Chapter 1

Interface between Poststructuralism and New Media

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*Books must follow sciences, and not sciences books.* - Francis Bacon

*The reality of our century is technology: the invention, construction and maintenance of machines. To be a user of machines is to be of the spirit of this century. Machines have replaced the transcendental spiritualism of past eras.* - László Moholy-Nagy

*[T]he true freedom from the tyranny of line is perceived as only possible now at last with the advent of hypertext, written and read on the computer, where the line in fact does not exist unless one invents and implants it in the text.* - Robert Coover

The rise of new media has been seen by many as one of the most fundamental features of the late twentieth and early twenty-first centuries. Critics and theorists from varied disciplinary backgrounds have produced detailed scholarly studies of new media technologies in which they have critically attempted to understand what new media is, what its peculiar characteristics are, how it is different from old media, what role it has started playing in our lives, and in what way it shapes and affects everyday practices and thinking habits. The attempt throughout has been to produce a comprehensive and sophisticated analysis to thoroughly decipher the multifarious aspects of new media, for example its specific characteristics, qualities and advantages with respect to the existing kinds of media from social, historical, cultural and technological perspectives.
During the last decades of the twentieth century, new media became a buzzword in the academic and artistic disciplines across the world. It became a term for discussion, explication and contestation. It gradually gained the status of an umbrella term for a range of practices that employ digital technologies and computers in one way or another, rapidly becoming “a key institutional term in education and culture, [and...] the title of university departments and degrees” (Dewdney and Ride 20). As an intellectual discipline, new media took “shape only [towards] the end of the 1980s” (Manovich 13). With time, it came to be recognized as an independent force in the socio-cultural sphere of society; as a distinct space for creative experimentation and artistic expression; as a new virtual field for the blending of cultures, traditions and societies; and as a radically new globalizing force bringing together groups and communities from various regions of the world by providing them a single global platform for reciprocal interaction of varied kinds.

New departments and institutes were set up to study and support the production of new media art. Europe led the way by setting up ZKM (Centre for Art and Media) in karlsruhe, Germany (1989), New Media Institute in Frankfurt (1990), and ISEA (Inter-Society for the Electronic Arts) in Netherlands (1990). Tokyo and Japan soon followed and eventually became the budding hubs for new media art practices and exhibitions in which international computer artists, new media curators and critics, new age musicians and installation artists have been participating year after year.

New media, at the most fundamental level, is marked by a shift from the analogue to the digital. One may also say that what distinguishes the new media from the previous media is the central role which information plays in it.
Contemporary society is becoming a vast network in which information travels across nodes at an ever-quickening speed. Information sharing and transfer permeate every aspect of life, from entertainment, films, shopping, gaming and education to philosophy. Nearly everything has become fluid in the sense that nearly everything today can be converted into some kind of information (bytes and bits) that remains in constant flow. This “information culture,” describes Manovich, should be thought of in terms of the modes, manners and styles in which information is nowadays exhibited and presented at diverse cultural locations and sites, and in objects of everyday use – from all kinds of traffic signs at roads and train stations; in airports and big malls; mobile, internet and television screens; newspapers, books, magazines; flex holdings and dynamic electronic screens by the roadsides; the interior design of banks, hotels, and other commercial and leisure spaces; the interfaces of planes and cars; and the user-friendly interfaces of operating systems and software applications (Manovich 13). In other words, we can say that the new media is primarily new on account of the centrality of information, its digital and computational nature, its networking abilities, and its interactive and simulative character.

This chapter examines new media and the history of its gradual emergence via various technological innovations and scientific discoveries through a close reading of Lev Manovich’s path-breaking work *The Language of New Media*. In the book, Manovich traces the origins of new media, its evolutionary trajectories, and its stylistic and technical developments that make it fundamentally different from other existing media. Besides Manovich, we shall be referring to other theorists of new
media like Janet Murray, Jay David Bolter, Richard Grusin, etc. whose work has played a significant role not only in chalking out the specificity of the new media but also in enhancing our overall understanding of the new media, its nature and possibilities. Subsequently, we shall attempt to understand the implications of the new media for literary studies, its creative contribution to the field of literary writing vis-à-vis its inherent characteristics and properties, and how the history of literary studies during the second half of the twentieth century already anticipated, though in a vague manner, what the advent of new media later helped to materialize in a concrete and operational manner. This is done through a critical reading of George P. Landow’s ground-breaking study of the coming of the hypertext and its relationship with new media technology, titled *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*.

In a way, Manovich’s book *The Language of New Media* has proved to be the determining factor in the growth of new media studies. It undertakes an in-depth systematic analysis of the language which the new media technologies use, including its forms, emergence, peculiarity and cultural significance in the emerging socio-cultural formations of the early decades of twenty-first century.

The new media, according to Manovich, should be examined within the socio-historical context of its gradual rise. For him, new media “represents a convergence of two separate historical trajectories: computing and media technologies” (Manovich 20). An analysis of new media can only be fruitful if we are able to relate it to other areas of culture, like the emergence of contemporary visual and information culture, other media-related innovations and digital
communication technologies, on the one hand, and the development of computer in the middle of twentieth century, on the other, which eventually replaced numerous mechanical calculators and tabulators used widely by companies and governments for lengthy computations of different kinds. Manovich relates the rise of the computer with the invention of Charles Babbage’s *Analytical Engine* in 1833 and the construction of the Jacquard loom by J.M. Jacquard in 1800. There were also developments in media technologies that allowed the storage of images, moving images and sounds using different materials like photographic plates, film stocks, gramophone records etc.

According to Manovich, the novelty of new media should also be understood in terms of how the new media displaces and dislocates the old media technologies in order to reconfigure and restructure the processes of mediation in society, and how it is in dynamic interplay with the existing media forms. Building on Fredric Jameson’s argument that there can never be radical ruptures between two consecutive historical periods but only restructuration of certain elements and relationships, Manovich argues that “new media does not radically break with the past; rather, it distributes weight differently between the categories that hold culture together, foregrounding what was in the background and vice versa” (229). Every new technological breakthrough, be it in the field of media, science or computers, shapes our culture in more than one way and radically alters cultural transmission, sharing and interaction in society. It opens up certain possibilities while blocking others. Manovich cautions that although the mediascape has radically changed with the coming of computers, yet we must not forget historical continuities of older
media in the new media. We must consider how the old media technologies paved the way for the new ones.

What is new media? What are its characteristics and how far is it different from the older media? How does it rearrange our co-ordinates of thinking? Manovich answers these questions by listing five principles of new media that make it new and distinguish it from the older media. These principles are numerical representation, modularity, automation, variability, and transcoding.¹

The first four of these principles foreground the technological peculiarity of the new media and the last one enables us to fathom how technological specificity interacts with the previously established cultural forms and to what extent it manipulates existing forms. Manovich adds that these are not the essential characteristics of new media; rather these are the general principles of the logic of new media. Janet H. Murray in one of her articles “Inventing the Medium” writes about four defining properties of the computer: these are the procedural, the participatory, the spatial and the encyclopedic nature of the computer. Since new media generally involves the use of computers, these four properties are important when it comes to identifying the defining aspects of new media. For Murray, the defining aspect of new media is its “interactivity” which has become possible because of the procedural and participatory properties of the digital medium. She argues that “the sense of participating in a world that responds coherently to our participation” afford us the pleasure of being an active agent and, as it also

¹ These are explained in detail on page no. 8.
“processes our input and responds in a way that makes sense to us,” it becomes an animated world on its own (Wardrip-Fruin and Montfort 6).

Both Murray and Manovich argue “for a conception of computing as a new medium of expression” (Dewdney and Ride 27). Murray considers the encyclopedic nature of the computers as a quality which catered to the needs of post-war world. The computer is simply the largest medium ever invented by human beings which is capable of storing vast amount of information at one place. With subsequent developments, the ability to randomly access this data has greatly increased our expectations of some gigantic storehouse of information. Quoting William Faulkner, Murray writes that the computer “calls forth our desire to get everything at one place…as William Faulkner once described the aspiration to describe the world in one sentence” (Wardrip-Fruin and Montfort 6). With Tim Berners-Lee’s invention of the internet (World Wide Web), we have at last been able to create Jorge Luis Borges’s “Library of Babel”.

Jay David Bolter and Richard Grusin in their book *Remediation: Understanding New Media* offer a distinct framework for understanding new media. For them, the emergence of the new media can be understood by historical contextualization and through the process called “remediation”. *Remediation* may be defined as “the representation of one medium in another” (Bolter and Grusin 45). In other words, every new medium borrows and uses the possibilities of older media to re-present the content by juxtaposing both the old and new media in a new relationship, literally demonstrating McLuhan’s hypothesis that “…the content of any medium is always another medium” (Wardrip-Fruin and Montfort 203).
According to Bolter and Grusin, remediation is one of the most significant characteristics of new media. Two more concepts which they think are crucial to any critical grasp of new media are our culture’s desire for two mutually exclusive tendencies: *immediacy* and *hypermediacy*. *Immediacy*, in simple words, may be defined as the desire to invent a kind of medium which allows us to experience the world unmediated. In other words, the medium in the process of representing the reality must seem to erase itself. In new media terminology, we can say that immediacy is the desire to design an interface “…in which there will be no recognizable electronic tools - no buttons, windows, scroll bars, or even icons as such. Instead the user will move through the space interacting with the objects ‘naturally,’ as she does in the physical world” (Bolter and Grusin 23).

