the other is active. Passive participation of the user means that the user doesn't generate any data for the work, she simply interacts with the system within the limitations that she is given. There is no information exchange or a real dialogue between the user and the system in passive participation and relationship is a static one. The action and reaction between the user/audience/receiver and the product/software/ work doesn't generate new data to the content. Each time the system gives the same response to the actions taken by the user. Instead of developing the database the user is left with the option of only navigating through the existed database. This causes the work to loose its potential to be immersive. Typical examples for passive participation are navigating through virtual galleries, CD-ROMs presentations, or Web pages by simply using the generic navigational buttons. Whereas, in active participation the system generates new responses to the actions of the user and the user can be immersed in the work easily. Active participation requires the user's interaction with the system to fulfill its promise. The work stays unfinished without the interaction of the user. An actively participated work has an open system, which creates a unique end result in each trial. The dialog between the user/audience/receiver and the product/ software/ work now becomes a dynamic and real one. The user is confronted with the opportunity of being the co-author within the system. With this approach the border between the author and the user blurs, thus enables the system being more immersive.

Among the examples for active participation, there are Telematic art works by Paul Sermon, who builds his installations upon the principles of interaction of the participants.[53] Roy Ascott explains Telematics as, "Telematic is a term used to designate computer-mediated communications involving telephone, cable and satellite links between geographically dispersed individuals and institutions that are interfaced to data-processing systems, remote sensing devices, and capacious data-storage banks".[54] One of the famous works of Paul Sermon is *Telematic Encounter.[55]* Two remote locations are used for the work. These two locations are connected via an ISDN teleconferencing link. The main gallery installation consists of a table, chair and a carpet on the ground. There are three monitors around the space. A camera sends live images of the participants sitting at the table to the other installation place. The image is fed to a digital chroma keyer. The installation space is the exact copy of the first space. Again there is a camera in the 2nd place and the images are also sent to digital chroma keyer. The images from these two places are merged into the same image. Then the two participants sitting at the table in remote locations unfolds a narrative by interacting with each other's images and the images on the table as if they are in the same place (see figure 6). In this example in order for the work to fulfill its promise of being immersive, the participation of the audience is at stake. Since the participants generate the result of the experience, their engagement with the work is even on higher levels.

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[53] Telematic is a term coined by Simon Nora and Alain Minc in 1978.
[54] Jordan, Ken, and Randall Packer. Ed. *Multimedia: From Wagner to Virtual Reality,* 2001. New York: W.W. Norton & Company, 2002, 335.
[55] *Telematic Encounter* was exhibited at ZKM Media Museum, Karlsruhe, Germany in 1997.

Figure 6. *Telematic Encounter*

In both of the participation levels the interface stays at the core of the work and structures the human-computer interaction. Because of that reason the function, usability, look and style gains great importance in adapting the users interaction.

3.2 HUMAN-COMPUTER INTERACTION (HCI)
AND GRAPHICAL USER INTERFACE (GUI)

Human-computer interaction (HCI) is the study of interaction between people and computers. In the report of the ACM (Association for Computing Machinery) Special Interest Group on Computer-Human Interaction (SIGCHI) Curriculum Development Group, the HCI is defined as follows, "Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them".[56]

The main aim of Human-computer interaction is to improve the quality of the interaction between users and computers. Input and output technologies affect and shape HCI. HCI workers are trying to achieve user friendly, usable and functional computer interfaces.

Basic interactions such as direct manipulation of graphical objects, usage of a mouse, the windows have great impacts how the computers are developed and how the interaction between users and computers have shaped. There are key moments in the history of HCI that directed the development in computer field. In 1943, John Mauchly and Presper Eckert presented ENIAC, first electronic numerical computer. In 1945 Vannevar Bush highlighted the importance and need to access more information in his

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[56] "ACM/SIGCHI", March 2005<http://www.sigchi.org>.

famous article "As We May Think" and suggested a device called the *Memex* that was based on microfilm records in which offered linked information that is created between the pair of microfilm frames and can trail links. His ideas inspired very important figures in computer field. In 1960, J.C.R. Licklider published "Man–Computer Symbiosis" that was stressing the need for a simpler human-computer interaction, and was marking the computers as common devices. Ivan Sutherland's *Sketchpad,* a graphic system introduced many ideas that are used in interfaces. Then in 1965 Ted Nelson coined the term *hypertext* meaning non-sequential writing.[57] In 1968, Douglas Engelbart made a speech about ONLine System (NLS), an online system that used mouse, chord keyboard, tiled windows, and command line interface. The mouse first appeared for commercial use in 1981 with Xerox Star, in 1982 with Apple Lisa, and in 1984 with Apple Macintosh. In 1969 Alan Kay proposed overlapping windows in his PhD thesis at University of Utah. They were realized in 1974 in *Smalltalk* at Xerox PARC.

In a 1977 article, Kay talks about *Dynabook,* a notebook sized computer that can store anything and is loaded with multimedia. In 1989 Tim Berners-Lee working at CERN (the particle physics laboratory in Switzerland) proposed an information space that brought together the Internet and hypertext, which he called the World Wide Web. All these developments privileged graphical user interface (GUI) over command line interface (CLI).

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[57] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency.* The MIT Press, 2003, 165.

Graphical user interface (GUI) is as its name suggests is picture oriented and is considered as being user-friendly. It is built on graphic elements such as icons, menus and pictures and is used by a pointing device such as mouse. With a GUI the user can directly manipulate the graphics on the screen by moving, rescaling, grabbing etc. First graphical user interface is developed at Xerox's Palo Alto Research Center in 70s and it was mainly Macintosh that popularized the graphical user interface.[58]

The usage of the GUI has adapted the ways in which users interact with the computers. Graphical user interfaces are built upon visual metaphors that help the user to associate the computer with real life easily. Interface metaphors need to be intuitive to complete their promises. For instance, desktop metaphor is built upon this principle. Interface metaphors carry the traces of the culture and they both reflect it and have impacts on the culture itself.

Meadows explains the importance of the GUI in the following sentences,

"Part of the reason why the GUI became so valuable was because it represented squared information rather than the linear information (as in the 'command line'). The GUI took the one dimensionality of the command line and extended it to the metaphor of desktop. Dimensional information has the potential to offer denser information sets than flat imagery".[59]

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[58] Johnson, Steven. *Interface Culture: How New Technology Transforms The Way We Create and Communicate.* San Francisco: Harper Edge, 1997, 16.
[59] Meadows, Mark Stephen. *Pause and Effect: The Art of Interactive Narrative.* Indiana: New Riders Press, 2003, 168.

After the widely use of personal computers, these cultural traces became more apparent because of the reason that the computers began to be used by everyone, not just by researchers and scientists.

