Evolutionary City and the New Media

An Exploration of the City of Delhi,

By
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Abstract

This thesis explores the City as an interpretation in the extending boundaries of human habitation of the real and the virtual. The exploration is based on the study of the factors that define the forms and notions of its manifestation as a City. By means of the interpretation of real and virtual cities, this thesis seeks to examine the plausible relations that arise between them. As a prototype for the research, the thesis explores the grounds to interpret the City of Delhi, based on which, the virtual version of changing Delhi is proposed. The proposal is a new media device to unravel the underlying course of changes that animate the narrative of its evolution.

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Preamble

"Since men first began to use enclosures, the notion of what a boundary is has undergone transformations which concern both, façade and what it faces, its vis-à-vis. From the fence to the screen by the way of the rampart walls, the boundary – surface has been continually transformed, perceptibly or imperceptibly. Its most recent transformation is perhaps that of the interface."ⁱ

-Paul Virilio, *Ars Electronica: Facing the Future*, "The Overexposed City", 1999

The City is a model of constantly occurring events, thus in a continuous state of change.

In this regard, the City is similar to an evolving model as it is subjected to factors of change. These factors involve changes that are triggered due to social, political, economic, cultural, or aesthetic reasons that represent themselves as objects of built events. Due to these factors, the notion that defines a City has continuously transformed in the built forms. As suggested by author Paul Virilio with regard to transforming boundary of enclosures is similar to the transforming boundary of a City, as these built events are transforming into virtual events with the oncoming of the interface in the information age.

The City of Delhi is such that it invites a visitor or a student to experience the reminiscence of the past, which is layered amongst the compelling issues of the urban matrix in the present. It is a congested metropolitan City and politically distinct as the national capital of the South Asian country of India. The City of Delhi is an expanding urban form rooted in the issues of population, pollution, sanitation and transportation. The economic importance of Delhi can be attributed to the fact that it is the central point that connects with most parts of the country. Thus, it is the central location and the node of the railway and road network.

Fig 1. Aerial view of Old Delhi City showing the Congested Urban City

The understanding this City is closely associated with knowledge of its rich historic past and the chain of events that has occurred in the course of its evolution as 'Delhi' in the present. The social and cultural aspects of the City are ingrained in the multifaceted way of life that the City has acquired over time.

"...the questions which rise in the mind of any visitor to or student of Delhi concerns the numerous changes of site to which the city has been subjected to ..."ii
 - Percival Spear, *the Delhi Omnibus*, "Delhi: A Historical Sketch", 2001

As pointed by the author Percival Spear, changing factors of the site are distinct aspect of the City of Delhi. The location for the City has shifted around the Delhi area due to reasons regarding military strategy, dynasty pride or in some occasions for better health. As a consequence of this, the City is associated with built environment (as seen in the gateways to the cities, refer Fig. 2) from different time periods, revealing its evolution. While the animate nature of a City is seen through the changes in the topography, density and network of the expanding urban form, the City of Delhi is also characterized in changing built environments mirrored in the animate location of Delhi through time.

Fig 2. Symbolic City Entrances. From top to down- The Gateway to the Old Delhi Palace Complex;
Monumental Gateway in New Delhi

The City that is addressed as 'Delhi,' is a changing fact in the order of the chronology of events. The built environment mirrors these changes that the City has undergone, forming a trajectory of events in the mind's eye.

Legend

- The locations showing the previous Delhi cities

Fig 3. Map of the Delhi City showing the changing location through its evolution and the extent of expansion until 2001

This thesis intends to examine the possibility of new media intervention to interpret the evolution of the City of Delhi as an elaboration of the mind's eye.

In light of the evolution of the urban form known as the 'City', the renewed urban organization becomes transformed into the 'notion of the city'. It is distinct as the virtual space or place within the City as an interpretation. It belongs to the premise of representations as there are similarities in the experiential qualities with regards to space, place and events. This refers to and represents the space or place constructed by the influences of the information age. Author Steve Johnson in the book "Interface Culture" articulates this as "an environment, a space explored. You could project yourself into this world, lose your bearings, and stumble across things. It was more like a landscape than a machine, a 'City of bits'".ⁱⁱⁱ (Johnson, 1997) New media also offers valuable technological tools for representing the real City in a virtual environment. As a consequence, both environments, the real and virtual, compliment one another in order to create the possibility of presenting a comprehensive exhibition and information about the City. The thesis presents the research of the City of Delhi and is based on the design of the virtual environment that is proposed as an information object that compliments the experience of the place.

"Two procedures confront each other: one is made up of physical elements, precisely situated walls, thresholds, and levels; the other is immaterial, its representation, images, and messages possessing neither locale nor stability, since they exist only as vectors of a momentary and instantaneous expression, with all the misinterpretation and manipulation of meanings that this implies."^{iv}

- Paul Virilio, *Ars Electronica: Facing the Future*, "The Overexposed City", 1999

ⁱ The author analyzes the transformations in notion of enclosure to become the extending City where the boundaries that define the City have extended to the virtual domain. Thus the City in the information age is a sum of two procedures, the real and the virtual. Virilio, Paul. "Overexposed City", *Ars Electronica: Facing the Future*. Cambridge: MIT Press, 1999, p-277.

ⁱⁱⁱIn this essay the author points to the salient aspects that is unique to the City of Delhi. The City has multiple locations, names, fortresses and citadels that offer a rich historical perspective of the evolution and architecture of the City.

Spear, Percival. "Delhi: A Historical Sketch", "The Delhi Omnibus". New Delhi: Oxford University Press, 2001, p-3.

ⁱⁱⁱThe screen of the computer as described by the author, is synonymous to a surface through we immerse into the depth of the virtual landscape of information bits. As these information bits connect us virtually to associated information similar to an experience of travel across the City of information.

Johnson, Steve. "Bitmapping: an Introduction", *Interface culture*, San Francisco Harper's Edge: 1997, p- 24

^{iv} Virilio, Paul. "Overexposed City", "Ars Electronica: Facing the Future", Cambridge: MIT Press, 1999, p- 281.

Chapter 1 Introduction

1.1 Area of Inquiry

This thesis seeks to explore the reciprocal analogies between the evolutionary City and the new media. The City is interpreted as an environment, which is characterized by an evolving pattern and this interpretation is based on an analysis of the pattern of change, which defines the model of a City. The evolutionary model is compared to the new media and the comparison is grounded on the example of the City of Delhi as a 'prototype'.

In this regard, the thesis examines the new media environment as an evolving changing form that materializes as an alternate 'form' and 'medium' of human inhabitation. This alternate realm or 'notion of the City' is also explored. This includes the different ways of representing the interpretations of a City in the virtual realm that form the alternate realm of the, 'notion of the City'.

The case studies in this respect analyze the different forms of the representation of a City, and the relationship between the real and the virtual environments with regards to a 'place' or a 'space' in a City. As these examples of new media environments have been drawn from the City, this thesis looks at how the virtual contributes to the real forming, in combination with an environment of existence and exploration in the information age. This primarily benefits the new media designers who derive significance from the real City environment to represent in the contextual virtual City.

This study is sectioned into two parts: a critical essay with regards to the above description, and a design of the virtual environment in light of the interpretation of the 'prototype' of the City of Delhi. The organic growth of the City of Delhi over time has manifested as a complex paradox of the contemporary and also the structures of the past.

The design of this contextual virtual design presents the transformations as the extending changing boundaries of the City. The intention of the contextual design is to represent the place through its evolution over time. The City of Delhi presents an appropriate scenario for the intentions of the thesis, which are to create a new media device of critical information to complement the experience of the place.

This design is a trace of the evolution of different cities, which combine to become the City of Delhi. The virtual layer becomes an information insight into the existing city with regards to its origin and growth over time, as distinct built events. Such a new media object can be utilized as information about the City of Delhi in any contextual public event or gathering to deepen the knowledge of the existing place, while acquainting the viewers with a sense of the real City. In this regard, the intention of this thesis is to demonstrate a meaningful exploration of the real City in order to represent the contextual virtual City as an interpretation.

1.2 Research Approach

The study of the City with regards to changing boundaries, is supported by the essays from the book *"Ars Electronica: Facing the Future"* by Timothy Duckrey. In this book, the new media is highlighted with regards to 'change' in the environment of inhabitation, as a consequent process of the evolution towards the future. With regard to the manifestation of this evolving pattern of the information age, this thesis focuses on the 'notion of the City' as interpretation of the City in the virtual environment. This idea has been reinforced by inspiration from the book, *"Immersed in Technology"* by Mary Anne Moser. The book highlights the significance of new media projects, which are interpretations of evolving patterns in the virtual environment. This has inspired the investigation of the evolving pattern of a real City environment to, in turn, form a basis for its interpretation in the virtual environment. The following questions are addressed to aid in the investigation of the 'notion of the City'. What form does the idea of the City hold in relevance to the new media? In what unique way does the City of the new media address the viewer, while representing both space and time? How does the evolving pattern of the real City extend to operate as a virtual City?

In order to address these questions, the exploration of the City is reinforced by the ideas of two books. In light of Steve Johnson's *"Interface Culture"*, the evolving form of the City is viewed as an emerging cultural interface for human inhabitation. In consideration of the ideas by author Lev Manovich, the new media artist, theoretician and critic of the book, *"The Language of New Media"*, the City is explored as a form of representation. This book analyzes the new media environment as a new language of representation. In this regard, the thesis explores the representation of a City as an alternate 'medium' and 'form' for representing 'space' and 'place' in a virtual environment. In the context of the

real City environment, the relations between the real and virtual combine to form an interface of a City for human inhabitation.

The real and the virtual are also examined as a dialectical discourse. The real City is compared to the City of new media in order to pinpoint the qualities that define the 'place' of inhabitation. Peter Lunenfeld explains this in the introductory section of the book *"The Digital Dialectic"* as "...the dialectic is commonly understood to be a dynamic process in which one proposition is matched against the other proposition in order to bring a third, combinatory proposition into being."ⁱ (Lunenfeld, 1999) The dialectic discourse between the real City and the virtual City of the new media points to an underlying reciprocal metaphorical relation between the City and new media in the information age.

In this view, the case studies involves an analysis of cities in the form of websites (WWW), virtual reality (VR), interactive installations (HCI), computer animation, multi media and computer games that operate in an interface that articulate the City. The interpretation of the 'notion of the City' is explored in light of the examples for the above projects. The focus here remains on the aspects that involve the representation of a real City, in the virtual City. With regards to this, the exploration of new media tools to understand the evolution of the urban landscape of the 'prototype' is involved. Since the City of Delhi has evolved as an amalgamation of eight cities, it offers a matrix of multiple scenarios where the evolution of discrete parts leads to the creation of the whole. The City of Delhi is

related to multiple locations, multiple cities and multiple names, which indicate new thresholds where one ends synonymously with the virtual environment where gathering necessary required information involves the opening of many windows where one blurs into the other.

The design puts together a trace of the changing boundaries that form the City of Delhi through time displayed as an 'animation'. While the existing Delhi is a remaining trace of the past cities, the virtual version is an exploration through the trace that comprehensively links the evolution of the built City to the information available about them at present. The material for this part of the thesis is supported from the book "*The Delhi Omnibus*" by Gupta, Spear and Frykenberg. The other book explored is called "*Architecture and Independence*" by Madhavi and Miki Desai. The books on architecture of India by Percy Brown and Satish Grover also provided valuable resources and information regarding the evolution of architectural styles and building trends in the Delhi area through time.

Fig 4. 'Screen Grab' from the 'Prototype' showing the animate locations of the Previous Seven Cities and the Eighth City which is the Present National Capital

The comparison between the real City and the virtual City in this thesis is to arrive at the relationships the dual domains make to offer an interlocked interface of existence in the present. The dialectical approach used in the book is useful to demonstrate to point to the salient factors. Lunenfeld, Peter. "Screen Grabs", The Digital Dialectic, Cambridge: MIT Press, 1999, p-3

Chapter 2 City and New Media: Context and Methodology

2.1. Research Context

The two projects described in the essay about the "*Medialization of Cities*" by Edouard Bannwart, is the inspiration that contextually grounds the purpose of the thesis. The project is similar to a walk in "screen bunkers".ⁱ It is the networking of information; control and monitoring technologies that have created a model of urban change of the City of Berlin. "This dynamic model is replacing the fixation of status by means of drawings and serves as a digital basis for the planning and administrative process."ⁱⁱ(Bannwart, 1999) In accordance with this project, the virtual City is a model of urban change but seeks an animated environment for the aspects that inform the change. It is not intended as a generic copy of the City, but a new media version of the changes in the City through time and evolution. Objectively, it is a virtual exhibition, and an interactive narrative as opposed to being a digital basis for planning purpose. Another project that is similar to this is the ART+COM project that allows "the realization of media events devoted to public interest. The media island marks this location as a gateway of non-material worlds and open windows to global communications. In this way, the virtual urban model materializes in a specific place and defines the swinging door between reality and virtual reality. The medialization of the cities therefore becomes an object of public interest."ⁱⁱⁱ (Bannwart, 1999)

Fig 5. Top to down - "*City Snap 2*", Digital Model of Berlin; "*Macshine llb*", Multimedia City Stage

The virtual model of Delhi is similar to this project is an object of a public event. It is envisaged to be an interactive narrative, which provides paths and links to permit virtual visits to the place and obtain information about built events. In accordance with this, the multi-media representation of the City of Delhi is attributed towards an object of public interest. It is the 'infotainment' object that provides information about the

evolution of Delhi cities and contributes towards a multi-dimensional awareness of the 'place'. It is an interactive information object used for public events. City models are represented as a 'metaphor' of the real scenario, in the light of its evolution. It combines script, images and animation with regards to the trajectory of change in the city. The movement through each city is represented with events that highlight the place, in the chronology of time.