*Hypermediacy*, on the other hand, may be defined as a visual technique which highlights multiple perspectives and ways of representation. The process of mediation is ‘intentionally’ foregrounded. Using the words of William J. Mitchell, Bolter and Grusin define hypermediacy as a visual style “which privileges fragmentation, indeterminacy, and heterogeneity and …emphasizes process or performance rather than finished art object” (31). Wunderkammer, collage and photomontage are practices in hypermediacy. Arguing about the ‘newness’ of the new media they comment:

> What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media. (15)
The specificity of new media can be apprehended critically if substantial attention is paid to its complex relationships with older media and how the new media embodies the functionalities of the old media together with its peculiar capabilities to process and execute those functionalities in radically new ways because of its inherently distinct technological character. At the same time, another core issue is how the technological character of new media shapes or reconfigures existing cultural and aesthetic practices, that is to say that the challenge is how to decipher the relationship between “the cultural language of new media and scientific and technical apparatuses and systems upon which it is based” (Dewdney and Ride 27).

1.1 **Principles of New Media: Lev Manovich**

We may now examine each of the five principles expounded by Manovich in detail. The first of these principles is numerical representation. Numerical representation means that every kind of data can be represented numerically. As the digital media work on the binary logic of 0 and 1, it can be said that numerical representation allows data to be represented as continuous streams of zeros and ones. The process of converting continuous (analog) data into numerical representation is called digitization. Digitization involves sampling and quantization. Sampling in turn may be defined as breaking data into discreet samples, that is, data occurring at distinct units (For example, pages of a book, pixels of an image). Quantization is the assignment of a numerical value to the sample drawn from a defined range. Manovich notes that most of the modern media has discreet levels because it emerged with industrial revolution. The installation of assembly line production in his factories by Henry Ford in 1913 was a significant step towards the
standardization and compartmentalization of work. The production process was separated into sets of simple, repetitive and sequential activities that could be performed by any worker and the workers did not have to necessarily master the whole process.

Numerical representation facilitates the modular nature of new media. Modularity may be defined as the “fractal structure of new media” (Manovich 30). Any kind of data - images, sounds, videos, and texts - can be represented as a collection of discreet samples. All these kinds of data are made up of pixels, polygons, voxels, characters and scripts. These elements of data are then combined into large-scale objects but each continues to retain their separate identity because of modularity. An example of modularity is an ‘object’ in Microsoft Office. While composing any document in Microsoft Office when we insert an object, like a clipart image or media clip, into a Word document, it continues to retain its independence. It can be deleted or edited at any point of time with the program which was used to create it. Another example of modularity is an HTML page. An HTML page consists of many objects like images (GIF and JPEG images), Virtual Reality Modeling Language (VRML), videos (scenes and flash movies) and texts. Each of these objects relates to others to form an HTML page but at the same time these objects are also independent of each other. Every kind of object on an HTML page can be deleted, edited or re-inserted.

The two principles of numerical representation and modular structure of new media objects facilitate the automation of many operations involved in creation, access and manipulation.
Automation is the third of the five principles of new media that make it new. Since every kind of data is numerically represented and modularly structured, it allows for the automation of small operations. Many image-editing software, like Microsoft Office Picture Manager, Adobe Photoshop etc. allow a user to modify or edit an image. These software come with filters that can automatically modify an image, the modifications ranging from simple editing to complex re-rendering of images. Some of the common functions include changing the color combination of images, improving the contrast range, resizing or compressing the image, removing noise etc: the user just clicks on the appropriate button. Manovich writes that automation allows the user to create “simple application variations of color to changing the whole image as though it were painted by Van Gogh, Seurat, or another brand-name artist” (32).

With the coming of animation, many computer programs have been developed which can automatically generate 3-D objects, like trees, landscapes, buildings and human figures. These programs can also create detailed ready-to-use animations of complex natural phenomena, like fire and waterfalls. Examples of this can be seen in many Hollywood films where flocks of birds, ant colonies and crowds of people are generated automatically using AL (Artificial Life) software. In the Hollywood film *Resident Evil 3* there is a scene in which thousands of crows are shown gathering around a group of 5 or 6 people to kill. In that scene there were actually three real crows only; the rest were created using computer software. According to Manovich, technologies like printing, photo camera, film camera, tape recorder and video recorder had already automated media creation. Over the course
of last hundred years, using these technologies we have been able to accumulate an unprecedented amount of media materials in the form of photo archives, film libraries, audio and text archives etc. But there was a dire need for new technologies which allowed easy organization, storage and efficient access to these media materials of different kinds. This need led to the next stage of media evolution. The answer was the emergence of computer-based media. Computer-based media allowed easy storage, faster access and retrieval, better organization and management. Hence, automation of different in-built functions was the next logical step in the process that had been set into motion when the first photograph was taken.

Variability is the next important principle of the new media. Each object which is created in the new media has the potential to exist in many versions and it “is not something which is fixed once and for all, but something that can exist in different, potentially infinite versions” (Manovich 36). The older media technologies allowed for the creation of material that was fixed once and for all. It could not be easily changed. New media, in contrast, is characterized by variability. For example, an image in new media is nothing but an array of pixels. It is because of this quality that it is infinitely mutable and ‘liquid’. Manovich argues that it is only because of the modular structure of new media that variability is possible. As the data is stored digitally and is in a numerical form rather than in any fixed form, media elements exist separate from each other and as a result can be assembled into numerous combinations under different program controls. We can say that in the new media there are no identical copies but different versions of the same object.
Further, Manovich discusses particular cases of the variability principle, like scalability, branching-type interactivity (or menu-based interactivity), hypermedia, etc. Of these, the most important is hypermedia. Hypermedia may be defined as the creation of a document or web page or any artifact in which various media elements are connected through hyperlinks. We can see that the elements and the structure into which they are woven are independent of each other rather than hard-wired as was the case in older media. This separation of media elements from their structure is possible because individual media elements always retain their identities (the principle of modularity is at work), and as such these elements can be wired together in more than one way. Hyperlinking is one particular way of achieving this wiring. Hypertext is a particular example of hypermedia that uses one media type - text. A hyperlink creates a connection between media elements, for example between words, texts and images which are located on different pages or different computers connected through a network. To make an analogy we can take the example of computer programming. In computer programming, there are algorithms and data on which these algorithms get executed. There is no relationship between algorithm and data. An algorithm is a sequence of steps to be performed on any data. The same is true of hypermedia as it is only a way of structuring or connecting media elements that can be applied to any set media objects. The technological features of any media, at one level, make space for all kinds of novel cultural and aesthetic practices whereas, at another more fundamental level, these same features forces the social to re-conceptualize such socio-cultural constructs like the individual, the social, their mutual relationship by opening up new modes of reciprocal interaction,
communication and sharing through changing media technologies. The specific features also correspond to collective needs and aspirations of society at large. Explaining how the changes in media technologies complement social requirements, individual demands and collective ambitions, Manovich says:

…[T]he logic of old media corresponded to the logic of industrial society, the logic of new media fits the logic of postindustrial society, which values individuality over conformity. In industrial mass society everyone was supposed to enjoy the same goods- and to share the same beliefs. This was also the logic of media technology. A media object was assembled in a media factory (such as a Hollywood studio). Millions of identical copies were produced from a master and distributed to all the citizens. Broadcasting, cinemas, and print media all followed this logic. In postindustrial society, every citizen can construct her own custom lifestyle and “select” her ideology from a large (but not infinite) number of choices. Rather than pushing the same objects/information to a mass audience, marketing now tries to target each individual separately. The logic of new media reflects this new social logic. (41)

It is the case with new media and the artistic practices associated with it, which in turn facilitates the creation of such new media art-objects that foster active user/reader participation; the art-objects literally respond to the choices of the user/reader, this is especially true of writing in the new media. Every hypertext reader follows her version of the text by choosing a particular path through it.
The principle of hyperlinking which forms the basis of new media objectifies the internal processes of association taken to be central to human thinking. Many aspects of the new media are part of this “modern desire to externalize mind” (Manovich 60). Manovich says that interactive computer media asks us to click on the first hyperlink to go to another link irrespective of the fact that the new link is to another image, video, text or web-page. In this way we follow objectively existing associations programmed beforehand in order to relate one to another in a non-linear manner. Manovich asks if this is not an updated version of Althusser’s concept of interpellation when I am asked to act on the pre-designed multi-linear paths of a new media object but made to feel or understand as if I am myself creating my path. That is, we are interpellated as subjects by this very process of hyperlinking into a given regime as we treat somebody else’s associations of mind as our own. Manovich explains this by way of comparison with cinema:

The cultural technologies of an industrial society - cinema and fashion - asked us to identify with somebody else’s bodily image. Interactive media ask us to identify with someone else’s mental structure. If the cinema viewer, male and female, lusted after and tried to emulate the body of the movie star, the computer user is asked to follow the mental trajectory of the new media designer. (61)

The last and most significant principle of new media is cultural ‘transcoding’. Transcoding may be defined as the way culture and computers interact and the way culture, in particular, gets transformed under the impact of computer and communication technologies. Manovich suggests:
…software interfaces also - both those of operating systems and of software applications - act as representations. That is, by organizing data in particular ways, they privilege particular models of the world and the human subject. (16)

The way information is organized and stored in different file systems in the computer and on the World Wide Web represents a way the world can be understood, interpreted, ordered and represented. In an essay on the new media, he remarks that “human-computer interface comes to act as a new form through which all older forms of cultural production are being mediated” (Wardrip-Fruin and Montfort 16). New media art-objects like web pages are “simultaneously computer code, cultural representations, material objects for consumption and the outcome of skilled labour” (Gauntlett 31).