Tarleton Gillespie argues about visual metaphors in "The Stories Digital Tools Tell" as such,

> "Interface metaphors are considered successful by designers if they seem 'intuitive,' and if they help the uninitiated to quickly and comfortably adopt the tool in ways that feel productive to them. But we need to be suspicious about something being 'intuitive.' Metaphors are not culturally neutral; those that achieve circulation do so because they are consistent with the values of the culture"[60]

An interface is the core of an interactive art because of the reason that in interactive works the data is generated through the interface in real time. HCI programmers favor transparency for the design of the interface, whereas designers believe that the interface is the element that reflects the user to herself while giving information about the structure and the data of the work. The GUI examples are mostly hypermediated to remind the media's existence to the user and to form associations with visual metaphors. They develop and their appearances also change in accordance with the change in digital technologies. As Manovich states, "more than any medium

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[60] Gillespie, Tarleton. "The Stories Digital Tools Tell", Ed. Everett Anna, and John T. Caldwell. *New Media (AFI Film Readers)*. Routledge: January 2003, 115.

before it, HCI is really like a chameleon that keeps changing its appearance, responding to how computers are used in any given period.[61]

3.3 CUSTOMIZING USER EXPERIENCE THROUGH AN INTERFACE

The collaboration between the artists and programmers is inevitable. One of the reasons for that is because they don't possess the same visual literacy. They see and conceive the world from different points of view. Designers and artists are now working with programmers to produce interactive works. Interactive artworks tend to be compelling and informative at the same time. Therefore, the structure of the interface should be both functional and appealing to the eye.

What new media offers is an experience for the user. This experience should offer something more than the experience that old media offers. But at the same time it should have something in common with the experience of an everyday life. The user needs direct associations with old media to feel herself more comfortable by confronting her with familiar relations and connections.

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[61] Manovich, Lev. *The Language of New Media.* Cambridge, MA, London: The MIT Press, 2001, 89.

In any interactive piece, be it a computer desktop, a Web page, or an interactive installation the interface sets the limitations for the user and shapes her experience in that manner. Since the user interacts with the work through an interface the steps in which the interface is built through must be carefully examined.

In order to immerse the user in the work, Meadows mentions four steps of interaction that guides the structure of the work.[62] These steps are considered as the actions that the user takes. If these steps are carefully examined and the structure is built upon the outcomes, then the quality of interaction increases. They are *observation, exploration, modification,* and *reciprocal change* in order.

When the user is confronted with the work, she *observes* the system, and makes an assessment. The reason for making an assessment is, it is necessary for the user to get to know the system/environment, and the possible options before taking the first action. Then the reader moves on to the next step; *exploration* and discovers her capabilities as a user. She finds out the options and limits of her interaction. But as Meadows stresses this process of discovery is an unintentional one.[63] Then the user starts to act within the possibilities that she is offered. This time her actions are intentional and they *modify* the system. Each action that she takes has an outcome formed by the system; hence it increases her level of engagement

[62] Meadows, Mark Stephen. *Pause and Effect: The Art of Interactive Narrative*. Indiana: New Riders Press, 2003, 44.
[63] Idem.

with the system and cause to interact more. The last step is the *reciprocal change*. If the system is interactive and the user can modify it with her actions, then she is immersed in the work. In order for the work to keep her interest in itself, it should have an open system that modifies the user's actions. If the work is a closed system than the user is stuck with a passive participation and the work results in the same way in each trial. However, if the work can generate new responses to the actions taken by the user then the she expectedly would like to see the new outcomes of different actions. In this respect, the system also modifies the user. These are shortly the list of the steps that the user follows in an interactive work.

In digital media like the others, the user interacts with the system via an interface. Independent from the aim, kind and the stored medium of the work, the mediation between the data and the user is constructed by the interface. The mouse, pointing device, keyboard, and screen are the hardware interfaces of a computer that the user interacts with the work on physical level. The user interacts with the work with the help of the interface-with the learned actions- via hardware interfaces that controls the software interface which manipulates objects by clicking on, dragging, moving, rescaling that are seen through a screen that acts like a window.

According to HCI programmers this interface must be transparent and leave the user alone with the content that she is presented. [64]However, on the other hand, the designers insist on the idea by echoing McLuhan's famous

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[64] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency*. The MIT Press, 2003.

line; the medium is the message, that the interface should be visible. Graphical user interfaces carry some codes with them. They provide hints about the style, kind, time period, cultural basis, content, and interaction level of the work. For instance, a rollover image, check box, radio button, underscored text, blinking cursor, empty text box; they all indicate the possible interaction with the computer at that particular place and time.

In order for a work to immerse the user on higher levels, the interface should invite the user to the system. So it must be appealing and captivating. An interface, as Bolter and Gromala keep on stressing in their book *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency*, should act both as a window and a mirror.[65] The main goal of an interface is to immerse the user into the work and reflect the content of the work that it represents. The user mustn't have problems in conceiving the operational logic of the interface and she should be kept engaged with the work. She shouldn't feel imprisoned or limited with the interface and she must enjoy navigating via and interacting with the interface.

The user should be aware of the existence and operational logic of the interface and she wants full control over it. If the program/work/system is confronted with failures, delays, or errors the play of transparency is lost. Then the user is pulled back to the surface and reminded the existence of the media. Bolter and Gromala explains this idea as, "In general, the user wants (and needs) to be aware of the interface whenever something goes wrong

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[65] Idem.

because bugs and failures in a system break the illusion of transparency".[66] The creator of the work constructs a sense of identity of the user by letting her to make her own choices that have consequences. These choices bring subjectivity towards the understanding of the context of the work. The creator's own point of view lies in the structure of the interactive work. How she builds up the system, how she designs the way that the user will navigate through the content, the formation of alternating objects and the ways that these options manifests themselves in the work defines the expressive power of the creator of the interactive work.

David Rokeby in his essay "Transforming Mirrors: Subjectivity and Control in Interactive Media" stresses the authoritive power of the traditional works in contrast to interactive works as follows,

> "The static artwork can be looked at in two opposing ways. It can be seen as authoritarian in its refusal to reflect the presence and actions of the spectator, or, it can be seen as giving the spectator complete freedom of reflection and interpretation by not intervening in this process. An interactive artwork can likewise be seen as loosening the authority of the traditional work, or as interfering in the interactor's subjective process of interpretation".[67]

The interactive artwork can be seen as a set of freedom given to the user by making him the co-author of the work. However, all of the actions and possible options are calculated and set by the creator of the work. These

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[66] Ibid, 73.
[67] Penny, Simon Ed. *Critical Issues in Electronic Media*. New York: State University of New York Press, 1995, 141.

options are dependent on the technical and technological aspects of the work and they increase or decrease as these possibilities increase or decrease. The interaction of the user with the system is defined by the creator and always is a pre-conditioned, habitual and planned one. Although the user is given plenty of possibilities, her interactions always continue to stay within the boundaries that the author sets. However, if the user is confronted with unpredictable responses retrieved from the system, her interest and engagement can be triggered. For instance, if the system responses with a different reaction than performed before then the user will start to interact with the system on a higher level to observe if she can get new responses.