This object is designed for special events, concerts and spatial illusions that contribute to the creation of a communicative public space as a central focus, similar to the ART+COM project. The virtual City is developed as a complimentary aspect of the real City. Thus, unlike the Berlin model the virtual City is not an exact replication of the existing City but a metaphorical demonstration of evolving cities, mapped out with regards to its existence in the real City. It is also designed as a shell structure that can keep with the changes in the City and accommodate the changing boundary of the evolving City.

2. 2. Research Method

The 'City' is - "a theatre that contains the ideas of all things except, of course, the idea of itself".
- Jeanne Randolph, *Immersed in Technology*, "City of Bachelors", 1995

As stated by the author Jeanne Randolph the City by itself is an idea and also a container for ideas. This aspect is the primarily reflected in virtual cities that draw inspiration from the real cities. In order to explore the City of the new media environment, the following questions need to be addressed- What is the new media? How does the City translate into a new media model? Lev Manovich in the book, "*The Language of New*

Media” describes new media as that which comprises of the Internet, websites, computer multimedia, computer games, CD-ROM’s, DVD’s and virtual reality. The author defines new media as such - “The popular understanding of new media identifies with the use of computer for distribution and exhibition rather than production.” (Manovich, 1999) Thus, to create a virtual version is to “transcode”^{iv} in a new media layer which underlines the appropriate interpretation of the contextual subject.

The City as an idea is a network of connections in an environment. In the real it is network of transportations and in the virtual it is information network. The idea can contribute towards the creation of a new media environment as it is a similar medium in which events occur and evolve into trajectories. Events that are marked by space and time to become a City of built structures or a City of information bits. In this light, they become a record of unfolding stories of the present and memory of the past as described below.

2.2.1. City and New Media: Space and Time

William J. Mitchell in his essay about *‘Replacing Place’* brings in a comparison between two unfolding stories, Cities and virtual 3D environments in the following manner:

“They (meaning the 3d environments) do seem to possess the power of the memories of the previous events that took place there. As they grow and change over time, they become like cities – records of an unfolding story. They can sustain communities by providing something of cultural and emotional value to hold in common”^v

- William. J. Mitchell, *The Digital Dialectic*, “Replacing Place”, 1999

The City is a theatre to travel through the ‘time’ of the evolution of the built events. Thus it becomes a medium through which history is etched in time and space as built structures. New media environment offers synonymous possibilities to travel through time as characterized by variability as opposed to uniform directionality in the real

environment. According to Florian Brody in the essay "*Medium is the Message*", time for a new media is attributed to a variable factor.

"Time is as much a human convention as it is a condition of existence. Every 'user' of time perceives it on an individual level that is in turn informed by social and cultural conditioning. The way we define the concepts of past, present, and future (and even unidirectionality of time) are reflected in all media and, furthermore, are actually enforced by the way we use media. It is precisely because time and space are cornerstones by which we define our environments that they are central categories within any discourse about media. New places for our images allow for new explanations as well as new forms of contextualization."^{vi}

- Florian Brody, *The Digital Dialectic*, "Medium is the Message", 1999

Built structure can display layering of time, animate architectural elements or even movement in its location with regards to its social and cultural conditioning. The factor of variability is present in the real also. As pointed by the author, the creation of new media places implies interpretation of explanation or a narrative and new forms of contextualization or an appropriate metaphor. This brings in the question that what are the factors in the real and the virtual mediums that define time and space for human habitation. The primary attribute is the experiential value.

If architecture of the City is viewed as an anima of experience, the experience is dialectic of memory. Memory is a synthesis of information for recollection and reconciliation. The built structure is a mark of time in space. Through time the structure becomes a container of information marked in time and space. But, the evolution of the structure not evidently displayed with regard to the chronology of the events. It is an indigenous form of accumulated information. Here, a media intervention is resourceful to demonstrate interpretation of the discrete events. Media, at this point becomes a container for interpretation of information.

The book in personal way is an extension of memory, and now the electronic text of

computers has taken its place. Florian Brody argues that if “we see books as spaces that we are able to enter and explore, much like a house, we find ourselves in the memory theatres used in the classical *ars memorativa**.”^{vii} (Brody, 1999) The new media has now emerged as a contemporary stage of the memory theatre. He makes an interesting analogy that- “If a medium is a conveyor of memory rather than messages, this offers us some insight into how to design for new media. This starts at a level where our memory technologies tend to define the very way we metaphorize our lives.”^{viii} (Brody, 1999) Virtual medium becomes a conveyor of memory which underlines the interpretation of the place. The contextual text, graphics and images are numerically coded interpretations of the place.

New media ‘space’ or ‘place’ are numerically coded as patterns of information. As a result, they become numerical representations of a ‘place’ or ‘space’. Katherine Hayes points to the notion that, “cyberspace discourse and technology, metaphor and practice, come together in the concept of virtuality.”^{ix} (Hayes, 1996) To distinguish between the idea of the real and the virtual, the analogies of two authors are compared. While, “real has been categorized as something that exists independent of the vicissitudes of sensory perception”^x (Lunenfeld, 1999), “virtuality can be defined as the perception that material structure are interpreted with information pattern.”^{xi} (Hayes, 1996) The virtually embodied memory ‘place’ or ‘space’ is an interpretation of the real ‘place’ or ‘space’ by a pattern of information. This brings the question as to what are the aspects that are considered to create a virtual version.

2.2.2. New Media

The virtual version of Delhi is synonymous to a well-defined “data”.^{xii} It also involves the design of automated tools for accessing these data forms by appropriate ways of navigating through it, similar to a means of transport for a journey through the City. This is a composite function of two layers. The cultural layer is conceptually attributed towards this “data” is memory exhibited or distributed. The “data” can be variable or an extension of the original theme depending on the level and nature of the interpretation. Here, it is variable depending on the available and ongoing research of the place. It is extensible as aspects of information are divided to be presented in phases.

The computer layer comprises of the hardware and software that influence the organization of the cultural layer. As hardware and software keep evolving the computer layer undergoes continuous change. New media layer exists in the composite layer between the cultural and computer layer. Thus, the design of virtual City involves the creation of virtual forms (metaphors) using 3D software packages, image editing packages, organization and storage of these data forms. The virtual versions are subjected to changes with regards to the evolution of the technologies. This points to function of space in the evolving virtual version.

“... Rather than considering only topology, geometry, and logic of static space, we need to take into account a new way in which space functions in computer culture – as something traversed by a subject, as a trajectory rather than an area.”^{xiii}
 -Lev Manovich, *“The Language of New Media”*, 2001

The illustrations below (refer Fig.6 and Fig.7), are examples of technological artwork that signify as instruments of time as demonstrated in the above statement. They bring to light media contents with respect to the contextual history, both past and present. These

are represented as an animation, a trajectory that one could travel through. The cultural layer and the computer layer of the “data” (Manovich, 1999) for the example are described below.

“Jeffrey Shaw’s installation *Inventer la terre*, commissioned by La Villette science center in Paris, is a densely layered cluster of history, myth and power. The visitor first sees a chrome plated column standing on a round black terrazzo pedestal, inlaid with brass signs: the cabalistic zodiac. Getting closer one notices the column is kind of a periscope, with an eyepiece and two handles, one on either side. By grabbing the handles the visitor can turn the column around; simultaneously gazing into an eyepiece reveals a “see-through” panoramic view of the surrounding science center. Yet there is another panorama superimposed on this one – a string of computer-generated views of creation myths, concepts of the universe by different cultures. The images seem immaterial like mirage floating in the air. By pressing little knobs in the handles, as if launching a torpedo, the visitor can animate the views, ‘visit’ them.”^{xiv}

- Marie Anne Moser (editor), *Immersed in Technology*, 1995

Fig 6. Jeffrey Shaw, “*Inventer la terre*”, 1986

In the technological artwork (Figure I), "Japanese artist Toshio Iwai has been involved in creating what the Japanese television program recently called "another evolution of moving image". Since the early 1980's his works have investigated the historical repertoire of moving image technologies, from flipbooks to zoetropes to interactive and videogames. Iwai constantly deconstruct, modifies and combines audiovisual gadgets from different periods and traditions." ^{xv}
 - Marie Anne Moser, *Immersed in Technology*, 1995

In this example, individual moving image technology marks an event, and a series of events bring out the 'animation' in the evolving trajectory.

Fig 7. Toshio Iwai, "Time Stratum III", 1989

The examples point to the process of interpretation of the cultural layer and representation in the computer layer for creation of the new media environment. The interpretation of the cultural layer of the "data" (Manovich, 1999) in the first example was historical and the cultural images of the world and in the second it was the history of moving images. The recreations of the "data" (Manovich, 1999) are the artist's interpretation in the form of an animate representation. With regards to the recreation of a City involves a process of interpretation of the City to define the "data". (Manovich, 1999) In this thesis the definition of each type of City is addressed as City models.

2.3. City Models

"...It is more likely that the basis of so-called urbanism is composed/decomposed by these very systems of transfer, transit, and transmission, the transportation and transmigration networks whose immaterial configuration renew urban organization ..."^{xvi}

-Paul Virilio, *Ars Electronica: Facing the Future*, "Overexposed City", 1999

The City and its boundaries are constantly being renewed by the notion of change that is observed in the system of transfer, transit and transmission. The forms of transportation and transmigration of networks define and illustrate the various ways to experience the qualities of a City. The virtual layer is formed based on an interpretation of the real. If this interpretation of a City is closely associated with regards to its evolution, it then brings forth the innate ideas contained within. Since the evolution of the City is examined with regards to the factor of change in this thesis, it can be broadly categorized into distinct evolving models to represent in the virtual layer. These models are thus analyzed and set against types of transition that describe the trajectories involved with them.

- The Traditional City refers to fixed state of transition.
- The Innovative model refers to the City that has adapted through time and exhibits a metamorphic state of transition.
- The Revolutionary model refers to the City that constitutes the logic of the industrial age, a forced implementation of a global ideology. Transition seems abrupt, without any reference to the context.
- The Virtual City refers to the immersive environment of the information age. The transition here is with regards to the change from real state to virtual state.

- The Evolutionary model refers to the City that has transformed exhibiting an animate disposition in the chronology of time. This thesis focuses on the interpretation of such a City where the virtual state is designed as an extension of the real state.

The first three states of transition refer to models that concern the evolution of the real City, whereas the fourth state refers to the 'notion of the City'. It is a metaphor that pertains to the realm of representation, a connotation.

The City models explored here are grounded with respect to examples of real cities. The evolutionary model, the 'prototype' for this thesis is interpreted in detail in later Chapter 4. The intention of the thesis is to interpret the City to form the basis to represent the inherent qualities of a City. The evolution of a City interestingly displays a rich essence of historical events, and a trace of the past and present, which are etched in the architecture of the built structures.

2.3.1. Shahjahanabad as Traditional City

Fig 8. City square: *Chandni Chowk*, 1857

It is a part of the City of Delhi, known as Old Delhi. This City is located to the west of the famous Red fort. *Chandni Chowk* which means the moonlight square continues to be a market place of contemporary Delhi City. This street square was built during the rule of the emperor *Shahjahan*, around 1650 A.D. It was conceived as the central road route that runs in the east-west axis, and connecting the Red Fort. The center of the road had a water channel raised from the ground, and the merchants' houses and shops were lined up on both sides. This place is a suitable scenario to articulate the 'fixed state' with regards to the changing landscape of the City. The transition that is taking place is that area does not destroy the spirit of the market place. The reason can be attributed to the cultural and economic traditions that have acquired their importance and persevered over time.

Fig 9. View of the Urban Landscape of *Shahjahanabad*, 1996

The road, perpendicular to this on the north-south axis, formed as the basis of the structural development of the City of *Shahjahanabad*. The illustrated image is an urban landscape of the present *Shahjahanabad*, known as the Old Delhi, where the old and the

new forms of built structures are witnessed and displayed side by side as a trace of evolution of the built environment.

2.3.2. Mass Rapid Transit System as Innovative Model

The rapid transit system is an innovation, as it is a solution to the issues of traffic and congestion in the City of Delhi. The transit system has been conceived to evolve and contribute to other built forms associated with it. As a consequence of this event, there arises a predicted concentration of built structure along the network of this transit system. Thus, it can be viewed as a 'City' within the City of Delhi.

The feasibility study for this project recommended a network aggregated at 240kms to meet the projected traffic demand for the horizon year of 2021. The project has been sectioned into phases. Currently, the first phase is under construction, and estimated to be completed by September 2005. The line-1 of the first phase is operational and has been extended for commercial use since 2002. The benefits of the project are that it saves space (and has the same amount of traffic as 9 lane busses or 33 lane private motor cars)^{xvii} and consequently reduces pollution by 50%, improves safety, and reduces travel time (10.5km/h to 14km/h)^{xviii}, reduction of accident rates, and fuel cost.

The Delhi Metro Rail Corporation has taken up property development projects such as the Information and Technology Park, residential development, commercial development and contact agencies for advertising in metro stations and structures. This scenario builds a sketch of a City, which has evolved due to a necessity. It contributes to

the evolution of new social and cultural aspects associated with it. This model can be defined as the Innovative City as it improves the economic and environmental conditions of the urban fabric.

Fig 10. Metro Rail, Delhi, 2001

2.3.3. Chandigarh City as Revolutionary Model

This City was a revolutionary vision brought to reality. It was designed and built after the Indian independence, symbolic of freedom, as a City of the future. "The generic modern architecture of Chandigarh is probably best displayed in the city center in sector 17. The characteristic way in which the space between the buildings is handled, the use of concrete slab and column structures, the walls are set back allowing balconies and the broken symmetry, all exemplify Le Corbusier's thinking."^{xix}(Lang, Desai, 1997)

Fig 11. Sector 17- City Center in Chandigarh

The master plan divides the City into rectangular modules called sectors. Each is provided with shopping complexes, schools, health centers, places of recreation etc. Architectural forms are combined with wide tree lined avenues, green belts and gardens at the foothills of the Shivalik hills. The City was conceived as a living organism, with the capital complex in the north representing the head, the city center as the heart and the open spaces as the lungs. The networks of roads reassemble the circulatory system, the industrial area as the viscera and the cultural and educational belts as the intellect. The design faces some issues that are out of context. Some examples are as follows: "The inward looking sectors have no interaction with the main roads"^{xx}, "The public transport system need to be improved"^{xxi}, "Massive open land area needs to be oriented towards people coming together"^{xxii}. The obsolete laws imposed by original master plan are under question with regards to the growth of the City.