According to Manovich, new media can be thought of as consisting of two distinct layers, the “cultural layer” and the “computer layer” (Manovich 46). Various categories which belong to the “cultural layer” are “encyclopedia and the short story; story and plot; composition and point of view; mimesis and catharsis, comedy and tragedy” (46). Similarly, various categories which belong to the “computer layer” are “process and packet (as in data packets transmitted through the network); sorting and matching; function and variable; computer language and data structure” (46). We understand and relate to the world through new media technologies which in turn affect our understanding and relationship with the world. Commenting on this, Manovich writes
…cultural categories and concepts are substituted, on the level of meaning and/or language, by new ones that derive from the computer’s ontology, epistemology and pragmatics. New media thus acts as a forerunner of this more general process reconceptualization.

(47)

Transcoding as the computerization of culture accomplishes the translation of given cultural categories and concepts in new media categories.

After defining these five principles of new media that make it new, Manovich goes on to explain the prevalent myths about new media. Two prevalent myths about new media are “the myth of digital” and “the myth of interactivity”

(49).

1.2 Myths about New Media and the Emergence of Human-Computer Interface

A common view in the discourse about the new media is that it is data in digital form. Digital representation is the term which is used to foreground this characteristic of new media. According to Manovich, this term is misleading as it acts as an umbrella term which signifies more than one concept at the same time. It means analog-to-digital conversion (digitization), a common representational code and numerical representation. Digitization refers to the process of making discrete. An everyday life example can be the multiple choice question (objective type) format of a questionnaire in which the answer to each single question should be given from a discrete set of four options: a,b,c or d/1,2,3 or 4. In the case of a subjective questionnaire, the answer should be given in a persuasive form of
argumentation rather than clear-cut options. But these three are completely different concepts. They allow discreet representation, multimedia and random access but, according to Manovich, these three properties had already been exemplified by cinema. So when we talk about any particular quality of new media that derives from its digital nature, we should specify which of these concepts acts as a foundation. For example, different files can be combined into a single file because of a common representation in the sense that no file-type (audio or video file) requires a distinct platform, whereas numerical representation (all data exists in the form of binary digits and the complex logic arrays of digit combinations; it also means that every function is quantified which means that each function carries a numerical value attached to it) allows copying of media without degradation or loss of information. The nature of new media is radically altered by numerical representation as all kinds of data become bytes and bits in the computer memory and the data is, as such, programmable.

The other important misapprehension about new media is that it is new because it is interactive. ‘Interactivity’ is one of the most misunderstood concepts when it comes to new media. All art, classical or modern, is interactive in different ways. All kinds of artistic practices, from theatre, painting, sculpture, architecture, literature to cinema, induce some kind of interactive participation from the viewer. In literature, the reader has to activate her imagination to actually experience the narration; in cinema, the visual composition of scenes demands a different kind of interactivity (for instance, in modern cinema the scenes directly shift, eating out what has happened in between the scenes which the viewer has to understand
independently). In architecture and sculpture, the complete body of the viewer participates in the process of experiencing the art object. In painting, the viewer has to decipher not only the relationships among objects depicted in the painting but the visual composition of painting itself needs to be actively justified. This foregrounding and explicit awareness of ‘interactivity’ of the viewer was the cornerstone of modernist artistic practices like collage, photomontage and film montage which later developed into independent movements like Dada\(^2\) and Futurism\(^3\) etc. The new practices of representation which emerged in the wake of industrialization were mainly concerned with making an oblique/tangential reference to the object of representation against the realist tradition, as a result of which, they employed all kinds of abstract forms like cubes, triangle, circles and crisscrossing of lines to invent a new style of representation. Commenting on the use of abstraction or semi-abstraction methods of this new representational regime, Manovich writes

\(^2\) Dada was a movement in art and literature, founded by Tristan Tzara in 1916, and which subsequently paved the way for other artistic movements like Surrealism and Absurdism. It emerged largely as a response to the horrors of World War I. The Dadaists rejected reason, logic and the enlightenment belief in human rationality, and stressed irrationality, free expression and intuition. The works of Dadaists were marked by “calculated madness and flamboyant nonsense” (Milne 10).

\(^3\) Futurism was also a literary and artistic movement which developed primarily in Italy, besides influencing artists in France and Russia during the 1920s. The Futurists celebrated modern industrial civilization through their enthusiastic appraisal of technology, speed, violence and youthful energy. They employed radical imagery and invented new forms of expression by juxtaposing things; their prime aim was “to incorporate the appearances and sounds of modern life into their work” (Milne 784).
The new representational style of semi-abstraction, which along with photography became the “international style” of modern visual culture, required the viewer to reconstruct represented objects from a bare minimum – a contour, a few patches of color, shadows cast by objects not represented directly. Finally, new forms of art such as happenings, performance, and installation turned art explicitly participational – a transformation that, according to some new media theorists, prepared the ground for the interactive computer installations that appeared in the 1980s. (56)

All these new practices of representation demanded an active engagement from the beholder or the reader. In other words, we could say that various media foster interactivity distinctively. When it comes to new media, in particular to computers, we need to understand what particular kind of interactive participation it demands from the user. What needs to be understood about interactivity with regard to the new media is the nature of interactivity and the different “kinds of interactive structures and operations” it facilitates (56). We cannot merely state that computer is interactive.

One of the most significant things that have happened in recent decades is human-computer interface (HCI) of which the Graphical User Interface (GUI) is the dominant form. The term human-computer interface denotes “the ways in which the user interacts with a computer” (69). Human-computer interface includes the computer monitor, the CPU (Central Processing Unit) and all the input and output peripherals connected to the computer. The metaphors used to conceptualize the
organization of data in computers are also an important part of the human-computer interface. HCI also includes “ways of manipulating data, that is, a grammar of meaningful actions that the user can perform on it” (69). A range of functions, generally provided by this interface, are create, delete, edit, copy or rename a file; start or stop a program; list the contents of a file or directory (collection of files); set date and time of the computer.

According to Manovich, the human-computer interface acts as a code carrying its own cultural messages by gelling together different media on a single dynamic window frame. Building on Whorf-Sapir hypothesis which says that “human thinking is determined by the code of natural language [and hence] the speakers of different languages perceive and think about the world differently,” Manovich argues that the computer interface in the form of a code imposes its own model of the world, its own ordering and logical system, or its own socio-cultural ideological forms on the user (64). The code is not a transparent window on the world. If it facilitates a particular view of and relationship with the world, it also, at the same time, delimits or excludes other possible ways of understanding and relating. Manovich emphasizes this “non transparency of the code” in all socio-cultural construction of the world, be it the pre-industrial world, the industrial or the postindustrial world (64).

A hierarchical file system assumes that the world can be organized and understood in a hierarchical way whereas a hypertextual model of the World Wide Web assumes that the world can be organized and understood in a non-hierarchical way ruled by metonymical relationships. The interface not only “shapes how the
user conceives of the computer itself… [but] also determines how users think of any media object accessed via a computer” (65). For instance, take the example of ‘cut and paste’ operations available in all software running under the modern GUI: these two operations render insignificant the traditional distinctions between spatial and temporal media as the user can cut and paste regions of space or parts of temporal composition exactly the same way (for example, the user, on the one hand, can cut a part of an image, a video or any number of pixels from an image, whereas on the other hand, she may transfer different kinds of files from one drive to another arbitrarily). In the culturally dominant form of Graphical User Interface (GUI), the interface acts as a kind of Lacanian mirror looking at which the users are supposed to make sense of their own self and their relationship with the world.

As more and more institutions and everyday activities of society are computerized, more and more socio-cultural interaction and forms will become computer-based. In their free time, people nowadays surf the net, hear songs or see movies on the computer. Thus most leisure activities already include the use of computers in one form of another. We are already in contact with the computer from the morning to the end of the day. That is, almost all cultural interaction, sharing and participation are taking place with the use of computers. “[W]e are no longer interfacing,” argues Manovich, “to a computer but to a culture encoded in digital form” (70).

There have always been cultural interfaces at work in the history of human society which allowed human beings to interact, share and relate among themselves by allowing certain forms of cultural language and perception. Manovich defines as
a *cultural interface* a human-computer-cultural interface which denotes as “the ways in which computers present and allow us to interact with cultural data” (70). Cultural Interfaces include designs of various websites, multimedia encyclopedia, computer games, online museums and magazines, window and software interfaces and other new media cultural objects. The two significant cultural interfaces before the emergence of human-computer-culture interface were the “printed word” and “cinema” (71). The language of cultural interface at any point of time is largely made up of or mediated by already familiar cultural forms. The printed word was one of the most important cultural interfaces of the world of the Renaissance. Printing was invented in the middle of the fifteenth century by Johannes Gutenberg. When we use the expression the ‘printed word’, we mean a set of conventions developed over the course of many centuries and that have come to rule our thinking as they are shared by numerous forms of printed matter from books, magazines to instruction manuals. These conventions are a rectangular page containing paragraphs, leaving margins on both sides of the page, sequential order of the pages, use of images to illustrate text, table of contents, an index and a particular reading order from left to right. The same is the case with cinema. With the coming of ‘cinema’ came moving camera, editing techniques, sampling of time, narrative conventions, spectator activity, etc. Manovich holds that

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  [e]ach of these traditions [cinema, the printed word and the human-computer interface] has developed its own unique way of organizing information, presenting it to the user, correlating space and time, and structuring human experience in the process of accessing information. (72)
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Thus both the printed word and the cinema brought with themselves their own language, perception, reception, and representational regime. The human-computer-cultural interface is a recent phenomenon and as such has a relatively short history. Hence we need to better understand its historical emergence and the way it is mediated by other cultural forms.