Every interface, besides being a channel for retrieving information, is the reflection of the user. An interface addresses the senses of the participant. In order for her experience to be an engaging one, the interface has to offer interaction options that the user can easily conceive and interpret. Because of the reason that the system is built upon the habitual behaviors that the user performs, it embraces the traces of the behavioral patterns of the user. Bolter and Gromala state that, "Digital interfaces are like mirrors in the sense that they reflect the user in context, including her physical surroundings, her immediate working or home environment, and the larger environment defined by her language and culture".[68]

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[68] Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency.* The MIT Press, 2003, 27.

We can consider *Text Rain* (1999) as an adequate example in which the interface defines the levels of interaction and encourages the participant to take role in the work (see figure 7). Camille Utterback and Romy Archituv's 1999 installation *Text Rain*, which was one of the works at SIGGRAPH 2000, manifests the interface both as a mirror and a window successfully. As David Rokeby states, "interactive artists intentionally express themselves through the opacities and idiosyncrasies of the media that they create. These media reflect, but also guide and transform the gestures of interactors"[69]

Figure 7. *Text Rain*

The installation is composed of two big parallel screens about 3 meters wide. One of the screens acts as a background for the interactors and the other one acts as a screen that the captured live images are projected onto. The screen

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[69] Penny, Simon Ed. *Critical Issues in Electronic Media.* NewYork: State University of New York Press, 1995, 143.

shows falling colored letters from a poem called "Talk, You" (1993) by Evan Zimroth. When an interactor passes through the installation, her image is reflected onto the screen together with the letters. As the letters fall in vertical direction, if they ever land on the interactor's image, they stop falling and stay there. The input/output principle of the piece is structured in a way that the interactor immediately conceives the operational logic of the interface and starts to interact with it. When the interactor moves, the letters continue falling down. If the she collects enough letters on herself, those letters form a word or even a sentence. As the interactor reveals the structure of the interface she starts trying to form different words by selecting which ones to hold. In this respect the user manipulates the design of the author by influencing the words that are formed. *Text Rain* invites the participant to interact with it by bringing together the physical and the virtual, the body of the participant and the digitally coded falling letters. In this interactive installation the participant is confronted with her image on the screen. She starts gesturing according to the interaction of her reflection with the falling letters.

David Rokeby discusses the relation of the participant's self and the experienced world in "Transforming Mirrors" as,

> "To the degree that technology reflects ourselves back recognizably, it provides us with a self-image, a sense of self. To the degree that the technology transforms our image in the act of reflection, it provides us

with a sense of the relation between this self and the experienced world".[70]

This statement manifests the mutual relationship between the self and her environment. Since the self is reflected back in the *Text Rain* example, the participant identifies herself and her interaction through the use of the interface with which she contributes to the work (see figure 8).

Figure 8. *Text Rain* 2

The participant can customize her experience through her interaction with the interface of any system. The interface provides the user with the options that she can choose from. The participant may choose a path along her journey in accordance to her past experiences, learned meanings, cultural implementations or in accordance to the technical and technological aspects

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[70] Penny, Simon Ed. *Critical Issues in Electronic Media*. NewYork: State University of New York Press, 1995, 133.

of the work. An interface is successful on the level that the principles of the interaction are fulfilled. As Manovich stated, there can be more than one interface to the same content, in which all act as constructing different experiences to the user. Any interface acts like an evidence for interaction. All the participants search for evidences on the interface, which also forms associations with old media forms. Because of the reason that the new media objects, as its title suggests are new and carry newly formulated connotations and cultural inputs in it.

CHAPTER 4. CASE STUDIES

This section concentrates on three case studies in which the issues concerning visual communication, interaction and interface are examined. All of the case studies are chosen within WWW pages and serve for different purposes. The first one is *Donnie Darko's* official website www.donniedarko.com that functions both as a supportive database for the movie that was filmed in 2001 and a complementary for the script. The second one is Sodaplay, which is an online Java based interactive perspective modeling site. The third one is Banja, the first online community adventure game. The case studies are examined considering the structure of the sites, the visual language used, graphical user interfaces and their interaction levels.

4.1 DONNIE DARKO-www.donniedarko.com

Donnie Darko (2001) is a sci-fi drama, which was directed by Richard Kelly and featured Jake Gyllenhaal as the protagonist. The structure of the film challenges the linear editing in the sense that the movie is about series of events, parallel universes and time travel.

The plot summary of the film is as follows; Donnie Darko a smart high school kid is having hallucinations because of a psychological disorder. He sleepwalks and talks to a giant evil bunny called "Frank" that orders him to commit acts of violence and crime. The film is taking place in US between 2 October 1988 and 30 October 1988. One night, on October 2nd, Donnie is called from his home by Frank and is told that the world is going to end, and there is 28 days, 6 hours, 42 minutes, and 12 seconds until the tangent universe collapses. That night, as he sleepwalks an airplane engine falls onto Donnie's room and he is saved by the coincidence that he was outside at that moment talking to the bunny. Frank directs him towards researching the possibilities of time travel and through out the film he brings together bits and pieces and concludes that time travel is possible and any object can travel in time, which explains where the plane engine comes.

The official web address of the movie is www.donniedarko.com. The site is designed by Hi-Res, which was founded in 1999 by Florian Schmitt and Alexandra Jugovic in London. The *Donnie Darko* site received awards from Prix Ars Electronica 2002, 6th Annual Webby Awards 2002, Flash Film Festival 2002, San Francisco, Art Directors Club New York 2002.

The site is designed by using Macromedia Flash-a software program. Flash is an authoring tool for creating animations, interactive Web sites, games, and interfaces. The organization and design of the site is different from conventional Web pages, which proposes a standard menu and a static conventional page layout. The site embraces different types of media and

manifests the typical characteristics of new media, such as, being a compilation of other media and being interactive. The site uses remediation strategy so often. It uses image, text, sound and excerpts from the movie to make the site more appealing and immersive. The whole site acts as a complementary for the film; it tracks what happens in the film and even reveals some details that are left open to interpretation in the movie.

The site welcomes the user with a window in which another small one is implemented. The small window seems an exact copy of a browser window of Internet Explorer. However, it is a representation of it drawn and put into Flash. In this small browser window we see a small loop from the movie. Although the context is different in the movie, at the Web site, the loop seems as if Donnie is hitting on the screen, and the area that he is hitting is marked with two integrated red colored circles, which imply the possible interaction point (see figure 9). As the spot is clicked, the loop changes in to the image of Frank, the evil bunny, for an instance.