Fig 12. Le Corbusier's sketch, Master Plan for Chandigarh

The Revolutionary City in this scenario, attempts to break away from the existing norms, and promotes new, creative approach to design a City. With regards to the notion of change the City model is rigid. Thus, change is in the crossroads between the politics of aesthetics and appropriate space usage for the required socio-cultural interaction within this monument of modern City.

2.3.4. Virtual City as Media City

Edouard Bannwart, in the book *"Ars electronica: Facing the Future"* says that - "we are convinced that the cities in which we live possess regional characters that are authentic, original, and individual."^{xxiii} (Bannwart, 1999) Due to the pervasion of enterprises such as the international chain of stores, service industries, and restaurants, every City latest by evening "radiates the international neon style."^{xxiv} (Bannwart, 1999) He defines it as an "infotainment", (Bannwart, 1999) model of a City.

As part of creation of this Multimedia City which are intended not only as data storage media, but walk in monitors also. Depending upon the software, these multimedia structural chameleons can switch from one status to next. Structural shells conceived in this way possess a constantly altering architectural appearance, one that displays advertising or which is even mobile. "Entire street could be Chinese, Baroque or as green as a jungle depending on the season."^{xxv} (Bannwart, 1999) The creation of an altering sense of perception of the place represents a virtual notion of a Chinese, Baroque or a green jungle. In this interpretation of the City model the relationship between the real and the virtual is interwoven such that the distinction between them begin to blur. As the focus in these interpretations is for representation in a new media environment, a comparative analysis of the observation is as described below.

2. 4. Observations

The traditional model displays a metamorphosis in the original built form, and conserves the spirit of the place as opposed to the virtual model, which maintains the same built form but displays the varying spirit of the place. Here animation is inherent in the changing spirit of the place. The design of the urban landscape is with regard to a state that involves constant change. The new media representation of the model involves the information of historical and cultural perspective of the place, whereas the virtual model involves information regarding the changing sense of the place.

The innovative model is a change that occurs with regards to the evolution of the existing City. It is like adding another layer to the existing City for the better functioning

of the City, with the model being contextual to the current conditions of the City. The new media representation of such a model involves information about the inherent City issues and conditions. However, the revolutionary model is a rigid monument that is implemented abruptly in its location, and the built form is indifferent to the contemporary issues with regards to development. This is similar to a one-time exercise, which is challenged to withstand the pressure of issues that arise over time. In the case of representing such a City model, the new media environment is a continuation of a system of networks for the transmission or exchange of information that affect the urban configuration. The evolutionary model which is discussed in detail in Chapter 4, is such that has organically grown through time in parallel with the virtual environment. They are both multi-modal, where one could use various paths to get to one point to another, and multi-nodal, where one uses the place to get to a variety of places. This model is the 'prototype' for the thesis as it draws a parallel metaphorical relation with the new media environment.

The next chapter explores the notion of the City as a representation. The state of change from the real to virtual is seen and represented in the real and virtual environment or an environments which present an amalgamation of both. The relationship of the real and the virtual is a resultant of the information age. This relation is an interface which is the realm of inhabitation of the information age. The case study analysis looks into the different ways of representing this interface which define the many ways of establishing appropriate relations between the real and the virtual.

ⁱ Bannwart, Edouard. "The Medialization of the Cities", *Ars Electronica: Facing the Future*, Cambridge: MIT Press, 1999, p-285.

ii Ibid.

iii Ibid.

iv "In new media lingo, to "transcode" something is to translate in into another format. The computerization of culture gradually accomplishes similar transcoding in relation to all cultural categories and concepts. That is, cultural categories and concepts are substituted, on the level of meaning and/or language, by new ones that derive from computer's ontology, epistemology, and pragmatics. New media thus acts as a forerunner of this general process of cultural reconceptualization."

Manovich, Lev. "The Language of New Media", Cambridge: MIT Press, 1999, p- 47.

v Mitchell, William.J. "Replacing Place", Digital Dialectic: Cambridge MIT Press, 1999, p-127.

vi Brody, Florian. "The Medium is the Memory": Cambridge MIT Press, 2001.

vii* Ars Memorativa is a memory theatre," a concept used by Giulio Camillo, Goirdi Bruno, and later by the English hermetic philosopher Robert Flud, was a theatre that would contain the concepts and the knowledge of the world. By entering the theatre, one would gain access to knowledge and be able to grasp the concepts contained. The theatre was then seen reversed – information was set up in the auditorium and the user/ reader was set on the stage, where he observed from this central position all aspects that was presented to him." – p142-143

Brody, Florian. "The Medium is the Memory", Digital Dialectic, Cambridge MIT Press: 1999, p142

viii Brody, Florian. "The Medium is the Memory", Digital Dialectic, Cambridge MIT Press: 1999, p143

ix Hayes, N. Katherine. "Embodied Virtuality", Immersed in technology, Cambridge MIT Press: 1996, p-4.

x Lunenfeld, Peter. "Real and the Ideal", Digital Dialectic: Cambridge MIT Press, 1999, p-2.

xi Hayes, N. Katherine. "Embodied Virtuality", Immersed in technology, Cambridge MIT Press: 1996, p-5.

xii "'Data" can be a well known narrative (Psycho), an icon (Coca-Cola sign), a character (Mickey Mouse), or famous star Madonna, is referred in the media industry as "property"."

Manovich, Lev. "The Language of New Media", Cambridge: MIT Press, 1999, p-43.

xiii Manovich, Lev. "The Language of New Media": Cambridge MIT Press, 2001.

xiv Moser, Mary Anne. "TimeTraveling in a Gallery", "Immersed in technology", Cambridge: MIT Press, 1995, P-246.

xv Moser, Mary Anne. "Time Traveling in a Gallery", Immeresed in Technology, Cambridge: MIT Press, 1995, p-251.

xvi Virilio, Paul. "Overexposed City", "Ars Electronica: Facing the Future", Cambridge: MIT Press, 1999, p-281.

xvii <http://www.delhimetrail.com>.

xviii <http://www.delhimetrail.com>.

xix Lang, Jon, Desai, Madhavi and Desai, Miki. "Architecture and Independence", Oxford University Press, New Delhi: 1997, p- 217

xx http://www.cperspectives.org/press/right_mistake.htm

xxi Ibid.

xxii Ibid.

xxiii Bannwart, Edouard. "The Medialization of Cities", Ars Electronica, Cambridge: MIT Press, 1999, p-284

xxiv Ibid.

xxv Ibid.

Chapter 3 City as Representation: Case Studies

"To imagine a language," Wittgenstein famously wrote, "is to imagine a way of life". The same is true of buildings, parks and cities- anything conjured up by human imagination and then cast into stone. The way we choose to organize the space we live in says an enormous amount about the society we live in – perhaps more than any other component of our cultural habits."ⁱ
- Steve Johnson, *Interface Culture*, 1997

The City as a virtual representation is notion that represents the cultural component to organize the habitable spaces. The creation of such environment involves the consideration of interpretation that echoes the cultural components of the society. "In the examples of architecture and urban planning there lies an attempt to address broader issues: each design decision echoes and amplifies a set of values, an assumption about larger society that frames it."ⁱⁱ (Johnson, 1997) In the context of a City model, this raises the question as to what are the broader issues or the set of values that bring forth the 'notion of a City'.

3.1. Overview

As the City model has been an interpretation that defines the inherent qualities of the City, this mode of definition has been extended to analyze the idea of representation in the virtual City. In this regard, the 'notion of a City' is explored as a form of representation to explore ways in which the idea of a City can be appropriated.

For this, the thesis analyzes the significance of City models that are based on the idea of City as a representation. The three types identified are textual based model, simulated model and virtual model of real, which are discussed based on projects. The first

portions of the projects explored belong to the environments of the virtual world such as MUDS, MOOS and WWW, which are textual environments that are conceptually based on the 'notion of a City'. The second belong to a simulated City environment which includes projects from HCI, VR installations. In both these categories, there are projects which are representations of a City in the virtual (new media) environment. The third is an architectural project, where the representation of the City is in the real environment. In the context of each example, the thesis explores the relations between the real and the virtual to explore how they combine to form an interface for human habitation.

3. 2. Cities of the Virtual

Change, in the context of the virtual city environment is based on the cultural layer and the technological layer. The emerging new media interface is a composite layer of the continuously changing cultural and technological landscapes due to constant innovation and update. In the examples discussed, the emerging interface of new media is viewed as an 'evolving model', owing to this constantly changing nature. These projects are devised to analyze the evolutionary trajectory of the virtual cities projects and understand their significance. This aspect is explored with regard to the following question: How do these projects reflect the relationship between the real and the virtual? How is that relationship appropriate in the contemporary cultural component?

3.2.1. Cities of the MUDS and MOOS

Collaboratively constructed, Multi-User Domains and Multi-Object Oriented on-line environments are virtual cities that one could explore in the virtual domain highlights the virtual cultural component in the contemporary way of life. As pointed by the

author of the essay, “Replacing Place” the environment is inhabited by scripted and robotic characters.

“The participants enter textual description of imaginary places that other can visit, and of objects and robotic characters that populate those places awaiting, scripted interaction with future visitors. The underlying software ties all the descriptions and scripts together to create a single, continually evolving environment and provides an opportunity for you to meet and interact with other participants within that environment.”ⁱⁱⁱ

- William. J. Mitchell, *The Digital Dialectic*, “Replacing Place”, 1999

Fig 13. Map of Mootiny

In this scenario the City is a representation in the sense of a “simulation” (Manovich, 1999) as the rectangular screen frames the imaginary City. It is also a cultural interface as the users interact with other users by means of textual description.

These virtual cities evolved Dungeons and Dragons, a fantasy role-playing game and James Joyce’s *Ulysses*, which textually constructs complex places where many characters simultaneously unfold and interact. They are collaborative chat spaces where you can converse with other participants by typing your comments and reading their responses, in a “virtual room”^{iv} constructed by software. There are various types of such games

while some are based on live action narratives, others have become miniature societies as places and people are invoked by text.

Fig 14. Telnet Window

The first MUDS were tiny as they involved only small groups of people. The virtual cities have evolved to accommodate the possibility to have “a room of one’s own”^v like in LambdaMoo. It unfolds itself as an animation of characters in a place of animation, for social interaction in a virtual domain.

“telecommunication satellite links and cables, and also proto-cyberspace devices such as the railroad and the highway network that unify physical space. This realm of connections invites the study of transitions between spaces and conditions, as well as the analysis of crowd movement between worlds – including the topic on the net, its ebb and flow.”^{vi}

-Margaret Morse, “Immersed in Technology”, 1995

MUDS and MOOS networks are links and cables, similar to the railroad and highway network, integrate the physical spaces as pointed by the author Margaret Morse in the essay “*Nature Morte*”. The following examples amplify the emerging virtual cultures that demonstrate the above. GeoSoc, an organization dedicated to providing on-line

resources for school -teachers and children, “proposes to bring the dungeon game format into education”.^{vii} MediaMOO is a professional online community for media researchers. This place is created to hold colloquia and conferences, and to explore the serious side of the new medium. Unlike other MUD environments the membership is very selective by restricting participants to those who are actively involved in media research.

3.2.2. Geocities of the WWW

The key innovation of the World Wide Web is the - “provision of a simple, robust way to interconnect large numbers of independently created virtual places to form a single continually growing changing structure.”^{viii}(Mitchell, 1999) The virtual cruise through environment that has emerged as a result of this innovation draws a similar analogy to cruise in a City from place to place. In the book *“The Digital Dialectic”* the author compares the user clicking the mouse and going from site to site, to a tourist who explores a City by a bus or a taxi from one attraction to another. Geocities, he explains, is a “themed neighborhood”, (Mitchell, 1999) which integrates chat space, commercial sites and residential districts organized in blocks. It is similar to the concept of using modules to divide a City. The user is helped by a search engine to get around like a map is used around the City. Each of the blocks is represented by an image icon, which the user clicks to enter. The City, with regards to the term, representation, is an interface that controls the user’s movement within the depth of information on the screen. The relation that the WWW draws from the real City is in the idea of organizing information hypertexts. The environment does not display any relation with regards to the experiential aspects of the City.

Fig 15. 'Screen Grab' from Geocities

When the HTML language, that is used to create web sites, was complimented by VRML, the web world changed and evolved into 3D shared spaces. These shared spaces bring in the element of interaction between users in an otherwise individual journey, as in Geocities. 3D spaces are inhabited by icons called avatars, as a representation of users in the virtual world, like as in the MUDS and MOOS. While the tradition of creating different classes of inhabitants with different privileges and power in the later has commonly been established, in the former one has complete control of one's own site and very little capacity to alter other sites.

As represented by the VRML three-dimensional representation of the urban form, Ottawa was designed by wizard solutions. It includes a tour -based use of viewpoints, embedded URL links to WWW pages, and a sound source for a virtual tour of the city. It

is based on the real City, but the virtual city in this case does not entertain the element of realism since it is in an interactive domain. It compliments the real place to help enhance the aspect of visualization and is therefore an object of information.

Blaxxum Interactive built a social- level of user interaction into the next level of VRML browser. It was the first company to offer a multi-user interaction on the WWW. It integrates java- based versions of Internet relay chat with a VRML compliant browser. Avatars are dynamically placed in the VRML world by a server, which is hosted on the creator's system. Thus, the existing VRML world could be adapted to include avatars.