We may consider how the cultural interface of the printed word has shaped subsequent cultural forms. Text is one of the most significant media types even in the age of computers and virtual reality; Manovich calls it the “metalanguage of computer media” (74). Most of the advanced computer languages use English as a nearly universal language for programming; coding is mostly done in English; syntax and semantic errors are reported in English (no doubt many of the new versions of Windows are also available in other languages). The formatting of an HTML page, the pixel values of a digital image or the co-ordinates of a 3-D objects in softwares like Maya, 3D Max are all represented through text whether alphabetical or numeral. Since text, as noted by Manovich, is the “metalanguage” of computers, the cultural interface of computers must also inherit the principles of texts’ organization developed by human civilization through successive ages. Of these principles, the invention of the page and the way it is organized are very crucial – it is a rectangular surface, consisting of paragraphs in certain order, margins left on both sides of the text; each page is related to other pages in a certain way. Practices based on these principles were developed further with the coming of computers.
The page came into existence roughly in the first centuries of the Christian era. Before that, the clay tablet and the papyrus roll were used to disseminate information. Subsequently, in the Christian era, these were gradually replaced by codex. Codex is a “collection of written pages stitched together on one side” (74). For a long time codex remained the principal medium to share information. Thereafter with the invention of the printing press, the book came into existence and became the central medium.

Computer was invented in the middle of the twentieth century. Initially a computer was used as a calculating machine only. It was in the eighties that human-computer-cultural interface came into existence when, in 1984, Apple launched a graphical user interface for the first time. In GUI the information was presented in the form of rectangular windows overlapping each other. The user was allowed to switch between windows, to go back and forth and to scroll through like a page. In this way, we can see that the “page interface” and its definitions were stretched to include emerging concepts made possible by the computers. The traditional page got redefined as a virtual page. After that Apple introduced another technology called Hypercard which allowed users to add multimedia elements within pages and link them irrespective of their order. In the same line of innovations, designers created HTML documents, stretching the concept of page even further into new territories. An HTML document is a dynamic and distributed document; its contents are located on different computers connected via a network. Recounting the entire process from the clay tablets to the computers, this step-by-step “virtualization” of the page, Manovich writes:
Messages written on clay tablets, which were almost indestructible, were replaced by ink on paper. Ink, in its turn, was replaced by bits of computer memory, making characters on an electronic screen. Now, with HTML, which allows parts of a single page to be located on different computers, the page becomes even more fluid and unstable.

(75)

It may be noted that the logic of the text’s organization and ordering complemented the physical changes in the topography of the page. An HTML page or a World Wide Web page may be read as a “further development of codex form” or it may also be treated as a return to such primitive forms as papyrus roll in ancient Egypt, Greece and Rome (Manovich 75). The web-page has more in common with the papyrus roll as it is read from top to bottom and the opening of a web-page has more affinity with unrolling of the papyrus roll than with the sequential turning of pages in a printed form. Reading is no longer linear; page is not read front to back only.

Another important property of the web page is that it is a space which allows distinctive elements to be embedded in a single entity. A web page embeds different media elements like text, images, animation, digital videos and sounds into a single entity within one rectangular frame we call web-page. What this embedded nature of the web-page means is that the contents are no longer fixed or tied to a physical medium on which they appear, and consequently content becomes free, fluid, and dynamic. As a result, the old dichotomies like content/form and content/medium are rewritten as “content-interface” in the new media (66). That same type of data can be interfaced to the users in multifarious ways. The content/interface is not a
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dichotomy in the categorical sense of the term that there is a content which is given form in (or on) a particular medium. For example, a writer can write a novel or a poem on a given physical medium such as ‘book’. The physical medium in the form of a book pre-exists. In the new media, the content and interface are produced almost at the same time; an interface organizes or presents content in its peculiar form. This is particularly true of “dynamic new artworks” in which “the data is created on the fly, or, to use new media lingo, at run time” (67). In the case of a website or interactive multimedia applications, data already exists before the user logs in. The production of data at ‘run time’ has become possible because of the numerical representation of data in new media and the modular nature of new media. The logic of new media endorses the theoretical perspective that content and form cannot be separated which were once upon a time thought to be separable. In other words, the code is not transparent.

The relationship between content and interface raises the question of whether the new media objects are not just “information designs” (217). The information which is in a quantified form in the computer can be rendered in multiple designs. Manovich says that all new media objects have an informational dimension but when we refer to new media objects as artworks we refer to the more traditional “experiential or aesthetic dimensions, which justify their status as art rather than information design” (66). Arguing further, he says:

These dimensions include a particular configuration of space, time and surface articulated in the work; a particular sequence of the user’s activities over time in interacting with the work; a particular formal,
material, and phenomenological user experience. And it is the work’s interface that creates its unique materiality and a unique user experience. To change the interface even slightly is to change the work dramatically. From this perspective, to think of an interface as a separate level, as something that can be arbitrarily varied, is to eliminate the status of a new media artwork as art. (67)

We need to be aware of the intricacies involved in the production of new media objects and their categorization while making attempts to understand new media artworks.

1.3 Database and Narrative: Decoding the Cultural Forms

Database is the backbone of new media technologies and plays a central role in all forms of new media artistic practices. It is the underlying structure of any media object or process. It has become, as Manovich notes, the symbolic form of our contemporary age. It is the logic of the database that now rules our practices for organizing, archiving, managing and storing enormous human knowledge and cultural artifacts which we are now able to produce at a breakneck pace. Database also has its historical precedents in the form of libraries and museums. Manovich dwells on the relationship database and narrative share between each other. According to him, both database and narrative represent two ways of understanding, ordering and relating with the world. Each attempts to organize human experience and lived human memory in different ways. Manovich believes that “competing for the same territory of human culture, each claims an exclusive right to make meaning out of the world” (225). He says that
If after the death of God (Nietzsche), the end of grand Narratives of Enlightenment (Lyotard), and the arrival of the Web (Tim Berners-Lee), the world appears to us as an endless and unstructured collection of images, texts, and other data records, it is only appropriate that we will be moved to model it as a database. (219)

Database and narrative are not mutually exclusive but merge into each other at many points. In computer games, the narrative plays a central role; but they basically consist of databases of different kinds of information that is retrieved according to the user’s actions.

The word ‘database’ is composed of two words data + base. Data is the plural form of the Latin word datum which means “a thing given” or something given and base is from the Latin basis which means ‘foundation’ (Delahunty 91). Database may be defined as a “structured collection of data” (Manovich 218). There are different types of databases, like hierarchical, network, relational and object-oriented. All databases use different modelling structures to organize data. For instance, in hierarchical databases data is organized in a tree-like structure. Network database follows hierarchical model but it establishes many to many relationships among data elements. Relational databases are the most common form of database management today. It relies on the concept of ‘tables’. All types of data are stored in tables and each table is given a unique name. Object-oriented databases organize data in the form of objects which are further organized into hierarchical classes. Each object inherits the properties of the class it belongs to. Christiane Paul in her
article “The Database as System and Cultural Form: Anatomies of Cultural Narratives” defines ‘database’ as follows:

A database essentially is a system that comprises the hardware that stores the data: the software that allows for housing of the data in its respective container and for retrieving, filtering, and changing it, as well as the users who add a further level in understanding the data as information. (96)

Database is the logical culmination of the “tradition of ‘data containers’ such as book, a library, a museum, an archive or Wunderkammer” (Paul 95). At the most basic level, it is a collection of items on which the user can perform certain functions like search, sort, view, and navigate.

In this sense most new media objects are databases. Therefore, the form and logic of database encourages a unique kind of interaction and participation which significantly affects the experience of the user; as such it will certainly be quite different from reading a novel or watching a cinematic narrative. Database can be understood as a specific cultural form as it allows users to experience it quite distinctly from other forms of organizing experience and knowledge. When we think of the database as a cultural or symbolic form, we are considering how the logic of the database is imposed on cultural production (organization and dissemination of knowledge, data and information). Simultaneously, we are also accounting for innovative aesthetic strategies which are employed by the new media artists to exploit the potential of the database for designing interfaces to different databases of varied types of cultural production (which in turn makes it an aesthetic practice in
itself). And this amounts to creating aesthetics of database as a cultural or symbolic form by inventing creative artistic practices of organizing information and data. The challenge for the contemporary artists, as Victoria Vesna puts it, is “[h]ow does one represent the information without dehumanizing it” because in an age of information overflow, the questions of access, organization and representation become fundamentally political (X-XI). One can find many examples where artists are trying to build database aesthetics. Two of the best known interventions are Web Stalker (1997) by the I/O/D collective and Maciej wisniewski’s Netomat (1999). As the web-page became a new cultural convention, these two web browsers attempted to create a different kind of interface for the users at the point where s/he puts a query into the browser. When a user enters a URL (Uniform Resource Locator) for a particular page in the Web stalker, it “displays all pages linked to that page as a line graph” (Manovich 75). Web stalker’s result of that URL will be a network of links where each node represents a page. Web stalker accentuates hypertextual nature of the Web. Similarly, Wisniewski’s Netomat is a browser that radically questions the HTML web-page format of engaging with the internet. What Netomat does instead is it extracts images, audios, videos, texts or any other type of data, as requested by the user, collects it and lets it float on the computer screen. Both these browsers try to create new database aesthetics by articulating a different kind of interface to the database and refuse to follow the page metaphor. They create their own metaphors and ways of navigating the internet, “a graph showing the structure of links in the case of Web Stalker, a flow of media elements in the case of Netomat” (75). Another example of this can be standalone application software Visual Thesaurus. Visual
Thesaurus displays the results of its search for a word in the form of visual links. Each different-colored node shows whether the forking links from that node are for adjectives, verbs or nouns. And each word is an active link which can be further clicked for more information. Manovich corroborates this attempt of new media artists when he says that the time has come to develop a “poetics, aesthetics, and ethics of this database” (219).