After that, the user is asked whether she knows the password for the first level or not in another drawn browser window. If the user has visited the site before, she would know the word for the password and she can proceed by inputting that word into the marked area. Otherwise, the user can click on the *proceed* button and move on to the next page.
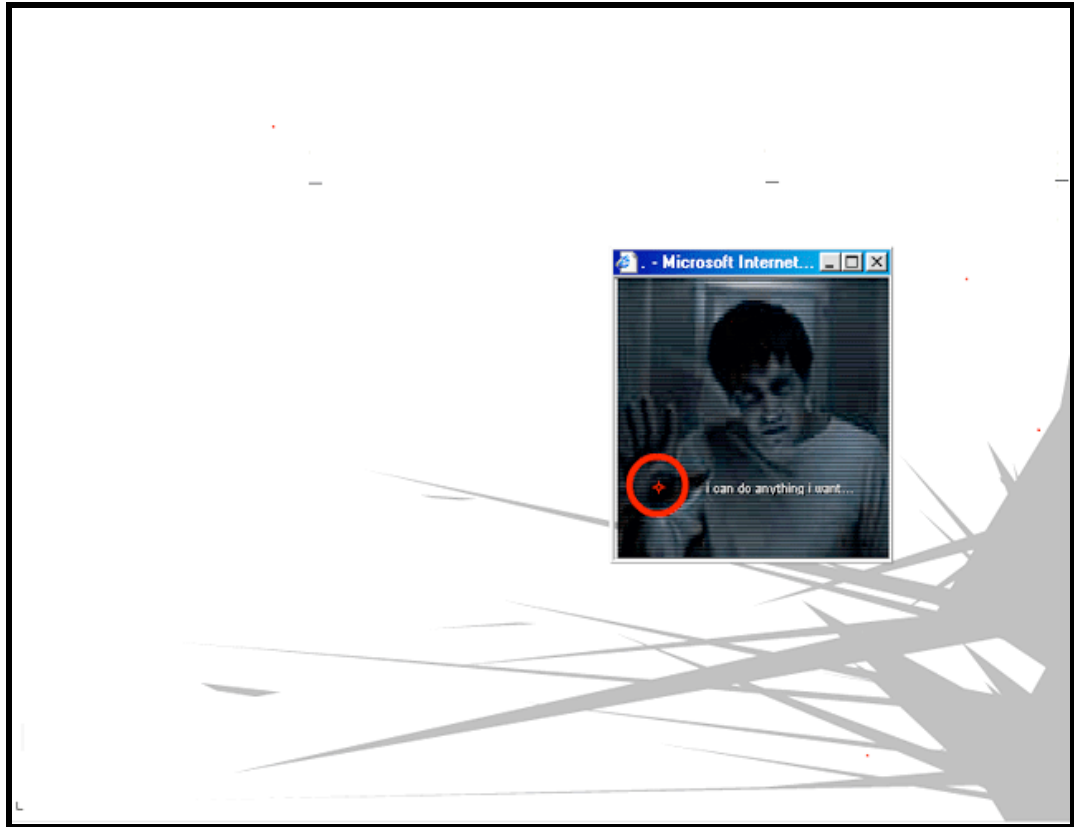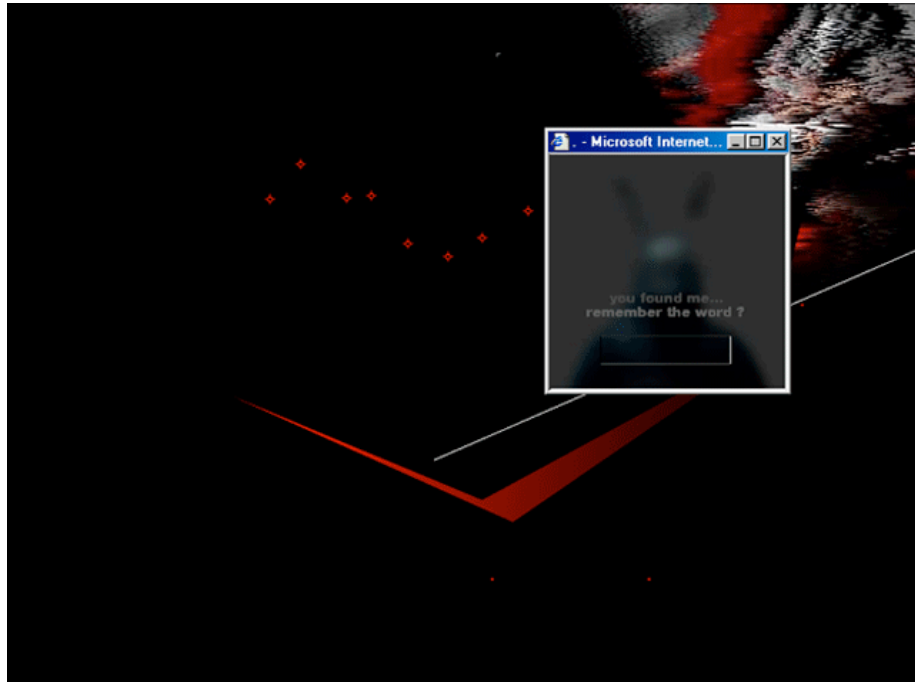
Figure 9. *Donnie Darko*

In contrast to most of the conservative Web pages the pages are not designed in a conventional manner by having a menu on one side and information on the other. Instead, the page is treated like a poster or a magazine page and the unity of the visual language of the pages have great importance. Through out the site the user is confronted with information that she has to pay attention in order to proceed. The buttons are designed in red and while forming the design unity of the pages, signal the hot spots in the page where the user should click or write into.

The site, as I mentioned before, uses both strategies of remediation to achieve an immersive and expressive experience. Site uses still images, paper documents, hypermediated and multiplied browser windows, short

loops from the movie. As the user is immersed in the work, the next moment she is reminded of the existence of the media by multiplied windows or repeated visual elements (see figure 10).