Fig 16. VRML of Downtown Ottawa City

The City is demonstrated as an abstract notion in the examples of MUDS, MOOS and the

Geocities of the WWW. With upcoming advances in 3D technologies, the virtual cities are increasingly experientially grounded in the real city environments, now acquiring more of its distinctive feel.

3.3. Simulated Cities

The term simulation adheres to physical modeling of inanimate objects and their interactions, the simulation of natural phenomenon used in movies, virtual worlds and human computer interaction. "Simulation in new media aims to model realistically how objects and humans act, react, move, grow, evolve, think, and feel."^{ix} (Manovich, 2001)

The HCI interface is distinct because of the way it can transform the exchange between the user and the computer in a feedback loop. "Every response you make provokes a reaction from the computer, which leads to a new response, and so on, as the loop from the screen to your eyes to your finger on the keyboard to the computer to the screen becomes a single cybernetic circuit."^x This is the quality that amplifies the immersive aspect of the human computer interface which is another emerging cultural aspect of the virtual domain. With regards to the term of representation in a City - "simulation involves modeling the dynamic behavior of the whole system composed from organic and/or inorganic elements over time."^{xi} (Manovich, 2001) Two examples of such environments are *SimCity* and *Legible City*.

The *Legible City* is a computer-graphic installation based on the metaphor of a City. The new media environment of the *Legible City*, form an evolving genre of art installation. The virtual cities are conceptually grounded around the aspects of the real cities. One

version based on Manhattan was released in 1989, the next based on Amsterdam was released in 1990, and the last based on Karlsruhe in 1991. The later version demonstrates an improvement in the virtual cultural aspects of the earlier version.

3.3.1. Cities of HCI

SimCity is an environment that gives a person the opportunity to orchestrate the building and development of a City. It evolved from “raid on the bungling bay where the basic premise was that you flew around and bombed islands”^{xii}, and the work of Jay Forrester, “one of the first persons to model a city for the purposes of social science.”^{xiii} The game genre has evolved along the concept of building and maintaining a City.

The new media environment of the *SimCity* has evolved along various versions, with regards to the cultural and computer layers of the game. The series chronologically follows this order: *SimCity classic* in 1989, *SimCity 2000*, *SimCity 3000* and now the *SimCity 4* in 2003. As a model, the growth and development of an entire virtual metropolis is a processor intensive task, and with the increasing strength and power of the computer, the gaming environment is more life like with every incremental version.

The game captures various intricacies with regards to urban development. The complex dynamics of the City is abstracted, quantified, simulated and micromanaged. It offers the users role-playing options to create a City. The basic scenario of the *SimCity classic* is an undeveloped patch of land and an initial development fund to provide the resources to create a City. By choosing where and what kind of power plant to build distinct zoning industrial, commercial, and residential areas; the city evolves as roads, mass

transit system and power lines are laid. Then one must consider buildings like the police stations, fire department, airports, seaports and stadiums. The sequel *SimCity2000* offers even more options, where every action is assigned a price, and one can spend only as much as the City treasury's limit. The treasury begins at the base amount and is replenished yearly by taxes. The development strategies encourage economic growth, build up the population of the city and score a high rating from the *sims*.

Fig 17. 'Screenshot' of *Simcity4*

This simulation represents animation and change by replacing two or three dimension spatial models with a map that shift over time to reflect change. This change is a continual interactive process. With the tools of narrative mapmaking, the user does not just observe the structures, but is experientially immersed in their logic.

Fig 18. Screen Grab from *Simcity4*

This game is about playing God, where one can sculpt mountains, gouge valleys, and seed forests. A person can also set buildings ablaze, pelt metropolis with meteors, unleash a twister, or wreak havoc with a volcano. One can also populate the terrain with animals that graze and roam. In this game, one can play mayor by building and running the most realistic metropolis. One can further connect them to other cities, sharing and competing for resources. A gamer can also deploy police cruisers and fire trucks to scenes of striking mobs, crime and fire.

Fig 19. 'Screen Grab' from *Simcity4*

In this game, a person can place his/her *sims* (virtual citizen of the City) in the City and they give the gamer's valuable feedback with regards to traffic, crowds and calm while he/she follows them to work and back.

The games offer a different perspective on information and the issues regarding City life. It is a simulation based on realistic representation, which is an illusion of the real City. The *SimCity* is an animation of built events in a real City scenario. "New media turns image into image interfaces and image instruments."^{xiv} (Manovich, 2001) It becomes the interface between the user and computer.

Fig 20. 'Screen Grab' from *Simcity4*

The evolutionary versions of the game reflect the features that have been possible due to improvements in computer ontology. *SimCity4* demonstrates the player's ability to use the free movement of the camera throughout the City, as opposed to the locked perspectives of the previous versions. The game also provides the ability to zoom into certain spaces, highlighting the details of the model. The movement of automobiles was introduced in the *SimCity3000* and was enhanced in *SimCity4*. The players are challenged to optimize traffic flow throughout the City. *Rush hour* is a recent expansion pack based on transportation. As a feature of regional play, the City can barter for resources from the neighboring cities to form interconnected cities. There is also the option to split cities into unique districts based on tax rates and zoning.

The game has evolved with regards to cultural aspects. While every version of the game that has been released influenced by commercialization, the WWW added yet another layer to the virtual City experience. The website for *Maxis*, which came with the *Simcity3000* game, provided a place for like-minded people to discuss the game. Players could upload their creations to the website and other players could download and play them. On the website for *SimCity4* was the feature of *SimCityScape*, added to the feature of exchange. Here the game turns into an exquisite corpse, where players can assume temporary ownership of the City and modify it the way they saw fit and upload it back for others. There are also websites developed by players such as *sc4ever.com*, *Simtropolis* and *SimCity Central*.

3.3.2. Cities of VR Installation

In these series of VR installations, the visitor is able to ride a stationary bicycle through a simulated representation of a City, using the ground plans of the cities. Here, the simulation is an imaginary City made of 3D letters, traveling through this City of words through a journey of reading. "Each 3D letter in the virtual city corresponds to an actual building in a physical city; the letter proportions, color, and location are derived from the building it replaces."^{xv} (Shaw, 1989) By navigating through the space, the user reads the texts composed by letters; these texts are derived from the archive documents describing the City's history. The handlebar and pedals of the interface bicycle, give the viewer interactive control over the direction and speed of travel. The computer-generated image is projected onto a large screen by a video projector and a ground plan

of the City is displayed in front of the bicycle screen, showing the momentary position of the cyclist.

Fig 21. VR installation of *Legible City*

The Manhattan version comprises of eight separate fictional story lines in the form of monologues by people such as: ex-Mayor Koch, Frank Lloyd Wright, Donald Trump, a tour guide, a confident trickster, an ambassador and a taxi-driver. Each story line has a specific letter colors so that the user can choose and follow a particular path of narration. In the Amsterdam and Karlsruhe versions all the letters are scaled so that they have the same proportions and location of the actual buildings they replace, resulting in a transformed but exact representation of the actual architectural appearance of these cities. The texts of these two cities are derived from archived documents that describe the mundane historical events.

Fig 23. 'Screenshot' from *Legible City*

The initial prototype of the *Legible City* comprises of a wire frame graphic that interactively operated with a joystick. This was presented in 1988. The implementations of the prototype used the bicycle as the user interface along with more advanced computer visualization methods.

The Distributed *Legible City* introduces new multi-user functionality, which has become a predominant feature of the later versions. This feature comprises of two or more bicyclists at remote locations who are simultaneously present in the virtual environment. When they meet intentionally or accidentally, they see abstracted avatar representations of each other. They can also verbally communicate with each other. Now the text is not the sole focus. Thus the installation extends from being a visual experience to become a visual ambience between the visitors. The versions that have been explored

are concerned with the central idea that is explained with the creators own writing below.

Fig 24. *Distributed Legible City*, VR Installation

"As a result of the increasing ubiquitous nature of the internet and the maturing of 3D interaction techniques, there is a growing need to define aesthetic frameworks for the technological development of new social interaction and interface paradigm for content rich, inter-connected, shared virtual environments. The *Legible City* has been used as a context to explore these issues, adding a space of distributed multi-user social engagement to the space of interactive spectacle. This paradigm is a novel one for art, embedding and transforming its representational practices in a new and evolving net condition."^{xvi}

-Jeffrey Shaw, "*Distributed Legible City*", 1997

Regarding the relationship between the virtual and the real, the author comments in the book *"The Language of New Media"* that- "*Legible City* functions not only as a unique navigable virtual space of its own, but also as a comment on all other navigable spaces. It suggests that creating virtual spaces that have nothing to do with actual physical spaces, or spaces that are closely modeled after existing physical structures"^{xvii}. (Manovich, 1999) The environment does not model the real space as it stands but interprets the memory of the real to create the virtual City. The innovation in the *Legible City* installation is in the creators interpretation of the cities and more so in the representation of virtual environment. The factor of innovation is amplified in the later versions. This fact is pointed by Manovich again as such:

"...the memory of the real City is carefully preserved without succumbing to illusionism; the virtual representation encodes the City's genetic code, its deep structure rather than its surface. Through this mapping Shaw proposes an ethics of the virtual. Shaw suggests that the virtual can at least preserve the memory of the real it replaces, encoding its structure, if not its aura, in a new form."^{xviii}

- Lev Manovich, *"The Language of New Media"*, 1999

Here, representation is symbolic narrative as the words narrate the lives of the personalities they portray. The words are symbolic of the people. The design of the layout of the words draws from the layout of the real City which implies the 'notion of the City'. Thus, the new media environment is a cultural interface, an object of communication between the viewers.

3.4. Observations

In the examples of cities in virtual environments, the places of the real are used as reference frames to help orient the users to explore the virtual world. Thus, the memory of the real is the basis to augment the virtual.

These act as cultural interfaces where information or entertainment is obtained by an interactive exchange in/with the virtual. Consequently, this leads to a blurring of geographical boundaries and creates a social platform for like-minded individuals to interact. Thus, the virtual place offers the extended possibilities for the real.

Virtual cities are in a state of continuous evolving change due to changing hardware and software. New innovative versions are released to update older versions. Even the cultural content is often divided and released in parts, forming a genre of City art. The City as a representation is constantly evolving, synonymous to the process of animation.

3. 5. Cities in Architectural Projects

The projects discussed so far pertain to city models that belong to the virtual (new media environment) of human inhabitation. But, change with regards to the evolution of new media culture and technology has also been reflected in the design of real environment of human inhabitation. The example of the architectural project discussed below mirror this influence. This influence can be categorized as a consequence of three factors; one is the technological revolution of the information age, the second is the interdisciplinary approach and the third is ideological where geographical distances blurs in a virtual sphere into the virtual distance. This brings the question as to how these influences materialize as a City model in the design of an architectural place/space.

"Architecture is both about space and about the events that take place in that space"^{xix}
 - Bernard Tschumi, *Event-Cities 2*, 2000

3.5.1. Overview

Event-cities are documented urban projects, which are triggered by an urban condition and program. The design of the form is a result of the attempt to uncover the hidden potentials of the program, site or circumstance, whether economic, social, or cultural as derived concept. The City of Architecture is one such project. The 'notion of a City' interpreted for this architectural project is as such: This is an urban project "due to its programmatic diversity and complexity, functions as a small City of sorts. Yet the mode of organization of that City becomes crucial."^{xx} (Tschumi, 2000)

The creator of this project has explained his interpretations of a City in the book *"Event Cities 2"* with key elements that are crucial to clarify his idea. These are summarized as such: The space/place of this project is categorized as a space for a "program" and space for "events". While, a "program" as explained by the author is a "determinate set of expected appearances, a list of required utilities, often based on social behavior, habit or custom"^{xxi}; an "event" is "an indeterminate set of unexpected outcomes."^{xxii} In an attempt to design conditions for "events", the program spaces, also known as activators, are organized to intersect un-programmed spaces like a "void". "The void is a public space of appropriation, the potential place of 'events': the un-programmed void is defined by the inner edges of a programmed solid."^{xxiii} (Tschumi, 2000) In the project, the programmed space is placed around a potential place for "events", where the built form takes the role of an activator to generate intensity in the void space. The interpretation of the key elements and their representation as spaces defines the

architectural building into a *City of Architecture*. This example clarifies the idea that the spaces in the real can have a virtual connotation of a City.

3.5.2. The City of Architecture

'An interactive station'^{xxiv} is an idea of the school of architecture at *Marne la Vallee*, located 30kms from the City of Paris, at the periphery of the urban center. In light of a triple revolution with respect to information, interdisciplinary and ideological issues this school was conceived at the same electronic distance from London, Berlin, Tokyo, New York or New Delhi. Global culture and information is structured in the local condition. Located away from the thoughts and habits of historical centers, this technological complex can be seen as a new model of a space "conceived for the age of modem and mobility."^{xxv} (Tschumi, 2000) The project is based on the following thesis:

"There are buildings that are generator of events. They are often condensers of the city, as much through their programs as through their spatial potential they accelerate a cultural or social transformation that is already in progress."^{xxvi}
 - Bernard Tschumi, *"Event Cities 2"*, 2000

The *City of Architecture* arranges all the rigorously programmed activities around an un-programmed, event-oriented large central space (250~100m) or a "void", activated by the density of what surrounds it. This space, in the most unexpected way becomes a large space for celebration and balls, encounters and debates, symposia and exhibitions.

Fig 25. Model of '*Marne la Vallée*', City of Architecture

The studios, ateliers, computer spaces, mediatheque, faculty offices, administration and research areas are organized to define the rectangular central space. As in a City, the built form is like a large promenade, which has several points of departure. The main entrances include the staircase in the south, which is in the continuation of the of the Descartes axis to the ramp in the west. The entry to the site is through a patio in the middle of the hall.