Another significant difference between database and narrative is the relative privileging of paradigmatic and syntagmatic relationships respectively. These two concepts are derived from Saussure’s theory of language. Saussure said that there are two kinds of relationships in language, paradigmatic and syntagmatic. Syntagmatic relationship is the relationship among different words in a sentence along the horizontal axis. Paradigmatic relationship is the relationship among words along the vertical axis that can take the place of other words. Database privileges the paradigmatic axis of the paradigm/syntagm pair, whereas narrative favours the syntagmatic axis. In narrative, the elements of syntagm are materially present (syntagm is explicit) and paradigmatic elements are present in absentia (paradigm is implicit) whereas in the case of databases this relationship is reversed. In databases the paradigm is materialized (paradigm is explicit) and the narrative (syntagm) is de-materialised.

New media art-objects are a product of complex interactions between technology, artistic and cultural practices, modes of representation and a particular kind of skilled labour. For a rigorous and serious critique of new media artifacts and the artistic practices engendered by such art-objects, we must take into account the
respective peculiarities of above mentioned layers and their complex dynamic interplay, together with the aesthetics and signifying strategies employed and adopted by artists coming from different artistic backgrounds. At the same time, critical attention should be paid to how particular forms of technologies gradually become the dominant cultural forms of an era, and what the implications and potential consequences of this phenomenon are. New media has certainly brought into visibility radically novel and innovative ways of ordering, organizing, accessing, retrieving and transporting all kinds of artistic and cultural production by breaking down that production into its constituent bits and bytes. With this the central question of how software interfaces, including the interfaces of operating systems, software applications, websites and other creative applications are designed gain significant socio-political dimensions. This is important because the organization, ordering and representation of vast amount of information, which remains in endless flow, determines the privileging of a particular way of not only relating, understanding, representing and ordering the world, but also of shaping the very way of, to use a Heideggerian term, being-in-the-world.

The new media clearly has profound and far-reaching cultural, epistemological and political implications. Once literary writing enters the new media, it obviously might not remain what it was before. As a result, the transformations presently underway in the field of literary writing in the form of creative experimentation to create new kinds of literary artifacts by adopting innovative forms of writing practices, which make use of the inherent possibilities of new media technology, have to be studied and analysed in order to critically assess
and examine the nature and specificity of such writings vis-à-vis their embeddedness in new media, together with a scrutinizing eye on the function of these writings in the emerging formations of literary-aesthetic culture.

1.4 Technology and the Poststructuralist Theory: George P. Landow

The idea of hypertext in computer sciences took shape at the time when, on the other side of the Atlantic, critical theorists like Roland Barthes, Michel Foucault, Jacques Derrida and others were questioning the dominant conceptual systems based on centre, hierarchy, and linearity. These developments were taking place from the 1960s onwards. The insights of these theorists have proved fruitful not only for the field of literary studies but for the theory of hypertext also.

Poststructuralism evolved over time into a movement in literary and cultural studies which radically questioned dominant conceptions underlying the liberal humanist tradition in literary studies. George P. Landow’s book *Hypertext: The Convergence of Contemporary Critical Theory and Technology* was one of the first full-fledged and detailed efforts to study the growth of critical ideas in literary theory with special reference to the emergent technological developments. A more recent version of the work was published in 2006 by the John Hopkins University Press under the title *Hypertext 3.0: Critical Theory and New Media in the Age of Globalization*. In his groundbreaking work, Landow attempts to map the relationship between the new media texts and technology in the light of poststructuralist literary theory. He argues that “hypertext has much in common with some major points of contemporary literary and semiological theory, particular with Derrida’s emphasis
on decentering and Barthes’s conception of the readerly versus the writerly text. In fact, hypertext creates an almost embarrassingly literal embodiment of both concepts, one that in turn raises questions about them and their interesting combination of prescience and historical relations (or embeddedness)” (32).

Landow asserts that the new media has afforded us the possibilities to ‘materially’ experience the post-structuralist concepts of intertextuality, fragmentation, de-centering and multi-linearity. The theorists of literary hypertext, like Stuart Moulthrop, Robert Coover, Pierre Levy, Michael Joyce and Jay David Bolter, have admittedly used the insights of poststructuralist thinkers. The literary hypertext, on the contrary, “had only a limited influence on the method of the humanities” (Bolter 20). Moulthrop makes a perceptive statement with reference to the attitude of literary theorists to new forms of textuality explicitly visualized in poststructuralist theory. He writes

…we must now consider not only the vicissitudes of poststructuralist theory, but all manner of technical innovations as well - not just Barthes’s or Foucault’s réseaux of intertextual relations but also actual electronic networks such as the internet and the many strange forms that propagate there. [As] we pass from theorization to praxis…we find our ideas caught up in things. (Moulthrop 225-226) Barthes’s distinction between the writerly text and the readerly text, Bakhtin’s idea of polysemous and dialogic nature of literary language, Derrida’s ideas about de-centering, intertextuality, textual openness and the infinite play of signifiers, and Foucault’s questioning of the category of author are some of the central insights
which are further worked on by the theorists of hypertext. Landow thus observes, quoting J. Hillis Miller, that the relationship between critical theory and computing “is multiple, non-linear, non-causal, non-dialectical, and heavily overdetermined. It does not fit most traditional paradigms for defining ‘relationship’” (Landow 46). The relationship, however, has not gained sufficient critical attention of the humanities scholars.

Landow studies the implications of emerging computing technologies for the art of literary writing: how the very processes of reading, writing, the construction of narrative and even literary pedagogy would literally undergo radical transformations in the near future, and what this entails for the study of literature in the age of computers. In the introduction to the book, he notes that “…critical theory promises to theorize hypertext and hypertext promises to embody and thereby test aspects of theory, particularly those concerning textuality, narrative, and the roles or functions of reader and writer” (2). He brings to light “hypertextual Derrida” and “poststructuralist Nelson” through a careful reading of the discursive relationship between critical theory and technology during the second half of the twentieth century (2).

1.5 Hypertext and the Workings of the Human Mind

The word ‘hypertext’ is composed of two parts ‘hyper’ and ‘text’. The *Oxford Dictionaries Online* defines the word ‘hyper’ as excited, highly energetic and nervous. The prefix ‘hyper’ has Greek roots also, meaning “over”, “above” and “beyond”. The word ‘hypertext’ was coined by Ted Nelson who followed Vannevar Bush and Douglas Englebart in developing his own understanding of hypertext
systems. Vannevar Bush was an American engineer whose job as Director in the Office of Scientific Research and Development was to organize research activities of leading American scientists. The aim was the application of science to warfare. In 1945, Bush wrote a thought-provoking article in the *Atlantic Monthly* titled “As We May Think”, subsequently reprinted in many anthologies of new media history. He talked about the heaps of information that we humans have been able to produce and accumulate. He remarked that our system for storing this vast storehouse of information is not efficient. The process is very hectic and time-consuming, and as a result researchers waste a lot of time trying to find the required information. To speed up this process of access and retrieval, he designed a storage machine based on the workings of human mind called *Memex* to organize the information. Bush visualized this machine on the basis of his understanding of the human mind. He writes that the human mind

…operates by association. With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts, in accordance with some intricate web of trails carried by the cells of the brain. It has other characteristics, of course; trails that are not frequently followed are prone to fade, items are not fully permanent, memory is transitory. (Wardrip-Fruin and Montfort 44)

The challenge facing Vannevar Bush was of information access, storage and retrieval. Bush notes that even if man cannot “…duplicate this mental process artificially, [he] certainly ought to be able to learn from it” (44). Faster accessibility is possible, as he visualized, through a machine he named “memex”. He explained
memex as a device “…in which an individual stores all his books, records, and communication, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory” (45). This device would make the accessibility and retrieval of vast amounts of information not only efficient but faster and easy. This is so because it will work on the principle of “selection by association, rather than indexing” (44).

Landow writes that two things should be noted with reference to Bush’s contribution. Firstly, it was Bush’s conception of memex which enabled him to conceive of reading “as an active process that involves writing, [since] while reading, one needs to append one’s own individual memory, transitory thoughts and reactions to texts” (Landow 8). Secondly, it was the ability of Bush to highlight “the shortcomings of one form of text to suggest a new technology, [which, in turn, led] to an entirely new conception of text” (8). He finally says that what Bush wanted was to “replace linear fixed methods” with “poetic machines – machines that work according to analogy and association, machines that capture and create the anarchic brilliance of human imagination” (10).

Douglas Engelbart, a famous computer pioneer, also contributed significantly to the development of ‘hypertext’. He invented some of the most commonly used devices and interfaces in today’s world, namely the mouse, the window, the word processor, and the hyperlink (the idea of which was at the time being theorized by Ted Nelson). Engelbart wrote a report entitled “Augmenting Human Intellect: A Conceptual Framework” for the Director of Information Sciences Air Force Office of Scientific Research. His was a preliminary conceptual framework which he deemed essential for an actual practical research program to
begin. In this report, Engelbart talks about his project to build something which would augment the effectiveness of human intellect. He takes the hypothetical example of an architect who wants to design the architecture of a house. The architect is aided by a computer, which functions as his clerk as Engelbart visualizes it. He delineates the detailed process of this engagement between a human and a computer and how the computer would aid the architect in achieving his aim more easily, speedily and accurately. He also sketches out how the architect would benefit from this clerk’s ability to respond to his demands instantaneously and how he would also be able to retrieve his previous trails of thinking processes if he needs.