Figure 10. *Donnie Darko,* Password

The site unfolds as a branching structure. The user has to pay attention and keep in mind what the site offers as data. In order for her to continue navigating through the pages she has to answer some questions that pop up at on unexpected times. As she answers the questions, some links directs her to another external source, which is an e-news paper that pops up on top the *Donnie Darko* site and is designed intentionally for the film. Through the end of the site the user is warned to continue navigating through on her free will because of the reason that the site unfolds the events in the film and after a certain point it reveals facts that shouldn't be accessed before seeing the movie.
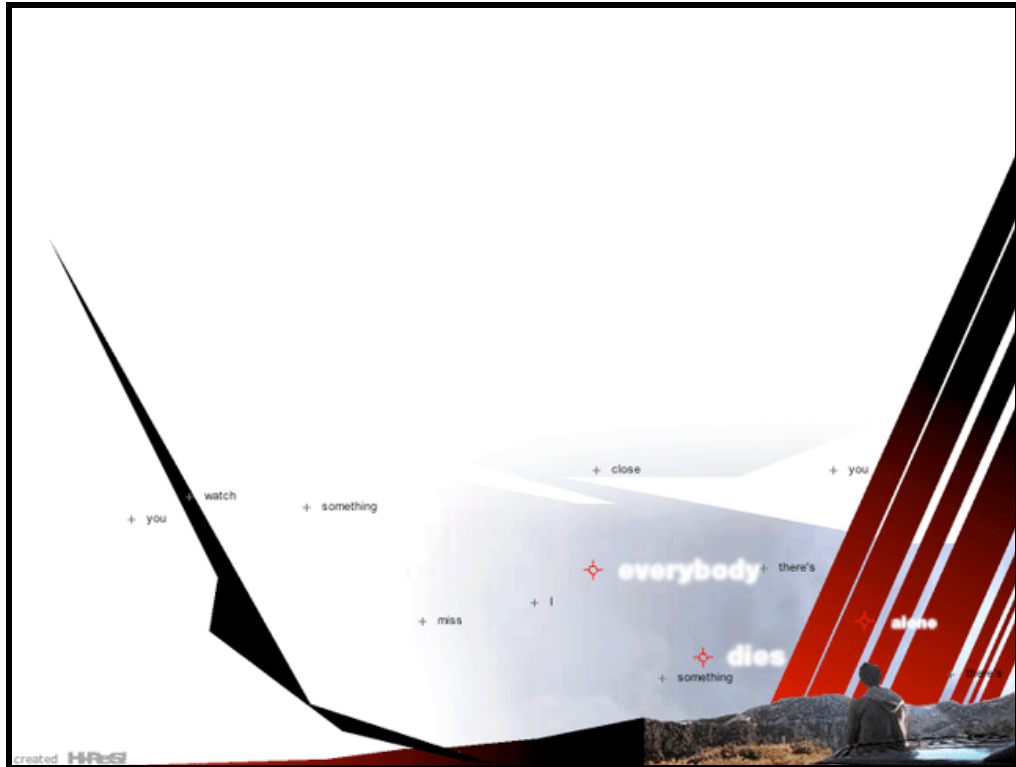
Figure 11. *Donnie Darko,* Main Menu

Donnie Darko as being a web site is highly dependent on contemporary design trends and first attracts the user with its appealing look (see figure 11). The site is structured like a game that encourages the users to interact with. Although there is one story the choice of the order of accessing to the whole story is seem to be left to the user. However, if the user tries to navigate by skipping some parts she can never be able to visit the whole pages of the site, because they will remain concealed. The site inhabits a psychology, which addresses to the curiosity of the user. The sound and music design of the site also takes attention and helps to feel the atmosphere of the site and of the movie without watching it. The user has to collect hints and has to reveal information to have access to all the data that she is offered. Her experience is customized by offered external links, the choices of the paths, which she has to choose, the usage of different media throughout

the site and the notion of surprise. Although the user conceives easily the structure of the site, because each page offers a different design and page layout, but again with the same visual language, her interaction is empowered by the notion of surprise within the work. She never knows what will come next, so in order to unfold the narrative she becomes an active participant in the site, which results in higher immersion. David Rokeby in "Transforming Mirrors" talks about the desire for control and the desire for surprise in an interactive work and marks both as elements that will increase the level of interaction and immersion. The user needs to face up with a user-friendly interface, which she can observe and conceive the operational logic at once. She shouldn't be puzzled with the complexity of the interface. In that case, she would be pulled back from the immersive dimension of the system. Moreover, at the same time, the system should be an open system that would convince and encourage the user to interact more. This situation is valid also for any interactive artwork. "Interactive artist balance control and surprise to suit their 'interactive aesthetic".[71] *Donnie Darko* is a site that promotes the film while offering an immersive interaction. The user cannot generate new data but can easily engage with the work by unfolding the narrative with the high level of interaction. Although, it requires passive interaction, especially the moments where the user has to submit some keywords increase the immersive nature of the site in comparison to most of the web sites. It plays with the notions of pull and push technologies. In order to surf the site the user has to reveal some hints and use them where necessary. It creates the illusion that the user is

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[71] Penny, Simon Ed. *Critical Issues in Electronic Media.* NewYork: State University of New York Press, 1995, 150.

confronted with a pull technology which requires to submit keywords and ask for more information as in the search engines. This kind of approach brings dynamic relations between the user and the system and manifests the interface both as a window and a mirror.

4.2 SODAPLAY-www.sodaplay.com

Sodaplay is an online Java based interactive perspective modeling site. In the site you create easily your creatures that can walk and crawl. It is a highly immersive site in which the user is expected to make different models and play with them. It is used both as a site for educative purposes and for fun. Sodaplay is designed by a London based company called Soda Creative Ltd. The sites main address is www.sodaplay.com. The general atmosphere of the site carries a white design in which every element is a generic and the use of color is at minimum. The minimal approach of the design of the site indicates that the user should interact with the system via a user-friendly interface (see figure 12).

The site has mainly two sections; one section is where the user construct and give life to different models, which is called *sodaconstruct* and the other one is a platform in which the compete with other users models and is called *sodarace*. There are also subsections in the site, which are, the forum where people make discussions, the shop where they get a model, the zoo where the

users submit their models, how to pages, resources page, frequently asked questions, and the news where the updated information can be found.
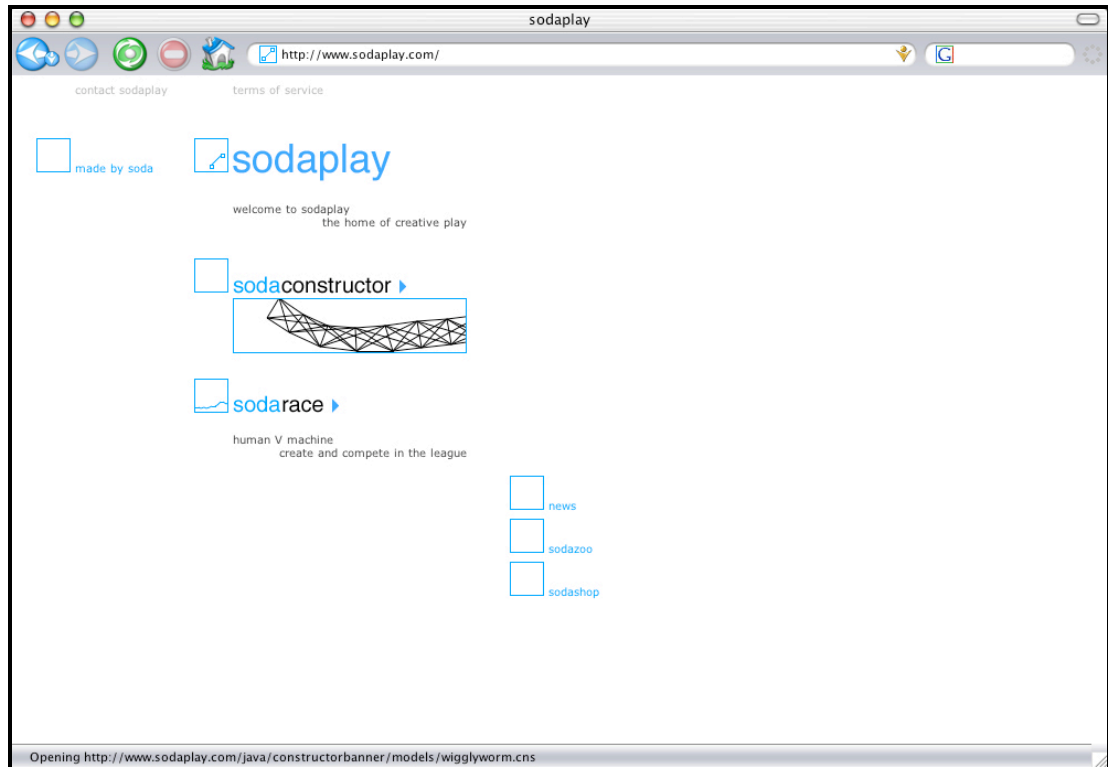