The interior landscape slopes up from 3.5m to 10.5 m, creating an interactive space in the center, which is inclusive of the student -work exhibition space and amphitheatre. The interactive space acquires a central position to witness projects with regards to information, communication and discussion. The central idea here is based on exchange.

Fig 26. Sections through the *City of Architecture*

Fig 27. Two Views of the Central Space of the *City of Architecture*

Fig 28. View of the Central Space of the *City of Architecture*

Fig 29. Plan of *City of Architecture* at 3.5m

3. 6. Observations

The City here is a representation in terms of a conceptual presence. This concept is a response to the ongoing changes in the global trends of the information age. Change is coherent in the ideological ground on which the built form is based, and is reflected in the relational composition of the central interactive and program spaces. Thus, it is a consequence of the new media technology and culture. The built structure is inward looking towards the central space as a place for events, arising from social and cultural exchange. Though composed around the idea of events, electronic display and dissemination, this interactive space is also the interface for the event, by navigating through the events of built form. The 'notion of a City' is also inherent conceptual display of heterogeneous aggregates of the functional element combined to form a whole element in the central space. With regards to the relationship between the real and the virtual, the *City of Architecture* is an example where the real domain of human inhabitation is a consequence of the virtual domain of habitation. It stands as a new model space and its conceived architecture is through a City model.

"...architecture is an instrument of measure, a sum of knowledge capable of organizing society's space and time by pitting us against the natural environment. This "geodesic" capacity of defining a unity of time and place for activities now enters into open conflict with structural capacities of mass communication.

Two procedures confront each other: one is made up of physical elements, precisely situated walls, thresholds, and levels; the other is immaterial, its representation, images, and messages possessing neither locale nor stability, since they exist only as vectors of a momentary and instantaneous expression, with all the misinterpretation and manipulation of meanings that this implies."

- Paul Virilio, *Ars Electronica: Facing the Future*, 1999

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- ⁱ Johnson, Steve. "Interface Culture", San Francisco: Harpers Edge Press, 1997, p-44.
- ⁱⁱ Johnson, Steve. "Interface Culture", San Francisco: Harpers Edge Press, 1997, p-44.
- ⁱⁱⁱ Mitchell, William.J. "Replacing Place", " Digital Dialectic", Cambridge: MIT Press, 1999, p-114
- ^{iv} Ibid.
- ^v Ibid.
- ^{vi} Morse, Margaret. "Nature Morte", " Immersed in Technology", Cambridge: MIT press, 1995, p-202.
- ^{vii} <http://www-rohan.sdsu.edu/faculty/geosoc/sociology/mud.html#Introduction>
- ^{viii} Mitchell, William.J. "Replacing Place", " Digital Dialectic", Cambridge: MIT Press, 1999, p-117
- ^{ix} Manovich, Lev. "The Language of New Media": Cambridge MIT Press, 2001, p-182.
- ^x <http://www.duke.edu/~tlove/simcity.htm>.
- ^{xi} Manovich, Lev. "The Language of New Media": Cambridge MIT Press, 2001, p-183.
- ^{xii} <http://www.duke.edu/~tlove/simcity.htm>.
- ^{xiii} Ibid.
- ^{xiv} Manovich, Lev. "The Language of New Media": Cambridge MIT Press, 2001, p-183.
- ^{xv} http://www.jefrey~shaw.net/html_main/show_work.php3?record_id=83.
- ^{xvi} http://www.jeffrey-shaw.net/html_main/show_work.php3?record_id=102.
- ^{xvii} Ibid. , p- 261.
- ^{xviii} Manovich, Lev. "The Language of New Media": Cambridge MIT Press, 2001, p-261.
- ^{xix} Tschumi, Bernard. "Event Cities 2", Cambridge: MIT press, 2000, p-012.
- ^{xx} Tschumi, Bernard. "Event Cities 2", Cambridge: MIT press, 2000, p-012.
- ^{xxi} Tschumi, Bernard. "Event Cities 2", Cambridge: MIT press, 2000, p-013.
- ^{xxii} Tschumi, Bernard. "Event Cities 2", Cambridge: MIT press, 2000, p-013.
- ^{xxiii} Tschumi, Bernard. "Event Cities 2", Cambridge: MIT press, 2000, p-012.
- ^{xxiv} http://www.um.u-tokyo.ac.jp/publish_db/1997VA/english/virtual/10.html.
- ^{xxv} Tschumi, Bernard. "Event Cities 2", Cambridge: MIT press, 2000, p-519.
- ^{xxvi} Ibid.

Chapter 4 Delhi: Evolutionary City

Delhi City is unique as its evolution is and has existed in various patterns change. It is an urban metropolitan capital city of India that is estimated to have more than 200,000 ruins. The innate quality that describes this City is the exhibition of its evolution since the past is placed in continuum of the present. Every visitor to the City who seeks knowledge of the place is presented with the paradox of the memories of its evolution in the midst of its contemporary transformations.

Delhi is called as the Evolutionary Model as the growth and evolution of the City is organic, where the City has adapted to changes overtime and these changes reflect the lifestyle and the culture of the City. Changes in such a model cannot be predictable.

This model contrasts with the revolutionary model like Chandigarh where change is abrupt defying the local traditions before incorporated into the urban fabric. While there are other evolutionary cities of Tokyo, Seoul, New York or Los Angeles, the City of Delhi is an appropriate example as there are parallel metaphorical relations to the new media environment with respect to the following:

The City of Delhi can be explored via various modes of public transport and each attributes a different meaning of the City's experience. In this light the City is a form of a hypertext which supports different reading of the City depending on how you move through them. The movement by foot traffic allows more details to assimilate as apposed to the accelerated movement of the rail system.

Like the new media environment which is a comprehensive whole of discrete information bits, The City of Delhi is amalgamation of discrete units as cities of its evolution. And this aspect varies with regards to the chronology of time as such: In the end of the 14th century Delhi was an amalgamation of four cities now known as the Older Old Delhi, in the end of the 19th century it was an amalgamation of seven cities known as the Old Delhi and the Older Old Delhi and 20th century the City amalgamates eight cities known as the New Delhi, Older Old Delhi and the New Delhi. The New Delhi which forms the central core of the urban layout is the precursor to the expanding reinvention of the City boundaries.

As in a new media environment the events occur as a result of the user's intervention which is constantly recorded, the evolution of the City of Delhi is an outcome of events of invasions which are recorded as built events.

The City has evolved through multiple locations in search of water building infrastructural devices such as water reservoirs, canals, water channels in the gardens developing the famous gardens to before locating itself near the river Yamuna where it remained as the present national capital. The expanding population of the City is still in demand of constant infrastructural changes through growth and evolution of the City.

As in the new media environment, any change in the infrastructure of the City reinvents the forms of its manifestation. The introduction of the metro rail system has resulted in the development of strips of land that are closer to the rail lines as contemporary high tech parks. This has reconfigured the urban form of the City. Similarly, the evolution of

the City is reflected in the constant reinvention of the infrastructural devices of the evolving new media environment. Thus the creation of infrastructure in the City creates new nodes to configure the forms.

The cultural evolution of a City, or its preferred historic landscape and the remembered are both examples of the past embedded in the present. In the City of Delhi, the memory of the this past is often a scattered experience encountered at a street corner, or recognized in a street cry, recovered in a fragrance or heard in a style of greeting. In some instances, it remains a foreign land.

The study of the City attempts to highlight the built events that intercept the social and cultural aspects of the City and trace its evolution through the transitions of what has become the City of Delhi. It is an interpretation to be discovered through the mind's eye, about information that complements the experience of the real place.

4.1. Context

"...If one compares Delhi with many great and historic cities of the world whose chronicles of continuous city life is virtually unbroken and clearly documented, it is apparent that age alone is certainly not what has made Delhi significant."ⁱ (Frykenberg, 2001) Rather, it is the historical role, where, "Delhi has been the center or the 'seat' of empire"ⁱⁱ (Frykenberg, 2001) etched in the evolving trajectory of built events.

Delhi has been the site for the succession of cities, each of which served as a capital, or

citadel or center of a vast domain. The factors associated with imperial power and rulership dictated that cities been built over and over again since every dynasty that came to power established their standards through built structure. Every structure is a consequence of the social, political and economic landscape of the time, and strives to be the architectural grandeur of the period. Delhi stands to exhibit the ruins of much of its evolution and remains to be the museum of time.

The Delhi area is a triangular part of land where all the successive cities, that are and have been the 'Delhi', are located. It is indeed unique, that the transformation that the City has undergone with regards to site location, its character and name are still preserved in the area. In light of this fact, the location of the City displays an animate nature with regards to its evolution through time. Delhi now is broadly divided as *ancient Delhi, Old Delhi and the New Delhi* within the chronology of its evolution. (Spear, 2001)

4. 2. Location

"Within a roughly triangular plain lie all the ruins and sites of all the previous cities of Delhi, together with the metropolitan cores of what are known as 'Old' and New Delhi. This triangle stretches from where the northern end of the Ridge- as the last, expiring outlier of the Aravalli (mountain) range- meets the Yamuna river, south to where a low spur cuts off from the Ridge and runs laterally eastward in a broken line across the same Yamuna."ⁱⁱⁱ

An older 'Old' Delhi and the original 'Old Delhi'- lies upon the rocky spur itself, at the point where its western end breaks away from the Ridge. Another old, that of Tuglakabad (one of the older cities), lies midway along the same spur (running along the base of the triangle). All other sites lie northern, within the triangular plain itself."^{iv}

- R.E. Frykenberg, *The Delhi Omnibus*, "The study of Delhi", 2001

The significance of strategic location is associated with geopolitical and physical attributes that help with the consolidation and control over the alluvial plains and the entire Indian subcontinent. Another fact is that the location of the City has provided for

a strong external defense. The illustration of the physical map of India points to the fact that Delhi stands at the end of the corridor that runs in a north-west direction, between the mounts of the Himalayas and the deserts of the Rajasthan state in India.

The winds that influenced the climate of the region come from the northwest and bring the monsoon rain, which is an essential source of water for the region. The artificial water bodies that were constructed are located in the northwest, thereby cooling the air for the built forms. Thus, the buildings were oriented towards the northwest as this was the main feature that helped contextualize the built forms to the local condition since historic times. This has been reflected in the concentration of the cities in the southeast, the direction of movement of cities to the northeast, and the unconscious search for water that lead to relocations along the river.

The location of Delhi makes it a circulatory node. From there, one could travel to the east, south or west of the subcontinent. Thus, it has been the economic distribution center, and which is illustrated by the importance of its railway center. With regards to this, the City is much like an interface that connected to all other parts of the country. This aspect of Delhi works in parallel with the functions of hypertext, which became the circulatory node of virtual travel.

4. 3. Change

Change is not only a factor associated with the extending boundaries of the City, but is also a sum of multiple issues that have arisen through time. The primary aspect is associated with its shifting location, and consists of the triggering point of consequent

issues. The geographic location that describes the City of Delhi is in a state of continuous change, which articulates an animation and a shifting of its location. Thus, the true location is a changing reality with respect to the geographic place of the imperial powers within the chronology of time.

Interestingly, the ruins of almost all the previous cities of Delhi are still visible. They chronicle successive stages in the development of great buildings, in the construction of grand edifices, also in art forms and strategic fortresses. The cities were outcomes of the dynasty pride of the conquerors and individual kings who celebrated by establishing new cities. In the chronological order, most cities have moved from the south-west to the north-east. (Grover, 1981) This was because the cooler breeze blew from the mountains in the northern direction. The other aspect was the river Yamuna. The newer cities moved north to procure cleaner water and compliment their buildings with riverside views. This was not true in cases where the cities completely detached, which happened in the third City of *Tughlagabad*.

Archeological and recent arte-factual finds, which are constantly pushing people's knowledge about the existence of urban life in Delhi, relate further back into the remote past. The evolution of the Delhi is a bi-directional representation: the extending memory of the past and the extending dimensions of the future in the chronology of time. The past of the city comprises an amalgamation of eight cities, which are unique due to various aspects in each of the changing features.

Along the broad divisions of the ancient, Old and New Delhi, the evolution of all the

cities can be traced in the next section in chronological order of the built events. Also, the changes associated with them are discussed in the sketch of their unique landscape. The types of changes associated with the cities are discussed with reference to the notion of change discussed in the Chapter Three.

The ancient historical buildings and cultural sites of the capital have been engulfed by the concrete jungle of high rises in Delhi. The infrastructure facility and business opportunities that the City offers have attracted people from all over the country. At present, the City is an agglomeration of built fabric that exists as evidence of the layers of various historic times. The population of Delhi, recorded as 0.41 million in 1901, rose to be 13.78 million in 2001. The density of the population was recorded to be 9,294 persons per sq. km according to the census in 2001. The previous historic cities lie within 142.20 sq km, which is the triangular ridge area, across the last of the Aravalli mountain range and the river of Yamuna. (Nangia, 2004)

The fast pace of urbanization that took place around the Yamuna River, and across the triangular ridge area has resulted in wide spread land use. This has resulted in the blurring of boundaries between the old and new. The City presents itself as vignettes of time. The built forms can be distinguished with regards to the layout, design, materials, geometric elements and architectural features. The City of Delhi now covers a land area of 1,483 sq km. The spoken languages include Hindi, Urdu, Punjabi and English. The major part of the expansion of the City is towards the northwest and across the river, called the *Trans Yamuna* development. The growth of information technology in India, and the development of high-tech nodes have contributed towards a virtual adaptation

of lifestyle and cultures where time is de-contextualized with regards to global conditions.