Engelbart also comments on Bush’s idea of ‘Memex’ and its implications for human beings in this report. He writes: “The Memex adds a factor of speed and convenience to ordinary file-system (symbol-structuring) processes that would encourage new methods of work by the user, and it also adds speed and convenience for processes not generally used before” (Engelbart 99). The most significant part of the report is the one in which he speaks about “Associative-Linking” possibilities which later got actualized in the form of ‘hyperlink’. Engelbart defined augmentation “fundamentally as a matter of organization” (Engelbart 97).

Bush and Engelbart were grappling with the problem of designing a machine that would augment human memory and cognition. This required a new kind of data organization technique which would facilitate rapid access and faster retrieval of available information. At the most basic level therefore, we can say, following Janet Fiderio, that hypertext may be defined as

a DBMS [Database Management System] that lets you connect screens of information using associative links. At its most
sophisticated level, hypertext is a software environment for collaborative work, communication, and knowledge acquisition. Hypertext products mimic the brain's ability to store and retrieve information by referential links for quick and intuitive access. (237)

We may remember that the idea of ‘hypertext’ originated in the field of computer sciences and refers to a new data organization methodology that enables users to access and retrieve information in a faster and more interactive way. None of the above-mentioned visionaries of the idea, however, used the term ‘hypertext’. The language and conceptual vocabulary used were very complex and difficult for common people to understand. It was thus left to future researchers to translate their ideas into a layman’s language. It was Theodor Holm Nelson (alias Ted Nelson) who took upon himself the responsibility of disseminating information regarding computers among the general public in a language that was relatively more understandable, exciting and enticing.

In 1974, Ted Nelson wrote a book titled *Computer Lib/Dream Machines*. The aim of the book, as he himself states, was to minimize “the chasm between laymen and computer people” (Nelson 303). This was the time when IBM dominated the scene of computers. An aura of mystery prevailed around computers since nobody was giving information about its working and possible uses to the public and access to the computers was strictly in control of the professionals. People regarded computers as cold, hard, and impersonal box machines. On the other hand, the computer was becoming such a common machine at all levels of social activities and practices that Nelson considered it urgent that “everybody should understand computers” (303). The book was meant hence only for general
readers, particularly those who were completely illiterate when it comes to computers and who were somewhat scared of this machine. The book became “a revolutionary manifesto calling for the liberation of computers and for the liberation of people through computers” (Juliano “Ted Nelson and the All-Purpose Machine”). In his foreward to the 1987 edition, Stewart Brand wrote about Ted Nelson, characterizing him as “the Tom Paine of the personal computer revolution. His 1974 tract, Computer Lib/Dream Machines, had the same effect as Paine’s Common Sense - it captivated readers, informed them, and set them debating and eventually marching, rallying around a common cause many of them hasn’t realized was so worthy or even a cause before…. The enemy was Central Processing, in all its commercial, philosophical, political, and socio-economic manifestations” (qtd. in Wardrip-Fruin and Nick Montfort 301).

He wrote another book titled Literary Machines: The report on, and of, Project Xanadu concerning word processing, electronic publishing, hypertext, thinkertoys, tomorrow's intellectual revolution, and certain other topics including knowledge, education and freedom in 1981. The title of the book itself makes it clear to the reader what it is about. Primarily, it tried to articulate Nelson’s project Xanadu. It was while working on his dream project Xanadu that Nelson first used the terms ‘hypertext’ and ‘hypermedia’ in this book. It was Nelson who first attempted to understand hypertext as a general method of organization of documents and ideas. In fact, the transposition of the term ‘hypertext’ into the field of literary experimentation was first achieved by Nelson. He defines hypertext as follows:

…Well, by ‘hypertext’ I mean non-sequential writing—text that branches and allows choices to the reader, best read at an interactive
screen. As popularly conceived, this is a series of text chunks connected by links which offer the reader different pathways. (qtd. in Koskimaa)

At the same time it should be noted that for Nelson literature meant nothing but “a system of interconnected writings” (Nelson 445). However, Nelson’s limited understanding of literature must not blind us to his contribution to the conception and theorization of the idea of hypertext, and consequently to the growth of hypertext fiction. He made hypertext part of the popular imagination. It goes to his credit that future creative writers, hyper media artists and information designers have all creatively employed his understandings of the idea of hypertextual structuring of information or links within a particular network. The idea of hypertext employed later by writers was fundamentally based on Nelson’s understanding of hypertext. An idea of the ordinary hypertext can be grasped on the basis of the following graphic representation:

!["ORDINARY" HYPERTEXT](image)

In the above diagram hypertext is shown as a network-like structure composed of blocks of texts, which may be described, using Roland Barthes’s term, as *lexias*, linked with other lexias through some kind of linking structure.

1.6 Hypertext: Linking and the Dispersal of Narrative

The central aspect of a hypertext system is ‘linking’ as this is “the element that hypertext adds to writing and reading” (Landow 11). “[E]verything in hypertext,” argues John Slatin “depends on linkage, upon connectivity between and among the various elements in the system” (Delany and Landow 161). The presence of ‘link’ opens up new forms of interweaving of textual components which, in fact, again makes the link “the elemental structure that represents a hypertext as a semic web of meaningful relations” (Burbles 105). Linking, in hypertext, almost becomes the “electronic equivalent of the footnote used in printed books for hundred of years” (Bolter, *Writing Space* 27). The very nature of hypertext opens up manifold linking strategies for the writer. A link is not as simple as it seems to be because it facilitates “associative relations that change, redefine, and enhance or restrict access” in a given hypertextual environment (Burbles 103). The nature and kinds of traversal paths a particular reader may encounter while moving in a hypertextual space depend on linking. Landow discusses the advantages and limitations of various forms of linking (Lexia to lexia unidirectional; Lexia to lexia bidirectional; String (word or phrase) to Lexia; String to String; One-to-Many and Many-to-One) in great detail. He concludes that a fully functional hypertextual environment requires multisequentiality, and this can be effectively achieved if one employs the one-to-many linking which “permits the readers to obtain different information from
the same textual site” (Landow 13). In such a hypertextual structure, which is not
only flexible but which branches out and branches in at every link, the reader can
enter from anywhere and her/his starting point becomes her/his point of departure
for the unfolding of narrative. As a result the linear structure of the plot with a
beginning, middle and end dissolves into a multi-linear and multi-sequential
narrative which can be read depending on the reader’s choice of path.

Hypertext is an open-ended, dynamic and polysemous text, in random
motion, infinitely extending itself, forming new relationships in a shared network,
and with no clear-cut boundaries. There are no ‘beginnings’ and ‘endings’ in
hypertext, the reader is always in a network of lexias. Hypertext has been
categorized as the realization of Barthes’s idea of the “writerly” text. In S/Z, Barthes
says:

…the goal of literary work (of literature as work) is to make the
reader no longer a consumer, but a producer of the text. Our literature
is characterized by the pitiless divorce which the literary institution
maintains between the producer of the text and its user, between its
owner and its consumer, between its author and its reader. (4)

For Barthes, the distinction between the “readerly” text and the “writerly” text was
crucial as it enabled him to distinguish some traditional literary works from those
new ones which consciously broke away with the realist paradigm of the novel. This
distinction, as Landow says, is essentially a distinction “between text based on print
technology and electronic hypertext” (5). Barthes further writes:
The writerly text is a perpetual present, upon which no consequent language (which would inevitably make it past) can be superimposed; the writerly text is ourselves writing, before the infinite play of the world (the world as function) is traversed, intersected, stopped, plasticized by some singular system (Ideology, Genus, Criticism) which reduces the plurality of entrances, the opening of networks, the infinity of languages. (Barthes, S/Z 5).

The reader in a writerly text becomes an active co-producer of meaning. S/he no longer remains a passive receiver of pre-determined reading or meaning as happens in a readerly text. A readerly text may be defined as a text which is simply read by the reader; s/he does not participate in its unfolding in any creative way. Hypertext technology creates the possibility of weaving a writerly text which comparatively gives more freedom to the reader as an active participant in the construction of meaning by making her/him part of the unfolding of the narrative. “The multiplicity of hypertext,” Landow argues, “which appears in multiple links to blocks of text, calls for an active reader” (6). In hypertext fiction, the text is multi-linear: it is a text that links, connects and branches out in a non-linear manner to various nodes that are part of it.