Figure 12. *Sodaplay*

The design language of the site is a minimalist one and based on the idea that form follows function. Excessive usage of white space with small amount of black elements and typography and blue colored links determine this minimalist approach of the site.

When the user clicks on the *sodaplay* link in the main page, a new pop up browser window appears and she is directly sent to this one to start playing with or to construct the models. The *sodaconstructor* section of the site has four options; the user can *simulate* a model, *construct* it, *delete* some parts of it, or *clear all* of it and start from the scratch. These modes are chosen from a

dropdown menu located on the top of the page. When the user is in the *simulate* mode she can see the model alive and she can drag and move it. In the *construct* mode she can create a model by simply clicking on the determined area and define the masses and the springs. Then the user can manipulate and modify its gravity, friction, spring stiffness and its power from the embedded menu on left. It is also possible to click on the buttons on the top to load and save models, turn on and off the gravity or make it reverse and change the direction of movement. When the user constructs something and want to delete a mass or spring, *delete* mode would be of use. If she wants to erase and reset everything the *delete all* button would be of use (see figure 13).
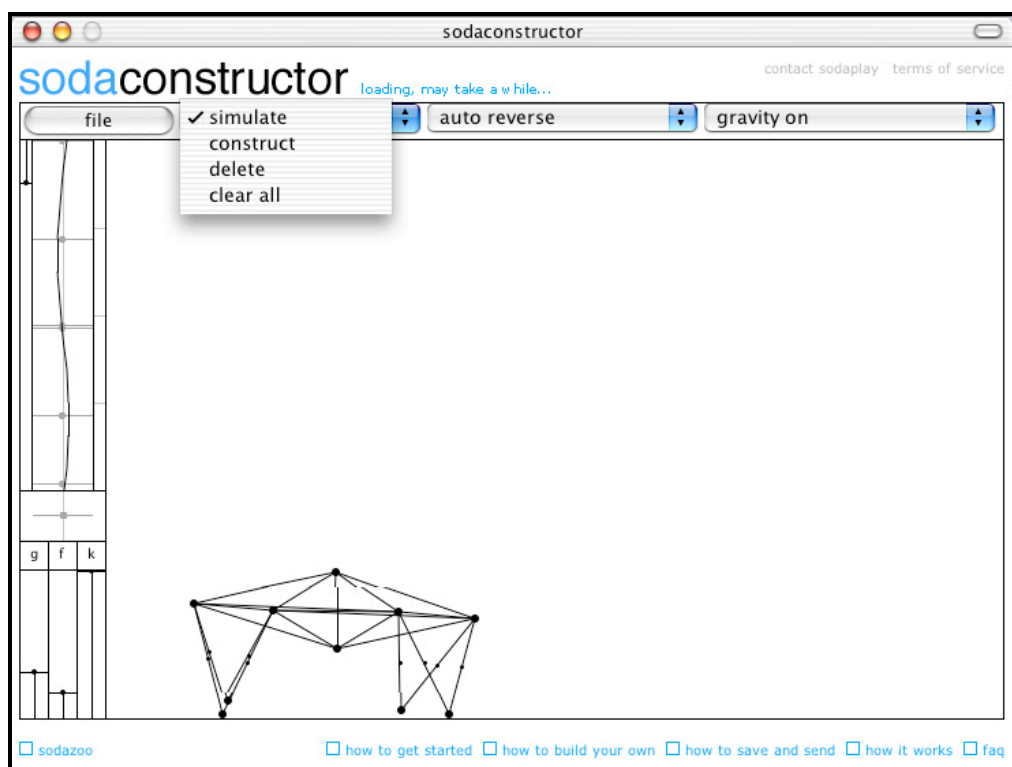
Figure 13. *Sodaconstructor*

The interface is user-friendly and it takes seconds to conceive the operational logic of it. The *sodaconstructor* models are formed by masses linked by springs and muscles that can be manipulated. The models' main property is that they act upon the laws of gravity, friction and spring stiffness. Moving the sliders up and down, on which their initial letters are written, can modify all of these three attributes. Moving the models is controlled by the muscle wave, which is located on the left of the screen; dragging the wave sideways causes its power to increase or decrease.

The other main section *sodarace* is a platform where the user can submit her model and enter to a race between the other users and the machine. The aim is to create a model that should be fast enough to win the race (see figure 14).
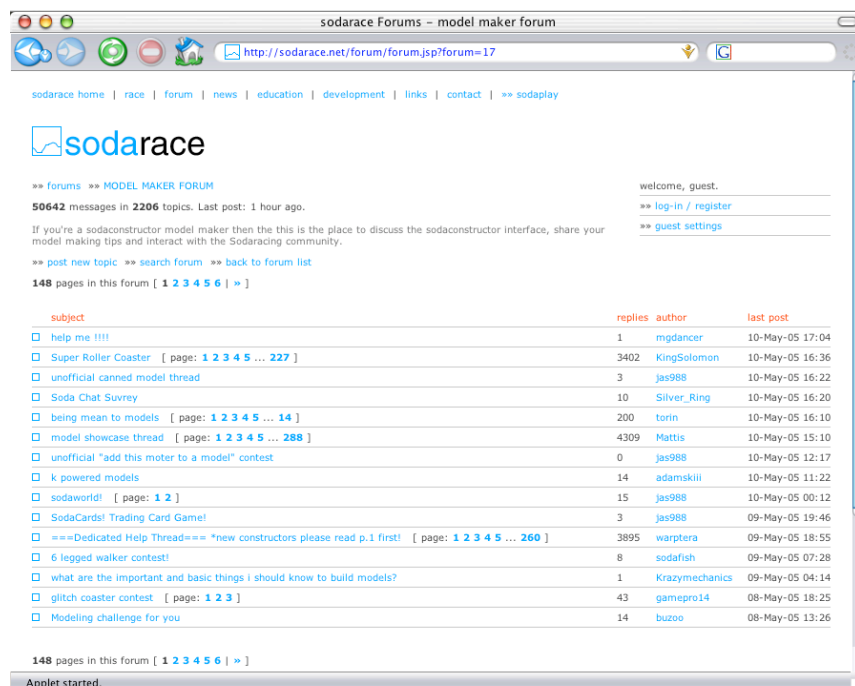