Fig 30. The Rajpath on a Republic Day parade in 1996, New Delhi

The photograph in the book (p. 10) is
taken from the Rajpath, showing a large
bandstand with a band and a large
audience. The bandstand is
located in the middle of the
Rajpath. The band is playing
music. The audience is standing
on the sides of the Rajpath.
The photograph is taken from a
low angle, looking up at the
bandstand. The bandstand is
white and has a large archway.
The band is standing under the
archway. The audience is standing
on the sides of the Rajpath.
The photograph is taken from a
low angle, looking up at the
bandstand.

Chapter 3 Delhi: City of Many Faces

ⁱAs described in the book Delhi is a unique as it has imbibed rich hisrorical and cultural heritage from the foreign invaders, existing and surrounding influnces and displays an evolution of an indigenous culture and yet it is a dense urban metropolitan fabric. Due to this, the city presents to explorers and visitors a bi-directional paradox.

Frykenberg, R.E. "The Study of Delhi", "The Delhi Omnibus": Oxford University Press, New Delhi, 2001, p-1.

ⁱⁱThe interesting fact about the strategic military location of this region has resulted the entire rulers make it as the capital to rule over the the fertile area between the river yamuna and river Ganges, or move south while defending the kingdom from invasion.

Ibid.

ⁱⁱⁱ Refer appendix1.

^{iv}Refer appendix2

Ibid, p-3.

Chapter 5 Delhi : City of New Media

5.1. Overview

The City of new media is a virtual environment that represents the understanding of the City of Delhi as an evolutionary model- presenting the present of the Delhi City in continuation with its past in regards to built forms. The environment is an organization of information in a multimedia format mapped around geographic references. The idea in this information organization is to explore, through potential of technological tools the aspect of chronology of the order of built events the information regarding them. The information about the Delhi City for this thesis is focused on exhibiting the areas of the City that display a built form tracing the evolution of the City.

This New Media City is unique in comparison with other virtual information space about Delhi in the light of the interpretation that is linked to the real environment. The popular web-based interface is mainly script based depiction that are associated with historical reconstruction sites, national organizations involved in trade and travel, and sites dedicated for tourist attraction and information. While the prototype is a virtual version, it is not intended to bring forth the experience of real City life, but rather it is a comprehensive virtual layer to the existing metropolis, that highlights information of its evolution. The narrative of its evolution is also displayed as an animated movie with regards to the physical location.

The City of Delhi, which is an amalgamation of eight discrete cities, is represented as a New Media City that has eight information stops for a visitor to travel through it. Each of these stops is juxtaposed with reference to their geographic location and a timeline that depicts its evolution as a mind's eye projection of their location, timelines and symbolic built events.

5.2. User Group

The user group for whom this interface is designed includes people who would like to know about Delhi in the mind's eye. This includes visitors or students who are traveling to or researching about the City. With this understanding, the design of the prototype is intended to be displayed in a kiosk. This gives the interface agility to move through museum spaces or public gatherings of special events. In addition, this could also be used in City tourist centers where a traveler could take interest in the interface at the beginning, during or at the end of his/her travel through the real City. In this way the virtual City of Delhi becomes a complementary aspect of the real City. The virtual layer of the City could thus be situated either the real City or in a museum of another City. There arises a possibility to establish a linking platform for like minded explorers to exchange thoughts and views while visiting the virtual City at the same time.

Fig 31. Diagram of User Group Analysis

5.3. Prototype Drawing from Interpretation

As described in the City models of chapter 2.3.2, the virtual representation of a traditional model retains spirit of the past, in the present. The information regarding the memory and the transition of a place will bring forth the quality of this model. The innovative model seeks information that sketches the reason and benefits of innovation in the present quality of urban life. The idea reflects the representation of the vignettes of urban traffic experience of the present and the improved condition of the future.

This ideology can be experienced in the Delhi metro website that gives an in depth analysis of urban traffic life and the need for implementations, the idea of the metro rail in the existing urban infrastructure. It also brings forth the salient features that consequently impact the City as building amenities and shopping facilities are developed, in close proximity to the rail stations. Such a developmental scenario is an upcoming fact, at present, in the City. The revolutionary model is rigid with regards to transition as seen in the example of Chandigarh in chapter 2.3.3. The representation in the virtual layer is to create a virtual monument of existing events in relation to the real.

In the example of the evolutionary model, the highlight is on the city that has an animate nature with regards to its location, history, and names that are reflected in the built form. The evolutionary city is an amalgamation of eight discrete City models that, in the timeline of their evolution, have been integrated into the present City with different functions and uses. The information for the evolutionary model integrates the present functions and conditions of the past. The virtual version organizes the information and

the evolution of eight cities is depicted as eight information stops in accordance with the chronology of built events in the timeline.

The outcome of the above has given rise to the idea of virtual travel on a metaphoric map of the City. The idea of this travel draws symbolically the real modes of transportation as a mode of virtual travel. It is further supported by the main idea of this thesis that the City is a depiction of urban network and a connection for human habitation.

Fig 32. New Delhi Layout Plan showing road, *Janpath*

The unique aspect of this prototype is that, it is ideologically based upon the interpretation as described in Chapter 4, of the evolution of the built form in the real City. In the design of eighth City of Delhi, the arterial road Janpath integrates the New

Delhi to the older part of the City, thereby forming monumental vistas. The design of the virtual version draws from a virtual extension of Janpath that integrates an information layer to the real City. The interpretation of the City models is an exercise to understand the basis upon which a City can be represented. It is also used to draw, from reality, the discrete information of the place to enrich the experiential value of the place. In this prototype, it is the virtual space of multimedia information stops that is experienced by traveling through it. Since each of the cities have distinct stories to tell through evolution, the cinematic process, as a looped narrative, combines images graphic and text to describe a place. The stories about each of these City, are organized as an interactive narrative within information stops that can be seen or repeated as the user chooses.

5. 4. Virtual drawing from Real

Technologically determined virtual environments, during the initial years, drew abstract analogies about real places with regards to ideas of organizing text-based interacting forums as in the gaming environments of MUDS, MOOS and the World Wide Web. This was based on giving the user a real life framework to help in his/her the orientation in a virtual space. The interface platform provided a network in which the environment, which was constantly changing and growing, acquired a City like a creation in the virtual.

In the case of the simulated environment, the power of representation has given access to images that closely depict realism the graphical inspiration and scenarios of the

ongoing City life provide for a storyline of imaginable realism, similar to real places and forming global connections between like-minded users, again forming micro cities of network. The advances in the 3D technology are edging, in this example, towards depicting enhanced graphical quality and interactivity in the story lines of city scenarios.

In the case of the HCI, the notion of a City is relevant when the interface is thematically constructed to provide appropriate information as in the example of the *Legible City*, described in chapter 3.3.2. The prototype has gained inspiration from this example to represent information in a three-dimensional environment, is based on the layout of the real City. The information about each of the cities is juxtaposed on a metaphoric map of the City of Delhi. With this, the viewer can get a comprehensive idea about the extent of expansion through time of the evolution of the City. The other fact that the use of a metaphoric map brings out is that the location of most of the cities of Delhi are concentrated in what is now the south and south-east and central Delhi. All of the rest of the City and its suburbs have been under development since after the eighth City, inaugurated in 1931.

In *Legible City*, the story is presented as words set along the roads of the map and the viewer has to travel through a bicycle interface to read the sentences. In the prototype however the story of the city is a multimedia movie embedded in a screen on every informational stop. Each city of Delhi represents an information stop. The viewer could travel through each stop or even randomly pick a stop to view information regarding that stop. While engaging the viewer in an immersive information environment about

the evolution of the cities of Delhi, the prototype provides an interactive interface that actively involves the viewer through travel.

5.5. Design Approach

Lev Manovich in the book, *Digital Dialectic* defines the principles of digital film in the following way:

"Digital film = live-action material + painting + image processing + compositing + 2d computer animation + 3d computer animation"ⁱ
 - Lev Manovich, *Digital Dialectic*, 1999

The prototype draws from the idea of designing information about the City of Delhi as an interactive narrative. Live action footage for a digital film includes a number of different information materials for the prototype. The metaphoric map of the City is the basis upon which the information about the interpretations is exhibited as a composite form of the photographs, graphical and textual description as an animate descriptive story of the eight cities. These narratives are placed in, the information stop which is the point of location in the map of Delhi where the event has taken place. The visitor could play movies about which information is required.

"As digital media replaces film and photography, it is only logical that the computer program's loop should replace photography's frozen moment and cinema's linear narrative. The databanks champions the loop as a new form of digital storytelling; there is no true beginning or end, only a series of the loops with their endless repetitions, halted by a user's selection or a power shortage."ⁱⁱ
 - Lev Manovich, *Digital Dialectic*, 1999

The composition of the information of the individual City of Delhi draws from this idea of a loop to integrate text graphics with images that can be seen over and over again as the viewer desire a halt in action when the user makes the subsequent selection. Each loop is integrated with an information stop. In order to go ahead in the interface, the viewer is required to travel to the next stop to be able to play the next movie in a loop

format. In this light, the objectives that the prototype intends to achieve are as following:

- 1) The creation of virtual environment informed by the metaphorical map of Delhi;
- 2) The creation of a pattern of virtual travel to explore the environment in the form of a travel;
- 3) The integration of an information stop that prompts the user to play loop movies to seek information about a city or go forward as desired.

5.6. Technologies

The technologies explored to model the virtual environment were such that they provided ability to sculpt the present boundary and depict the previous cities in the Delhi area. The metaphor of the map of the city of Delhi has been chosen to orient the viewer with regards to the real city.

Fig 33. From top to down- left to right- Map of Delhi, 2001; Layout of New Delhi, 1914; Map showing Delhi and its Hinterland, 19th century; Map showing the Delhi area, 14th century

The metaphorical map was developed to trace the animate location of what has been known to be Delhi at different times. These locations were integrated in the present map of Delhi to narrate a story of its evolution with respect to its geographic location in the context of the present layout plan.

Adobe Photoshop provided the technology to organize the maps as layers to help trace the evolution of the city of Delhi. These tools help to resize the maps to the desired scale and align them to the present map. The image of metaphorical trace of the evolution was developed by the process of compositing and then painting on an embossed outline of the City of the Delhi.

Fig 34. Diagram Representation Showing the Creation of the Metaphoric Map of Delhi, with the Trace of its Evolution

Flash Mx 2004 offers vector based software that provides a platform to integrate the information about the eight built events of Delhi's evolution as a narrative in the form of

an interactive narrative. The tools that flash help create discrete layered information content of each city that can be played as a movie.

Fig 35. Two screen grab of the virtual City showing the evolution of the first City of Delhi

Fig 36. Flow Diagram of the Interface

The virtual layer is an interface that integrates the descriptive information about each of the previous cities of Delhi previously. The information includes all the previous names of Delhi, the significant built structures, the architectural style and materials in the chronological order of its evolution. The present function, significance, development or

reuses of the site are highlighted to assess the aspects of change that contributed to its evolution.

ⁱ Manovich, Lev. "What is Digital Cinema", " Digital Dialectic", Cambridge: MIT Press, 1999, p-180

ⁱⁱ Ibid, p-189

Chapter 6 Conclusion

'City' "is a representation of human knowledge."¹

-Jeanne Randolph, *Immeresed in Technology*, 1995

The evolving notion of the City, referred throughout this thesis, provides a meaningful premise which draws a parallel metaphorical relation with new media. The creation of the new media 'prototype' that provides a mind's eye extension of knowledge about the City environment in Delhi has demonstrated the use of computing tools for meaningful mediation of information pools. The older forms of the mind's eye's interpretation, beginning with 'ars memotativa' and books, since print became the medium or conveyor of memory and information, is further enhanced by new media in terms of the multidimensional projection of knowledge in virtual space. The new medium signifies the recent form of representation in the information age, and is in parallel to the City as a metaphor.

The understanding of the different ways designers have addressed issues to represent an evolving form by new mediums is addressed by placing the present in continuation with the past or a trajectory through time, as demonstrated in the thesis which, also draws an analogy to the model of Evolutionary City. With the perspective of an architect, the interpretation of meaningful information that describes the City as a premise for the design of the new media representation of the City is an opportunity for critical study, which is provided in this thesis.

The question that has been referred to through the body of the thesis with regards to how the aspect of change has influenced the evolution of the built form in the real and virtual in Chapter 2 and Chapter 4 is addressed by the comprehension of the dual factors of the real and virtual in a City, which is the understanding of the aspects of change that have affected the lifestyle and cultures of the evolutionary City. In the example of Delhi, the urbanization and globalization of cities have led to the de-contextualization of time and space.

The City is examined as a form of representation in the virtual domain, as described in Chapter 3, in order to trace the ways that the City has manifested as a medium to challenge the real and the virtual realms of existence in the information age. Thus, the examples from the real and virtual environments have been chosen to investigate the potential and functions of new media tools and the technology to represent place and space that establish unique relations between the real and virtual. New media offers valuable potential for tools and new potential in the aspect of enhancing the discovery of a City with regards to multi-modality and multi-nodality.

The main finding in this thesis is that, with the advent of new media technology throughout the information and technological revolution, its function is in parallel to the extending boundaries that define a City. Through two forms of human habitation, from the realm of the real City to that of the virtual new media, there exists a reciprocal metaphorical relationship between them. While the design of the real integrates the concepts and the infrastructure of the virtual, as in the examples described in *Event Cities*, the virtual environment is also evolving with growing technologies that are

conceived as being closer to the concepts of the real by improving 3D and 2D technology tools. The contemporary 'way of life' is therefore a composite interface of the real and the virtual.

In summary, "Delhi" means threshold. Historically, through its evolution, the City of Delhi has been in constantly changing thresholds, in a multilayered expanding form manifesting a complex structure. Metaphorically, the new media environment is as well a multilayered expanding form of integrating complex understanding and transmission of information, pertaining to the cities and forming multi-threshold structures that cause the blurring of the threshold itself. Hence, new media tools become a metaphor for new cities in their content, concept and context complexities. In the present, when one tries to access useful information from the virtual, distilling and differentiation of the information pool are important in forming meaningful a layered structure of content, concept and context complexities of the real.