The notion of ‘text’ has gained sufficient attention in recent critical literary theory. It has been used to refer to the very constructedness of a literary work of art which means that any literary work is basically a textual composition brought into existence via a particular artifice, a strategy and a process of signification mobilized within a given network of signs. A text is basically a produced object. The notion of
the text refers to the textuality of any literary piece, thereby foregrounding its open, fluid, dynamic and ever-fleeting nature in terms of its meaning, whereas the idea of work generally refers to a stable, fixed and complete work of art whose meaning has been coded once and for all. Barthes, in his essay “From Work to Text”, develops this distinction further and argues in favour of the emergence of a new object of study called text. This object is acquired by “the displacement or overturning of previous categories” (“From Work to Text” 74). As a result, there occurs a shift in our understanding of a literary artifact as it cannot be categorized as work as has been the case so far. Barthes thus criticizes the dominant notion of a literary work. Work is readerly, but text is writerly. This distinction should not be understood as a new classification which sees avant-garde writings as text and classical writings as work. In fact, for Barthes, an ideal text is

…a galaxy of signifiers, not a structure of signifieds; it has no beginning; it is reversible; we gain access to it by several entrances, none of which can be authoritatively declared to be the main one; the codes it mobilizes extend as far as the eye can reach, they are indeterminable . . . ; the systems of meaning can take over this absolutely plural text, but their number is never closed, based as it is on the infinity of language. (emphasis in original; Barthes, S/Z 5-6)

The text is never given; it is actively produced by the reader. An electronic text always exists in a dispersed and open form, having perhaps no essential and inalienable form; it is a process taking shape when certain commands and procedures are employed. In computer lingo, we could say that a literary artifact is
more of an assembled product, composed of fragments, references, allusions, metaphors and other such literary devices as a result of which it “only exists in the movement of a discourse” (“From Work to Text” 75). “[T]he text is held in language” says Barthes (75). Consequently, it can be experienced, Barthes further says, “only in an activity, a production” (75). This further compels us to see a literary work as more of an aggregate of a web of relationships, a kind of network held in a particular structural form by differential linguistic signs. This leads to the foregrounding of the underlying fluid nature of all texts. Landow writes that “such montage like textuality marks or foregrounds the writing process and therefore rejects a deceptive transparency” which has been the hallmark of print-centered understandings of the writing process (Landow 35). An example of this would be T.S. Eliot’s *The Waste Land* (1921). It is an instance of non-linear writing; there is no sequential progression of narrative/s in the poem; situations, themes, events, mythologies and histories are juxtaposed. It comprises of manifold literary genres and devices, like interior monologue, daily speech, elegy, mythology and a World War I song. Consequently, the reader, instead of reading the text, traverses through it, creating and engaging in a fresh poetic experience.

One can say that hypertext is basically about how the text is linked together, its physical form, its structure, its emerging materiality and the kind of reading practices it entails. It is not about “the plot, or the narrative, or any other well known poetic unit” (Aarseth 762). Hypertext is a structuring technology rather than a new technique of fiction. Of course, a new structuring of the text definitely affects the narrative, plot and meaning of the text.
In the craft of literary writing, narrative has been the most decisive element since literature (as we understand this word now) emerged on the aesthetic landscape of modern times. Hypertext has thrown up new possibilities and opportunities to create de-centered, intertextual and multilinear forms of narrative. Virginia Woolf, in her essay “Modern Fiction,” proclaims:

The mind receives a myriad impressions — trivial, fantastic, evanescent, or engraved with the sharpness of steel. From all sides they come, an incessant shower of innumerable atoms; and as they fall, as they shape themselves into the life of Monday or Tuesday…. If a writer were a free man and not a slave, if he could write what he chose, not what he must, if he could base his work upon his own feeling and not upon convention, there would be no plot, no comedy, no tragedy, no love interest or catastrophe in the accepted style, and perhaps not a single button sewn on as the Bond Street tailors would have it. Life is not a series of gig lamps symmetrically arranged; life is a luminous halo, a semi-transparent envelope surrounding us from the beginning of consciousness to the end. (9)

At the level of narrative, conscious experimentation arguably started with the modernist moment in literature which is generally associated with the writings of T.S. Elliot, Ezra Pound, Virginia Woolf, James Joyce, W.B. Yeats, Franz Kafka and others. These writers, against the realist tradition in literature, used the available literary devices and tactics to create new forms of narrative and storytelling to foreground the excess of reality which escaped the realist novel and to carve out a
more comprehensive understanding “of the immense panorama of futility and anarchy which is contemporary history” (Elliot, Selected Prose 177).

The dominant notion of the plot in literary theory as defined by Aristotle in Poetics is of a plot that should have a fixed sequence and that must follow the principles of “probability or necessity” (Aristotle 14). Aristotle further explains a well-constructed plot as an “organic whole” which follows a “probable or necessary sequence of events,” having a “definite beginning, a middle and an end”, and being of a “certain magnitude” (10-25). Writing in the new media effectively contests and destabilizes these notions which have been ruling our conceptions of the plot in literary forms since Aristotle. It does not mean that linearity is absent in writing in the new media; rather it becomes, as Landow argues, “a quality of the individual reader’s experience within a single text and his or her own experience following a reading path, even if that path curves back upon itself or heads in strange directions” (184). The reader has been empowered in manifold ways. She is now free to choose any narrative route.

The distinguishing characteristics of writing in the new media are the non- or multi-linearity of the narrative, its “multivocality, and inevitable blending of media and modes, particularly its tendency to marry the visual and the verbal” (Landow 183). Literature in print form was, particularly until the advent of self-consciously postmodernist writing, predominantly linear in structure, narrative and plot. Against the notion of linearity, hypertext “challenges narrative and all literary form based on linearity, [and] calls into question ideas of plot and story current since Aristotle” (181). Espen J. Aarseth in his article “Nonlinearuty and Literary theory” defines a nonlinear text as follows:
A nonlinear text is an object of verbal communication that is not simply one fixed sequence of letters, words, and sentences but one in which the words or sequence of words may differ from reading to reading because of the shape, conventions, or mechanism of the text.

(Wardrip-Fruin and Montfort 51)

Aarseth further points out that even “nonlinear texts can be very different from each other, at least as different as they are from the linear text” (51). Consequently, it should always be taken into consideration what kind of nonlinearity one refers to when one talks about electronic texts since we can always have nonlinear texts in print form as well. And in the case of hypertext, Aarseth further argues, “the concept refers only to the physico-logical form (arrangement or appearance) of the texts, and not to any fictional meaning or external reference they might have” (52). To appreciate hypertext, one does not necessarily need to do “away with [all kinds of] fixed linear text… [or] with all linearity [and] formal coherence,” but it surely requires courage to respect coherence that “may appear in new and unexpected forms” (Landow 186). Landow acknowledges the fact that we must examine “prehypertext attempts to create nonlinear or multilinear literary forms” in order to better evaluate and understand the kind of nonlinearity offered by the use of hypertext (187). Moreover, as Roy Harris points out, “[o]nce it is theoretically conceded that language is not confined to oral expression but may also be expressed visually then the principle of linearity has to be abandoned as a foundational principle of linguistics. For visual signs are not necessarily linear” (Harris 39).
What is probably of the greatest importance is that writing in the new media dislocates the tripartite relative stability of authors, readers and texts. Collaborative authorship, writerly readership and electronic textuality allow new writing, reading and signifying practices. Bolter sees this change more perceptively than any other theorist of electronic writing\(^4\). The growth of hypertext has certainly problematized our traditional notions of author, reader and the text, increasingly compelling us to re-think the relationship between the author, the reader and the text vis-à-vis the printed form of the text, and simultaneously develop subtler and more critical understanding of the coming changes in their mutual relationship with the emergence of a new kind of text which is fluid, dynamic, malleable and that remains in continuous flow.

1.7 **Hypertext and Authorship**

Landow observes that the quality that characteristically makes networked hypertext environments so scary is that they produce a hitherto unimaginable notion of authorship which is essentially participatory and collaborative, thereby question the very notion of authorial agency, property and individuality that came into existence with the printing press which facilitated mass production of fixed products in the form of book. At the same time, hypertext challenges the dominant

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\(^4\) “Electronic writing emphasizes the impermanence and changeability of text, and it tends to reduce the distance between author and reader by turning the reader into an author. The computer is restructuring our current economy of writing. It is changing the cultural status of writing as well as the method of producing books. It is changing the relationship of the author to the text and of both author and the text to the reader” (Bolter, *Writing Space* 258).
conceptions of creativity. Creativity no longer remains an intrinsic characteristic of an individual genius, rather it become a more democratic association of individual all of whom posses special talents and qualities. It becomes collaborative (Landow 110). Writers often lament the decline of the author’s prestige and the associated romantic notion of authorship. A certain kind of horror is also expressed at the “death of the author,” something akin to D’Annunzio’s\(^5\) melancholia as is clear from the following text, quoted in Luca Toschi’s essay “Hypertext and Authorship”: “The manuscript is linked, I would almost say has an umbilical link, to the being of the writer. The printing press cuts this beloved terrible link” (197). The desacralization of the figure of the author, as Sven Birkets correctly remarks, “has much to do with the climate of our current intellectual culture, a climate in which all manifestations of author-ity are seen as suspect’ (Birkets 159). Alvin Kernan’s remark, in The Death of Literature, perceptively observes:

The Bastilles of old literature, the reality of “literature,” the creativity of the author, the superiority of authors and literary works to critics and readers, and the integrity of the literary art work, have now all been stormed. The attackers carried many banners, but all were associated with the political radicalism of recent decades, and all drew their authority in varying ways and degrees from two closely connected skepticisms, structuralism and [p]oststructuralism or deconstruction.… (Kernan 76-77)

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\(^5\) Gabriele D’Annunzio was an Italian poet, journalist, dramatist and novelist who is notoriously famous for his influential role in Italian Fascism.
The well-known de-centering of the human subject led to the fall of the idea of author-as-God. The ‘self’ is no longer understood as a transparent, rational and unified entity complete in itself. It is a composite “fabric of relations that is now more complex and mobile than ever before… a person is always located at ‘nodal points’ of specific communication circuits, however tiny these may be” (Lyotard 15). Furthermore, it was the printing press that had helped to stabilize the notion of individual author and genius. “[T]he cult of the author and the printing press are inextricably linked; you cannot have one without the other,” writes John Tolva (Tolva, “The Heresey of Hypertext: Fear and Anxiety in the Late Age of Print”, par. 5). Michel Foucault begins his essay “What is an author” with the following observation:

The coming into being of the notion of “author” constitutes the privileged moment of individualization in the history of ideas, knowledge, literature, philosophy, and the sciences. (Foucault 101)

It was the stability, longevity and permanence of words on the printed page which had entailed the ideal of individual authorship. Just like the ‘self’, the figure of the author is, as Barthes notes, “a modern figure, a product of our society insofar as, emerging from the Middle Ages and English empiricism, French rationalism and the personal faith of the reformation, it discovered the prestige of the individual…” (Barthes, Image-Music-Text 143).