Figure 14. *Sodarace*

Although, *Sodaplay* has a site that has conventional design attributes, because of its promise to immerse the user in it by making her the creator, becomes much more engaging. The user's interaction is directly customized by the user-friendly interface, which depends on simplicity. The user is given the option of creating a model by using the possibilities and the rest is left to her imagination. Moreover, the *forum* pages and the *sodarace* make it possible for the users to interact which each other. The user is enabled to form a narration by first creating the model and then playing with it and even more, entering a competition. The site offers different experiences for every person and a user can generate new data and end up with a different result on each trial.

4.3 BANJA-www.banja.com

"Itland is an isle where life is pleasant, in harmony with nature and the elements. The air is pure; the sea limpid, the wind distils soft music everywhere. Still spared from the mishaps of the modern world, Itland is a unique spot with a peaceful and pleasant atmosphere. There is no conquering here, but the discovery of mysteries of an enchanting world. The unifying thread of Banja's whole story is the harmonious life of the isle's citizens that one must try to preserve in spite of the arrival of troublemaking elements..."[72]

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[72] Banja-The Online Game. April 2004 <http://www.banja.com/home2004/uk>.

Banja is considered as the first online community adventure game in 3D Flash that evolves in real time. It was developed between 1998 and 1999, and first released in 2000 by CHMAN. New episodes are added to the game as the developers work on it, up to now CHMAN released nine episodes of the game. The home page of Banja is www.banja.com. The site and the game are available in different languages like Korean, English, French, Spanish and Japanese. It is one of the largest gaming communities on the WWW. The site claims to be highly immersive and social.

In order to play the game the user has to be registered. The users play the Banja character. The user has to explore the island and fulfill some duties or tasks that he is confronted in the island. In each episode there happens to be a different story. Banja meets with people, raise plants, cooks, plays, do shopping and all sorts of daily activities in the island. Furthermore the user has the option of chatting with other online gamers, and of exchanging information or ask questions.

Figure 15. *Banja*

At the beginning of the game the user is offered help to guide her from a bee called Pyu. The bee acts like the paper clip (or the monitor in Macintosh) in the Microsoft Office programs. It introduces the island, your capabilities, how to move, look, grab or act. From the menu, the user can disable the option of getting help.

The menu necessary for the game is located on right side of the screen but the user can change its location by using the cursor and dragging it (see figure 15). This menu encloses the buttons for loading or saving the game progress, toggling display quality of Flash, quitting the game, and link to the chat area. The main button in the menu is called *menu* and when clicked

triggers a big menu that pop ups in the middle of the screen. Within this menu the user has access to the high score list, mail, inventory, passport (registration information of the user), agenda and help links (see figure 16).

Figure 16. *Banja* Menu

The camera movements are arranged in the way that they offer the gamers as much information about the story as they can. The game uses different camera angles and different point of views depending on the scene. As Meadows illustrates, "perspective provides the foundation for understanding and providing context"[73]. Another important characteristic of *Banja* is its developed GUI for the creative staff to generate new narratives from the existing inputs, named Epi-Generator.

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[73] Meadows, Mark Stephen. *Pause and Effect: The Art of Interactive Narrative.* Indiana: New Riders Press, 2003, 159.

Within the game there are other mini-games that the user may want to play (see figure 17). As she plays she gets points and if she gets a high score she is listed on the Web page. These small games have different consequences on the narrative that the user unfolds as she plays and navigates through the content. There are some communal mini-games that if a gamer can change the score of it becomes the Banja Star and changes the story for the other gamers as well.
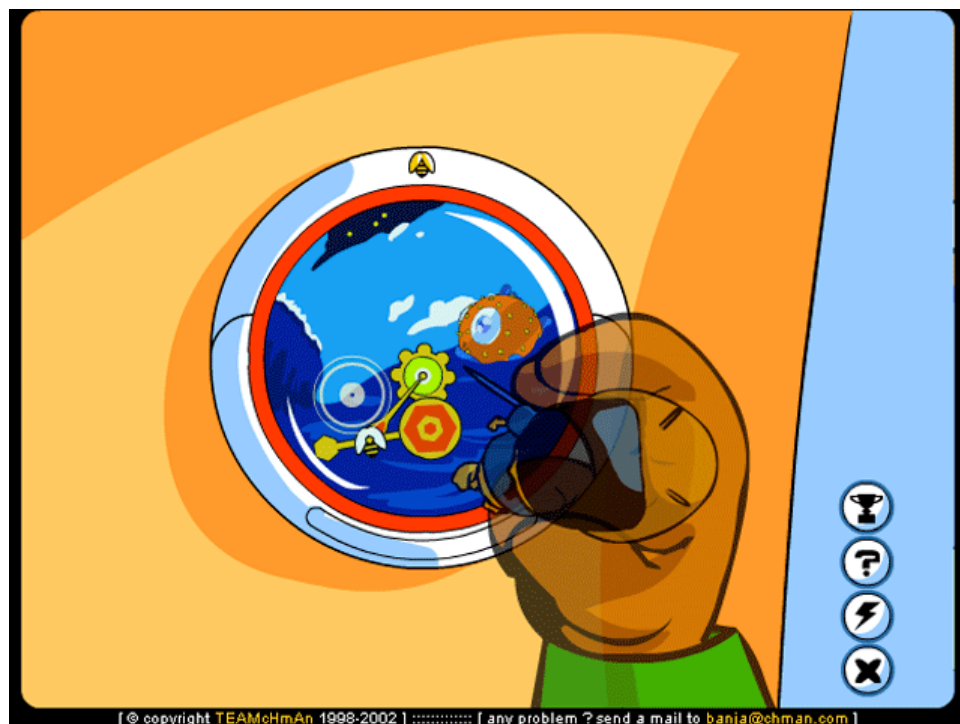
Figure 17. Mini-Game

Banja in contrast to most of the other online games appears as being highly immersive both with its content, its visual appeal that grabs the attention of the user by the use of color and stylized animations and the interaction possibilities with the other users. Apart from the animations the game has a unique visual language of its own. All through the game every event,

happening, thought, interaction, character and speech is represented by stylized pictograms and looped sound and music samples, which create a uniqueness for the game while reminding the user of the digital environment that she is interacting with (see figure 18).