6.1. Conclusion on the Prototype

The main findings in the prototype include the following:

Historical events that have marked changes in power are etched into the built structures that remain as reminiscent of particular time periods. The historical and cultural significance of the City has thus evolved and grown richer through these events.

The locations of all the previous cities of Delhi lie in the area between the last range of the *Aravalli* Mountains, and the *Yamuna* River. This is because this location was the strategic point that held the threshold to enter, and to control the Indian sub-continent

from the northwest. The significance of its location mirrors its military, economic, and political importance.

The changes in historical events are mirrored in the architectural styles of buildings, with regards to the geometry of layout and forms, architectural features, materials used along with the type and level of detail involved. This brought to light the evolution of the indigenous Indo-Islamic style.

The changing location of the City of Delhi as eight distinct cities has been recently engulfed into a densely layered urban fabric by population growth during the partition and, after, due to the urbanization of the capital City during the 20th century. The City presents a juxtaposition of the old and the new, interwoven in the urban fabric.

The evolution of the City, displayed as vertical and horizontal growth of the real place has led to the blurring of boundaries between the old and new. While some parts of the City have been declared as world heritage sites, much of the Delhi area has been taken up by the Archeological Survey of India (ASI) in order to research the past. Being the capital of India and one of the main economic centers of the country, the City of Delhi displays a modern built environment that caters to the needs of the growing population. The trace of the evolution of the City at this point becomes a bi-directional threshold.

New media offers valuable tools that uncover the layers of the chronologically built events in order to discover the City. Thus, the virtual inhabitation of the built form is the information that decodes the real place and, as such, complements the real City.

6.2. Highlights

The highlight of this thesis is that, in order to exhibit the City, the research has to identify the City with regards to the dual medium of human habitation. This consists of an examination of the virtual and real, to discover how they are interwoven by the placing the City in a virtual medium along the evolving trajectory toward the examination of urban issues of the real. The City of New Media has evolved as an extension of the boundary of the real City, where the design of the prototype in the new media environment is based upon the interpretation of the real City.

Since the probability of visiting the real place is often restricted by the geographic or time limitations of the interested visitor or student, the virtual interface provides useful information that integrates multi-dimensional technological tools such as: texts, graphics and images of City, mapped around a virtual interface to orient the user to the place.

Vector based technology, like Flash, provides the opportunity to cinematically exhibit information in an interactive environment, while engaging the user in thematic ways to travel through the information. Thus, the interface displays become both the information and entertainment object.

While the interface in the example of virtual cities is based upon the memory or the function of the real City, the design of the real place is reticent on function of the virtual. In this light, the context that defines the City as a representation has a dual origin. One consists of the local, pertaining to the geographic boundaries, whereas the other is

global, where these boundaries blur. The design of the interface involves an appropriate definition of the relationship between the real and virtual for a given cultural content.

The City as a representation is an evolving entity with regards to the content and its mode of presentation. In this light, the interpretation of a City model for a given content, involves the design of an evolving model.

The City has a striking similarity to new media as they are both entities, which are constantly transforming and evolving. As in New Delhi, the major arterial roads, the *Rajpath* and *Janpath*, frame the view and form vistas of the historical monuments. The prototype is thus connected by the virtual vista, that connects to the images of information about these monuments.

6. 3. Future Works

The prototype of the evolutionary City of Delhi has been narrowed down with regards to the nature of its evolution. The next phase of the project is to build upon this theme by representing t other recently built forms of urban importance along the evolutionary lane.

The monuments that have been explored in the eight discrete cities of Delhi have distinct forms of evolution. The complex that contains the *Qutb Minar* has evolved under three rulers. This is displayed in the architectural aspects of the built form. Another interesting City is the *Dinpannah*, the sixth City since it has been built by *Humayun*, demolished and then rebuilt *Sher Shah* and was again expanded by *Humayun*. Another interesting

aspect of this site is that researchers have found artifacts that date back to the days of the *Mahabharatha*, when the site was the City of *Indraprastha*. Using new media tools to represent this exploration, and then integrating this into the prototype is a way that I would like the prototype to evolve.

Information and Entertainment

The animated ways to visit virtual space include acquiring a potential ground of exploration with regards to the growing improvement in 3D software and animation technologies. This could provide an opportunity to enhance entertainment while visiting the Information City. The flash interface that is used in the prototype has the potential of integrating swift 3D technology to enhance the three dimensional aspect of the interface.

The use of such environments is attributed to occasion, where the information about a place is portrayed in the form of entertainment designed for information kiosks. The likely places of such information objects would be public gatherings like museums or festivals. These would thus integrate a multimedia representation with exhibits and extend the mind's eye's interpretation of a City. In the scenario when public events are defined thematically by graphical pictures and scripted text, multimedia provides valuable tools that integrate all of the representational media into one cinematic narrative interface.

The future plan is to integrate the interface into an interactive platform, where visitors could interact with each other in their cruises and exchange views about the places that they are visiting. This could give rise to a situation where two visitors to the City of New Media could even be located at different geographic locations.

The idea of a City as a symbolic representation of networks in an urban matrix has valuable potential in the thematic premise, since there is a clear orientation in the virtual due to the analogy that it draws from the real. This makes the look and feel of the interface user friendly. On this ground, other cities could be also explored for intense interpreted representation.

¹ Randolph Jeanne. "A City for Bachelors", "Immersed in Technology": Cambridge MIT Press, 1995, p153.

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Glossary

City	Multi-nodal and multi-modal evolving system
Real	Belonging to the physical space
Virtual	Belonging to the information space
Memory	Information manifested as built form
Model	Belonging to a specific type
Place	Circulatory node
Built events	Built forms that are a mark of a historic event
Interface	Vehicle of navigation and exploration
Environment	Encompassing surrounding space
Mind's eye	Perspective of understanding
Data	The subject content represented in information space

Appendix 1 Map of India

Fig 37. Physical map showing the location of Delhi between the Himalaya Foothills and the Rajasthan Desert on the Indian Sub-continent

Appendix 2 Maps showing the evolution of the Delhi area

Fig 38. Left to Right- Delhi area in the 13th to 14th Century; Delhi Area in the 15th Century

Fig 39. Two Maps of Delhi in the 19th Century

Appendix 3 Master and zonal plans of Delhi (2001)

Fig 40. Master Plan of Delhi showing land use categories

Zonal plan of Delhi

A	Old City	1159
B	City Extension(Karol Bagh)	2304
C	Civil Line	3959
D	New Delhi	6855
E	Trans Yamuna	8797
F	South Delhi - I	11958
G	West Delhi - I	5677
H	North West Delhi - I	15178
I	South Delhi - II	12056
J	West Delhi - II	22979
K	West Delhi - III	8213
L	North West Delhi - II	15851
M	North West Delhi - III	6081
N	River Yamuna	15707
O	North Delhi	
Total		148639

Fig 41. Map showing Zonal Division of Delhi; Table showing the break up of areas

Appendix 4 Evolution of Delhi

4.1. Cities of Delhi

“Once a City had been established here, in this place, and once a tradition of continual strength and success became long associated with such a place, it began to gather a kind of hallowed reputation, an aura quite beyond all reality. The very name of this place, however much it might have been changed over the centuries, would also become hallowed, and intrinsically identified with imperial sway. Thus, even such as Indraprastha, Purana Qila, or Lal Kot came to convey some of this magic. But no name has carried more of this magic, at least during the last millennium, than ‘Delhi’.”ⁱ
-R.E. Frykenberg, *The Delhi Omnibus*, “The study of Delhi”, 2001

There is evidence to connect the existence of urban life in the *Purana Qila* area (presently known as the *Qubt* area) to the Indus valley civilization that dates back about three thousand years. In the popular imagination the existence of urban life connects to the legends, which is also known as *Indraprastha*. The historical evidences and the popular imagination point to the fact that Delhi has been the region where cities were rebuilt forming layers of history. The recorded history of the City is narrated in this chapter as a story of its evolution and analyses the influence of the architecture in each City.

4.4.1. First City

The cloud of the uncertainties of the folklore and the vagaries of puzzling artifacts was brought into the clear light of recorded history when the *Lal Kot* emerged as the citadel of the *Raja Anangpal* in 1020. It was later renamed as *Qila Rai Pithora* after it was taken over by *Prithviraj Chauhan*. Through out this period, the Delhi City witnessed the building of twenty-seven temples. This citadel was invaded, and provincial City or small state capital was transformed into the administrative center of the sultanate of Delhi. *Qutb-ad-din Aibak*, the governing viceroy of *Mohammad of Ghor*, extended the boundaries

of the old *Lal Kot* and built the *Quwwat-ul-Islam* mosque, which was built out of the materials acquired from the twenty-seven temples.

Fig 42. The Arches and the *Qutb Minar*, Delhi

He commenced the building of the *Qutb Minar*, which was completed by *Iltutmish*, who succeeded next. He tripled the size of the *Quwwat-ul-Islam*, and extended the south east side of the citadel, *Lal kot*. The foundations of the mosques and the houses still stand as witness to this suburb. Another building is the *Sultan Ghari*, which is the tomb of his son. It is known to be the first of the Muslim tomb in India. It is located about two miles away from the *Qutb* area in a rocky plain. *Balban's* tomb was the first monument where the circular dome has been erected on a square base by transforming it into an octagon. This first city is now almost a suburb of the main city, a memory of the past in a foreign land that attracts tourists and visitors to celebrate its history. It was declared a world heritage site in 1993.

Fig 43. Left to right- *Qutb Minar* from the colonnade walkway of *Quwwat-ul-Islam* Mosque; View through *Sultan Ghari*: the first Muslim Tomb

The architecture of the first city marks the inception of the Islamic influence and the beginning of an indigenous architectural style which can appropriately be called the Indo-Islamic architecture. (Brown, 1956) The rulers of the first City built monuments that proclaimed the victory of their conquest. The monuments, extensions of the existing citadel, were primarily mosques for prayers, and watchtowers. The first mosque was called the *Quwwat-ul-Islam*.

Fig 44. *Quwwat-ul-Islam* Mosque, 1195 A.D. From left to right and top to down- Plan of the Mosque; Construction of Brick Dome; Construction of Brick Arch; View of the Interior Courtyard; Details of decoration of the Brick Arch as seen in the view

Fig 45. View of the colonnaded walkway in the *Quwwat-ul-Islam* Mosque showing the columns collected from the Temples

The mosque was measured as 217 feet by 150 feet and was built around a paved courtyard. The western wall was the direction at which the interior chamber or *Qibla* was placed as it pointed to Mecca. The materials were assembled by placing one column over another to achieve the required height for the building. The dome like structures, called the *cupola*, is located in the corners of the courtyard and at the entrance canopies. These were constructed by filling lime concrete in a terraced pyramid and a thick layer of plaster was also applied to achieve a smooth effect. The western walls of the courtyard were later emphasized by adding a screen of arches or a *maqsura*. This screen of five pointed arches spanned 108 feet long, 50 feet high and 8 feet in width. The construction of these arches were constructed by first creating a rough multiple bracketed opening and then chiseling out the objectionable parts to achieve the desired shape. The rough rubble masonry was covered with a veneer of red sandstone and the entire surface was decorated with rich patterns.

The *Qutb Minar* tower was first constructed in 1199 A.D. It is now 238 feet high with a base of 47 feet in diameter and tapered to the top to 9 feet diameter. The top storey is approached by a central staircase of 360 steps. The vertical and angular outer turret surface is broken into four balconies over an elaborate decorated pendent shape. The monument was begun by *Qutb-din-Aibak* and was completed by his *Iltutmish*. It was later struck by lightning and had two extra floors added in the later *Mughal* period. The melon shaped balcony balusters were replaced as late as 1928. The *Quwwat-ul-Islam* was extended by adding more arched areas around the tower. The mosque was later extended by *Ala-ud-Din Khilji*, which exhibits the evolution of true arches and domes as

seen in the entrance gateways, the *Alai Darwaza*. The *Alai Minar* is an unfinished monument that was intended to be bigger than the *Qutb Minar*.

Fig 46. *Qutb Minar* Tower, 1199A.D. Form left to right and top to down- The expansion of *Quawwat-ul-Islam* Mosque showing the circular *Qutb Minar* and extended courtyard spaces; Plans of the *Qutb Minar* at various levels; Details of *Volutes*

Fig 47. Illustration of the method of construction of a True Dome: as first seen in the Monument, *Balban's Tomb*. From left to right and top to down- Four Plans showing the transformation from a Square Base to the Circular Base; View of the method of construction; Interior Section of *Balban's tomb*; Ruins of the exterior walls of *Balban's Tomb* showing the Arch with radiating voussoirs

4.4.2. Second City

The monument *Chor Minar* is a half ruined tower, which a standing witnessed of the tragedy of the tyrannical rule of *Ala-ud-din Khilji* around 1296. The Delhi area in this period resembled a fortified Turkish camp rather than a capital. The empire extended on the south and on the west. About two miles north of first City, the second City called *Siri* was built. It was a circular walled City that had seven gates. There remain frugal remains of this city as the materials were reused by builder kings for the building of the subsequent cities. It was built to protect the King's Palace, the hall of thousand pillars.

No remains of this palace have been traced, it remains a subject of archeological interest. Building this walled circular City is attributed to a sense of insecurity against foreign invasion. In the nearing area, he built a great tank called the *Hauz Khus* and the area is still referred to with the same name. The cultural aspect that is attached to the tank is that it became a place of congregation in the evening and also a shopping area. This was due to its cooler air as it was near a water body.