It is not the ‘flesh-and-blood human person’ that is under attack; but the valorization of creativity and individuality through the figure of author and his genius, which has become the “epitome and culmination of capitalist ideology”
Singh 73

(Barthes, “The Death of the Author” 186). It does not mean that hypertext has no author. “Hypertext,” in the words of Landow, “[only does] away with certain aspects of the authoritativeness and autonomy of text, and in so doing it does reconceive the figure and function of authorship” (91). Hypertext certainly does have an author, but then the status of that figure is more impersonal, “…a continual self sacrifice, a continual extinction of personality,” and may be it is more akin to the kind of impersonality demanded by Stéphane Mallarmé, T.S. Eliot and Jorge Luis Borges (Eliot, Selected Essays 17). In his essay “The Nothingness of Personality,” Borges treats the ‘self’ as nothing but “a mirage maintained by conceit and custom, without metaphysical foundation or visceral reality” (3). Writing, in hypertextual environments, correspondingly changes into collaborative authoring since it “encourages interdisciplinary approaches, by making materials created by specialists in different disciplines work together - collaborate” (Landow 111). Hypertext, moreover, creates the possibility of building “a writing space in which traces of authority persist only as local and contingent effects, the social equivalent of the deconstructed author-function” (Moulthrop 695). The author, as a result, is no longer seen as an inspired genius, in dialogue with himself, contemplating his work perhaps in the lap of nature; affirming and/or legitimizing the meaning of his or her art-object; he or she as an author becomes a site performing different functions, depending on his or her location in the network.

Hypertext creates an active, participatory and intrusive reader, one who infringes on the hegemonic power of the writer and toples it. The advent of hypertext sounded the death knell for what has been characterized as “the
missionary position of reading,” that is, linear reading (Birkets 163). It is important to note here that the role and place of the reader in the production of meaning through her relationship with the text in the sphere of literary studies was already gaining significant critical attention as shown by the rise of the reader-response approach in literary criticism. In this regard, the work of Norman Holland, Stanley Fish, Wolfgang Iser and Roland Barthes reminds us of the fact that the act of reading is not at all passive. The very process of experiencing a literary work becomes central to the development of finding an interpretative framework for the text. The focus shifts from the author and his/her genius to the reader and his or her experience. Barthes shook off the mud of ages from the mummy of the reader and brought the reader to life in the essay in which he buries the venerable and proud figure of the author by stating that “…a text’s unity lies not in its origin but in its destination” (Barthes, “The Death of the Author” 189). According to Barthes, the reader becomes all powerful from now onwards. He also argues that “one place where [the] multiplicity [of any text] is focused… is the reader, not, as was hitherto said, the author” (“The Death of the Author” 189). Wolfgang Iser argues that the participation of the reader in the literary act is central, not marginal. He says:

The [literary] is more than the text, for the text only takes on life when it is realized, and furthermore the realization is by no means independent of the individual disposition of the reader. (Iser 50)

Hypertext, as Landow says, “obviously creates empowered readers, ones who have more power relative to both the texts they read and the authors of these texts” (169). Reading in the space opened up by hypertext is comparatively more participatory
and active in the sense that the reader is free to follow the links of her own choice
and create the text of her own design. To the extent the reader is free, she “can
choose [not only] the order of what she reads but that her choices in fact become
what it is” (Joyce 177). Therefore, in hypertext, “there is no single story of which
each reading is a version, because each reading determines the story as it goes. We
could say that there is no story at all; there are only readings” (Bolter, Writing Space
124). This certainly demands an active engagement, both at the physico-logical and
the semantic-symbolic level, from the reader, as compared to her half-passive
relationship with the print-centered text. In fact, readers “cannot avoid writing the
text, since every choice they make is an act of writing” (Bolter, Writing Space 205).
In “Hypertext and the Changing Role of Readers,” Nancy G. Patterson goes a step
further when she argues that “[h]ypertext gives permission to readers to insert
themselves into the meaning construction process and ‘write’ a text in a way that is
often different from what the author saw” (76). The reader becomes almost the
potential co-author of a text.

The etymology of the English word read comes from the Anglo-Saxon
raedon, the meaning of which is ‘to give counsel, to interpret,’ and which might
have played a crucial role in our understanding of the activity of reading as
essentially related to speech. Tracing the etymology of the Latin word Lego, which
later gave the Romance languages their word for ‘reading,’ Bolter writes that the
word literally means “to gather, to collect” and its meaning extends “to make one’s
way, to traverse” when used figuratively (Bolter, Writing Space 100). Reading, as a
result, can be seen as an activity of traversing possible pathways in the hypertextual
maze. “[R]eading,” Bolter continues “[finally becomes] a process of gathering up signs while moving over the writing surface” (100). Commenting on Landow’s use of the word *active* for the reader in a hypertextual environment, Patterson says that a more appropriate word would be ‘deliberate’ as all kinds of reading acts are active. “Hypertext reading,” she further elaborates, “requires the reader to make deliberate decisions about which path to take within a hypertext web” (Patterson 77). The question is not whether the reader becomes the author of the text or not; a more nuanced approach would be to see how digital texts re-configure the relationship between authors and readers, and between readers and texts, while respecting their distinct network locations within the symbolic order of print-centered systems of writing. Hypertext makes the reader and the writer, as is proclaimed, “co-learners or co-writers, as it were, fellow travelers in the mapping and remapping of textual (visual, kinetic and aural) components, not all of which are provided by what used to be called the author” (Coover 706).

Janet Murray’s conception of “procedural authorship” clearly captures the relationship of the reader to the hypertext on the basis of a distinction between authorship and agency. Going against the grain, she challenges the enthusiasts of the hypertext for not distinguishing “derivative authorship from the originating authorship” (Murray 153). This is so because the users of hypertext “can only act within the possibilities that have been established by the writing and programming” (152). She uses the word “interactor” for the reader/user of hypertext. Whereas the “procedural author,” according to Murray, “creates not just a set of scenes but a world of narrative possibilities,” the interactor, on the other hand, is a “navigator,
protagonist, explorer, or builder, [who] makes use of this repertoire of possible steps and rhythms to improvise a particular dance among the many, many possible dances the author has enabled. [And she is only] the author of a particular performance within an electronic story system” (152-153). This includes the possibility, as highlighted by both Patterson and Landow, of performing a reading not foreseen by the author of the hypertext herself. For Murray, the reader, while navigating through the hypertext, experiences agency and not authorship (153). The reader, or interactor as Murray would name her, is for sure “not the author of the digital narrative, although the interactor can experience one of the most exciting aspects of artistic creation - the thrill of exerting power over enticing and plastic materials” (153).

There is no doubt that the relationship between the author and the reader has not only been strained but has been increasingly questioned by hypertext for its straightforward hierarchical nature. A shifting of roles is certainly underway. “To understand what is new and different about electronic authorship,” argues Richard Grusin, “we need to look at the way in which the network of inscriptions that constitute electronic writing circulates within a heterogeneous social space of cultural, linguistic and technoscientific practices” (53). In our enthusiasm, Grusin says, we invariably tend to commit “the technological fallacy” – the urge to give technology the all-encompassing authorial agency whenever we are confronted by the question of the relationship between the author and the reader. Rather than proclaiming the unfortunate but nonetheless inevitable death of the author, the task confronting techno-literary theorists is to theorize about the relationship between the author and the reader getting re-configured within hypertextual environments, and
about the nature of that re-configuration *apropos* the broader spheres of socio-cultural and techno-artistic practices. This may throw some light on the urgent need to make way for new kind of ‘authorship’ and ‘readership’ necessitated by the new network-oriented digital technologies.

Landow analyzes the hypertext for its nonlinear network-type structure, its linking of what Barthes also called ‘lexias’ (blocks of text), its effect on the relationship between writers, texts and readers, and its role in the emergence of electronic textuality. Critical and theoretical efforts like these in making sense of the new media writing make us aware of the “specificities of the digital media” (Hayles, “EL: What is it?”, par. 3). An important challenge, as Benzi Zhang warns, is too see “…how computer technology influences our understanding and interpretation of postmodern literature and of how computer can be used as a conceptual model for textual analysis in a creative and theoretical manner” (Zhang 119). As computers become the dominant medium of creative expression, interaction and work, they inevitably affect the field of literary studies. It is not a question of some new *novum monstrum*, brought to life by “the sorcery of microchip,” silently intruding into the circumscribed domain of ‘pure’ humanities; it is rather a question of what the two hitherto independent and antagonistic disciplines can share with, and learn from, each other (Birkets 151).

The contributions of both Manovich and Landow are very significant for the present study. The work of Manovich in the form of his book *The Language of New Media* tries to build a comprehensive framework for understanding the language, styles, forms and technical specificity of new media technology with regard to its
relationship with other existing media, mainly the cinema. While doing so, Manovich questions popular understandings of new media and questions common assumptions about its radical newness by highlighting the technical continuities between the old media and the new media. Landow’s work, on the other hand, contributes to the challenge of exploring the complex relationship between new media technology and poststructuralist theoretical edifice. He comes up with new insights on the relationship between theory and technology as he foregrounds how the new media technology finally affords us the possibility of concretely realizing and experience central poststructuralist concepts at a more concrete and material level.