Figure 18. *Banja* Characters and Pictograms

The game aims to immerse the user with the narrative that it offers. However, it also customizes the users experience by bringing options and setting freedoms for navigating through the island. For instance, the user may choose to move from one location to another by traveling one by one through the scenes. On the other hand she may choose to use the map located in the menu to jump to some other location, which has been visited before and activated. The user has to accomplish some duties in order to

proceed. But the order of these duties is up to the user, she can choose to set her own priorities, furthermore, she may choose not to accomplish any of them and just to navigate in the island. The interface of Banja is the key element in accessing and accomplishing all those tasks and actions. As it sets the limits and places the options it identifies how the user interacts and navigates through the content while trying to achieve an immersive and engaging experience.

All of these three examples from the WWW manifest the role of graphical user interface in customizing the experience of the participant. The graphical user interface in each of the pieces defines the look, atmosphere, style, structure, and possible interaction ways of the user.

David Rokeby in "Construction of Experience" puts forward the role and importance of any interface in interactive media as follows,

> "… the rush to stuff content into interactive media has drawn our attention away from the profound and subtle ways that the interface itself, by defining how we perceive and navigate content, shapes our experience of that content. If culture, in the context of interactive media, becomes something we 'do,' it's the interface that defines how we do it and how the 'doing' feels"[74]

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[74] Rokeby, David. "The Construction of Experience:Interface as Content" March 2004 <http://www.activeart.ch/ratlab/textes/Drokeby1.pdf>.

If the interface is successful and can act both as a window and a mirror than it leaves traces and imprints on our subconscious. Since the GUI is a powerful agent, and gets its power mainly from the visual metaphors, as we use these interface and interact with them more and more each day by blending them into our lives, beginning to use new media terms in our daily lives is inevitable.

CONCLUSION

The technological developments in the computer field assign new features to the computers everyday. Computer is now considered as a medium, which conveys messages, shapes and influences the culture and the contemporary visual language by offering new experiences to the user. Its promise is to form new associations in between the systems. Computers are channels of retrieving information. The developments in computer field outline the form of the information and shape how the information is retrieved. In the digital age instant access to information has gained importance. Communication became the matter of time whereas it was a matter of space. The dimension of the space has shifted to the dimension of speed (time).

Representation has always been at the core of human interaction. As the medium that we express ourselves evolve, the ways, which we define and communicate also change. Artists and designers are seeking for unique ways of expression with the possibilities offered by new media.

The visual language in electronic era is also affected by the redefined formulations of time and space. In this era access to information became the key concept. Communication technologies switched the priority given to space over time. New media constructs its structure and how it

communicates in accordance with the new approaches towards the formulation of time and space.

Digital media is a ground that enables us to store, organize, categorize, distribute, duplicate, manipulate and generate data. The traces of its digital structure and interactive dimensions are clearly seen in postmodern culture. Departing from McLuhan's thesis that *the medium is the message*, it carries imprints of the postmodern society. This mutual relationship between the culture and digital media manifests itself through the shifting visual language. Fragmented and decentralized characteristics of postmodernism are evident in the works of new media. The bricolage like structure of new media is constructed on the multicultural pluralism and dissolving boundaries.

In electronic age instant access to information has gained significance. *Connect* and *access* became the keywords in this era. As the computers entered our houses and the number of the users is increased, the contemporary visual language has also affected. The result is a postmodern hybrid visual language, which reflects the culture and criticizes the older ones. The perception of mind and body has also challenged by the digital media. New media, with its multidimensional interrelations that offered various ways of interacting with the computer blurred the mind and the body dichotomy, which was a result of the Cartesian mind. Virtual Reality and 3D games are explicit examples of new media that are concerned with all senses of the participant.

The most two important characteristics of new media are its digital structure and interaction possibilities that it offers. Hypertext was the forerunner that signaled the interactive dimensions of digital media. It brought non-sequential readings that allow the users to jump from one location on the net or in the system to another without following a chronological order. Hyperlinking and WWW enabled nonlinear structures that gave birth to different narration patterns. These narration patterns challenged the traditional storytelling methods and embraced more complex structures, which customized the experience of the user.

All media imitates the older ones, but technological enhancements add new properties and features to the newer ones. Apart from the technological developments all media are shaped by the cultural conventions and shifts that take place in the society. New media by amalgamating different types of media produces a richer experience that addresses all senses of human. There is a certain link that bounds technology and culture. Technology shapes how the culture perceives media. It acts like a prosthesis that fulfills the lack of the body.

One of the most privileging characters of new media is the interactive dimension of the system. Interaction is the key figure that engages the user with the work. Instead of staying distant from the work and contemplating it, the user has the chance of being an active agent that manipulates the unfolding and the outcome of the work. However interaction is most of the times pre-conditioned and a habitual one. New interactive solutions must be

created in order to have a real dialogue between the user and the system. This can be achieved by broadening the technical and technological aspects of new media. In that case, the interaction will be more engaging and immersive.

An interactive artwork may try to immerse the user by offering either passive or active participation. A passive participation in the sense that the information exchange is one directional-from the work to the viewer- such as reading a book or watching a movie, may be more immersive on the intellectual level compared to a digital interactive artwork. But a piece becomes truly immersive when it reflects the user back to her and even transforms her within the digitally framed work. An interactive work should reflect the user and her surrounding to create a consciousness of the environment in relation to herself that she is acting within. Furthermore, if the work manages to transform the users behaviors, actions and her point of view it becomes much more engaging both on the intellectual, psychological and physical levels.

Interface is the key figure that connects the user with the system. An interface defines how we interact, what kind of an experience it is, the interaction method and the interaction levels. An interface is never a neutral form, as Manovich also states, the interface "acts as a code that carries cultural messages in a variety of media".[75] It carries traces of the culture, technology, socio-economic structure and the time period. An interface

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[75] Manovich, Lev. *The Language of New Media*. Cambridge, MA, London: The MIT Press, 2001, 64.

carries visual codes about the content. It gives hints about the context, its style, interaction possibilities, interaction levels, and the possible outcomes of the work.

Graphical user interface (GUI) is very important in the sense that it shapes the users experience. A graphical user interface should be user-friendly and the user must conceive the operational logic of it as quick as possible. In this way, the user won't spend much time on trying to figure out how to interact with the system and won't be distracted and repelled from the work. GUI's uses remediation as a strategy to immerse the user. Successful interfaces embraces both of the remediation strategies, which are immediacy and hypermediacy.

A GUI uses visual metaphors. These metaphors help the user to anticipate the logic of the system and how it works. Visual metaphors carry the imprints of the culture and they mirror the culture and have impacts on the culture itself. Access to the same content with visually or structurally different interfaces can produce different experiences for the user. It dictates the method of accessing the data, and the ways in which the user retrieves data affects the meaning of the content because of the reason that the medium always has a message as well. In order to have a successful, immersive interactive experience the interface should act both as window and mirror, which proposes the content while reflecting the user back to herself.

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