Fig 48. From left to right- Entrance to the Mosque, *Alai Darwaza*; Water Reservoir, *Alai Hauz* which was later known as *Hauz Khus*

He also doubled the size of *Quwwat-ul-Islam* by adding six more arches in the northern end. A new tower, the *Alai Minar*, was twice as big as the existing one when planned, but it remained an unfinished vision. It is now a seventy feet rubble stump. The *Alai Darwaza* is the entrance to this area. The important architectural contributions of this period are the practice of creating masonry with alternate headers and footers. The headers were embedded deep into the thickness of the wall to make the structure stronger. The other feature is the dome 34 feet in diameter that was placed over a square base of 56 feet by true arches with radiating *voussoirs*, thereby forming *squinches*. The interesting aspect of this structure is the blend of red sandstone and white marble. The

horse-shoe shaped arches are adorned with bands of Quranic inscriptions, and the jambs are defined by slender pilasters. This is a feature inspired by the temples. The intrados of the arch is adorned with spear like, lotus bud motifs. The façade proportionally divided the mass into two rows of windows.

Fig 49. From top to down and left to right- View of the *Qutb City* showing *Alai Minar* and the extended colonnades of the Mosque, 1296; View of the rubble stump of *Alai Minar*; Plan of the *Quwwat-ul-Islam*, 1296; Squinch detail of the *Alai Drawaza*

Fig 50. The Alai Darwaza with the Qutb Minar

The lower windows have arched opening treated with *jaali*. This was an architectural device that filtered light in a star and hexagonal pattern and was used to provide controlled illumination and ventilation for large voluminous spaces.

The *Jamat khana masjid* was the first monument where these large spaces were produced by conjoining together three cubic compartments each with its own dome. Among the events that emerged as built structures in this place, are the contemporary ones have also appeared. Located in this area is the *Siri fort* auditorium, an international

convention center and the *Asiad* village, a colony built to house the athletes who converged in Delhi for the sports event in 1982.

Fig 51. View of the façade of the *Jammāt Khana Masjid*

4.4.3. Third City

Around the 1321, another period of stern and pitiless rule emerged, and this spirit was apparent in the buildings. The motivating factor for building the next City was both defense and dynastic pride. About five miles east of the Old City was the City of *Tuglagabad* with sloping walls of massive strength, which were plain and undecorated. It was located in the edge of the rocky out crop of a hill. The massive outer walls where sloped at an angle of 70° and appears to have been a part of the hills on which they were built. The fortress walls had thirteen gates to enter the City. The City is seen in ruins and stands as a memory of the past. The important architectural contribution of this period is the monument tomb of *Ghiyas-ud-din Tughlaq*.

Fig 52. Left to right - Ruins massive walls; Remains of rubble walls showing *Ghiyas-ud-Din Tughlaq's* Tomb

The arches of the tomb have a dual feature structural element as they are true arches with radiating voussoirs, and yet they had lintel. This tomb was located 250 yards away from the main City and was linked by a causeway. It was surrounded by a sheet of water at one time, although presently it is dry. The third City was deserted and was never fully populated and was abandoned in fifteen years due to issues regarding water and resources. To the south of the City the fortress citadel called *Adilabad* was built. After this, the capital shifted from Delhi to the south of India. But as it was appropriate to control the capital for military reasons from the north, the sultan returned back to build the fourth City.

Fig 53. Top to down and left to right- Fortress walls of *Tughlagabad*; View of the ruins of the City; Sketch of the Tomb of *Ghiyas-ud-Din Tughlaq*; Openings in the Tomb showing dual construction elements: True Arch and the Lintel

4.4.4. Fourth City

The fourth City, called *Jahanpanah* was built in 1334. The space between the City of *Qutb* and the City of *Siri* where there existed an emergence of suburban settlement was walled, with the royal palace and a mosque built in the center. The traces of this City can be seen in partial ruins, although the eastern wall and a lake with the regulating sluice can still be perceived. This wall that united the four cities remained an unfinished project because of limited financial resources.

Fig 54. View of the remains of the Bijay Mandal

The Delhi City at this time was an amalgamation of four cities: *Qutb*, *Jahapanah*, *Tughlagabad* and *Siri* with the *Hauz Khaus* tank on the west (refer appendix 2). In the east, a lake divided the space between the *Jahapannah* and *Tuglagabad*. In the south, a rocky land was used for sports and in the north was the fertile land with provided for nobles in country houses. The City started acquiring a metropolitan character. The monument

of this period is the *Bijay Mandal* whose structure is indicative of the fact that it was a part of a palace complex. This part of the City is, at present reused as a public park that contains the remains of the past.

4.4.5. Fifth City

In time more mosques, centers of learning, water reservoirs and tombs were built. The City extended to another populous center, *Firozabad*, which was built by and named after the emperor, *Firoz Shah*. It was the first City to be built at the banks of the river Yamuna. It is currently known as Firoz Shah Kotla.

Fig 55. Reconstructed view of *Firozabad*

This place acquired the role of the Windsor palace while the capital remained in what was known then as the Old Delhi (*Qutb City*). The City was an irregular rectangle that measured 800m by 400m, and was defined by defensive outer wall. The eastern and longer side faced the banks of the river. On the middle of the western wall was the main entrance that led to the cloisters in the courtyard. Adjacent to this was the *Diwan-i-am*, where the king gave audience to the general public. The *Diwan-i-khas* that was located at

the heart of the complex was for private audiences. Right along the banks of the river were, the palaces, mosques and private residences. The areas in the north and south, which were divided into squares and rectangles, provided for accommodating the water gardens, baths, tanks, barracks and servants quarters.

Fig 56. Three Tiered Terraced Structure inspired by the Buddhist *Viharas* inhabited by the various Concubines of the King

The builder king at this time undertook different restoration projects, like the work in the *Qutb Minar* and at the *Haus Khaus*. In the later, he built a learning center called the *Haus khaus Madrasa*. It was a two tiered colonnaded area around the tank. The first floor was totally blocked on one side, but opened up to the water on the other side. The upper storey was totally open on both sides, creating cross ventilation. The tomb of *Firoz Shah* was placed at the corner where the two wings of the two levels met. The materials used

were the random rubble masonry of local stones finished with lime plaster. Decorative motifs were made on lime plaster.

Fig 57. Top to down - Plan of the College of Learning; View of the College of Learning and the *Haus khaus* Tank

Fig 58. From left to right- Entrance to *Kalan Masjid* showing the rest rooms or priest's quarters; View of the *Khirki Masjid* covered with flat and domed roof

Among the many mosques built during this period, the two most significant architectural features include the *Kalan Masjid* which had a raised courtyard and the *Khirki Masjid* which had a covered courtyard. After this period, the City fell into the hands of a turbulent reign where it again diminished to be a provincial City. The buildings of the next period were mainly gardens and tombs.

Fig 59. Left to right and bottom- Plan of the Tomb of *Sikander Lodi* in Lodi gardens; View of the Tomb; *Moti-ki-Masjid* Mosque, expressive of wide span of True Arches

4.4.6. Sixth City

After the Babur, who invaded from the north, Delhi resembled a provincial City. This period marked the beginning of the Mughul rule in the area. However, his successor returned and built a new city, *Dinpannah*, between 1530 and 1540. This City is presently a zoological park and the site for holding annual flower shows. The City extended from the *Humayun's* tomb to its northern gateway to the *Khuni Darwaza*. This citadel is an imposing mass that at present is connected to the present capital by the janpath road in New Delhi (Eighth City).

Fig 60. Entrance to the Sixth City, at present the Entrance to The National Zoological Park

Fig 61. From top to down and left to right - Two images showing the old fort, Delhi; Entrance to the City: Lal Darwaza; Entrance to the City: Khuni Darwaza

It contains within it the royal palace called the *Purana Qila* approximately where the City of *Indraprastha* is believed to have existed. But before the City was completed, it was invaded by the afghan, *Sher Shah Suri*. He also built a City to mark his victory by building one quarter of the *Humayun's City*, which was called *Sher Shahbad*. He retained

the same palace and was responsible for the completion its structure. Fragments of the market place and one gateway, is still seen near the palace. Among the surviving buildings built by *Humayun* are the *Sher Mandal* and a mosque in the complex. The *Sher Mandal* is a three tired pavilion which is octagonal and measures 158 feet by 45 feet and 66ft high.

Fig 62. Left to right- *Qila Kunha* Mosque in the Fortress City; *Sher Mandal* within the Fortress City

Another landmark of the City is the *Salimgarh* the state prison, which contains the battery that fires up ceremonial salutes for the capital New Delhi presently, is a monument attributed to this period. The tomb of *Humayun* which is known to be the predecessor of the Taj mahal in Agra, was also declared a world heritage site in 1993. The most striking design element of the tomb is not the building complex but the layout of the entire grand complex. It is conceived as the heart of a grand symmetrically arranged formal *char-bagh* (four gardens), to organize the natural elements into a man-made framework of geometrical patterns.

Fig 63. Top to bottom and left to right – View of the *Humayun's Tomb*; Layout plan of the Garden with the Tomb at the centre; *Khan Kanan Tomb*, a predecessor to the *Taj mahal*

4.4.7. Seventh City

Between the sixth and the seventh cities the capital was shifted to Agra where the emperor *Akbar* built the City *Fathehpur Sikri*, the finest examples of indigenous architecture. However, the Mughul rule returned to Delhi and it continued as a provincial City. In 1638, the City of *Shahjanabad* marked the transfer of the capital from

Agra. The primary reason for this was the congestion of traffic in Agra. Thus, the eighth City was built with broad roads as compared to the last cities and has remained the center of the urban matrix even today. This City was placed in the north of the preceding *Humayun's City* and measured four miles around.

Fig 64. View of citadel in *Shahjahanabad*, the Seventh City

Fig 65. Right to left - Entrance to the Fort; The colonnades of *Diwan-i-khas*, The hall for important and private audience

The broad planning principles here were similar to the planning principles of the fifth city. The whole plan of palaces, courts, halls and gardens are contained within a fortified wall within a oblong of 3100 feet by 1650 feet with the military ancillaries located along and just inside the fortified walls. There was a clear hierarchy of spaces from the entrance to the *Naubat khana*, from the *Naubath khana* to the *Diwan-i-am*, and from the *Diwan-i-am* to the *Diwan-ikhas*: all were organized around the colonnaded garden spaces symmetrically aligned along the central axis. All structure of the within the fort were in the form of open pavilions which were single storeyed, their facades of engrailed arches shaded by wide eaves or *chajjas* above which were the graceful domed kiosks.

Fig 66. Plan of the Citadel at *Shahjahanabad*, Old Delhi

The palace placed in the center was surrounded by the space for the royal bodyguards. The market was beyond this along the great avenue *Chandni Chowk*. Here the nobles had their houses, some which still survive today. Beyond the City wall, on the west lay a series of markets where the supplies of the City were replenished and in the north was the along the banks of the river, the structure had walled enclosures of fruits and flower where the nobles vacationed.

Fig 67. Left to right- Image from the towers of the Mosque showing the courtyard and the City beyond; Image showing the Market on the side of the Red Fort

The *Jami Masjid* at Old Delhi is a distinct mosque as the entrance gateway leads to immense red sandstone flagged quadrangle of 325 feet side in front of which stands the sanctuary that is 200 feet by 90 feet. On the other three sides, ranges of cloisters extend their long colonnades which are broken by gateways at cardinal points.

Fig 68. *Jami Masjid*, Mosque at Old Delhi

The *Qutb* area in this period was a decaying region. The *Humayun's City* was considered the older Delhi and the *Shahjahanabad*, the new part of Delhi. After this, in the next two centuries, the City underwent many changes in rule and, subsequently, the British moved to Delhi and built their cantonment and civil colony in the Dariyaganj area. Then, mutiny broke out in 1857. Delhi became a part of the state of Punjab.

4.4.8. Eighth City

After the mutiny much of the buildings were restored and recovered. Owing to the centrality of its location, once again Delhi become the central point from which trade and exchange of resources occurred. The City became central to the railway and continues to hold similar importance today. In 1911, the King -Emperor announced the transfer of the imperial capital from Calcutta to Delhi due to its historic and economic significance. This decision led to rapid growth and expansion of the City. The civil lines were thus erected in the north of the City.

Fig 69. View showing the Mughal Garden, Rashtrapathi Bhavan, Secratariat buildings and the Rajpath beyond; Layout Plan of New Delhi in 1914

The new capital, or the eighth City of Delhi was planned and formally inaugurated in 1930. The new City, symbolic of medieval India and its indigenous architecture, displays a predominant classical style adapted to Indian features. The two arterial roads of the

City layout intersected each other. One is the *Rajpath* (previously known as the Kingsway) and the other is the *Janpath* (earlier known as the Queensway) formed the arterial core of the layout. These roads related to the old monuments like the *Purana Qila* and the *Jama Masjid* by means of vistas created in the *Janpath*. The plan provided for government buildings, private mansions and palaces of great princes to add to the variety of style that they display. This City is symbolic of the Imperial rule in India.

While the new city grew, there was consequent growth in the older part (*Shahjahanabad*) also. Here, the old and the new monuments existed side by side. This aspect of the City was discussed as the traditional model. As a result of the influx of the population during the partition, it continues to grow rapidly. Delhi is now significant as the capital City and the economic center of India. It is now a congested City that is acquiring town-planning solutions on the issue of transport, public health and sanitation. As described with respect to the innovative model, these have become the additional layer to the existing urban matrix. The monuments of the older part of Old Delhi, where the earliest of the cities are situated, have become sites of archeological interest and restoration monuments. In some instances the old monument are used in a different functional context to the present as seen in the example of *Purana Qila* and public parks where the City of *Jahapannah* existed.

ⁱ The word "Delhi" means threshold. This could be appropriate with respect to the fact of its location into the Indian subcontinent. The other belief of its origin is that it was from a village Dilli which is located in the southern part of the city. Yet another belief is that it was derived from a previous ruler called Dillawa.

Spear, Percival. "Delhi: A Historical Sketch", p-5