The effect of digital technology on late 20th century and early 21st century culture

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THE EFFECT OF DIGITAL TECHNOLOGY ON
LATE 20TH AND EARLY 21ST CENTURY CULTURE

by

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Liberal Arts Department of Humanities and American Studies College of Arts and Sciences University of South Florida

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The Effect of Digital Technology on Late 20th and Early 21st Century Culture

Jennifer Clarke

ABSTRACT

Recently, artists have begun using digital technology to create new cultural forms in the fields of art, literature, and music, and a new cultural form known as interactive digital multimedia has emerged, which combines elements from the new artistic, literary, and musical forms. Many of these artists have produced works that explore the interactive capabilities of digital technology. These interactive digital cultural forms have encouraged collaborative efforts that would have otherwise been difficult or even impossible to achieve before the advent of digital technology. In addition, this element of interactivity has redefined the traditional relationship between artist and audience. As the line between creator and consumer becomes increasingly blurred in interactive digital cultural forms, it becomes necessary to use terms such as “source artist” and “mix artist” to better define this new artist/audience relationship.

Postmodern theorists such as Roland Barthes and Michel Foucault anticipate this new artist/audience relationship in their writings. More recent theorists, such as Margot Lovejoy, George Landow, and Paul Théberge, writing after the advent of digital technology, have suggested that interactive digital cultural forms and the changing nature of the artist/audience relationship present opportunities for cultural creation and
participation that extend the opportunities afforded by traditional artistic production and consumption.

Works such as the *As Worlds Collide* website, Stuart Moulthrop’s *Victory Garden*, the music of the Chemical Brothers, and Peter Gabriel’s multimedia CD-ROM *EVE* are examples of these new interactive digital cultural forms. These works present navigable constructs (often incorporating elements culled from other source artists) that can be experienced and “re-mixed” by subsequent mix artists who choose to interact with these works. The increased agency provided by these interactive works brings with it new responsibilities for both the source artist and the mix artist.

By encouraging collaboration and experimentation, redefining the artist/audience relationship, and expanding the responsibilities of the source artist and the mix artist, interactive digital media extend the possibilities for cultural creation and participation. As digital technology develops, so do the opportunities for cultural development among society as a whole.
Chapter One – Introduction

Whenever a new means of creative expression is introduced, whether it be in visual art, literature, or music, it challenges previously held notions concerning the art form it affects. It often forces students of an art form to redefine their ideas and decide how this new means of expression will fit into their concept of what art, literature, or music is. Those who create within the affected art form, whether they choose to work with the new medium or not, will usually find their work affected as well. For example, when photography was introduced and artists began to use it to express themselves, painters like Marcel Duchamp also found themselves influenced by the possibilities of the new medium. Duchamp attempted to give his paintings the feel of the multiple-exposure photographic images of Etienne-Jules Marey and the photographic motion studies of Eadweard Muybridge by painting his figures in several stages of motion that appear to occur simultaneously, as he did in *Nude Descending a Staircase, No. 2* (1912). If visual artists, writers, or musicians choose to work within the new medium, they often find themselves able to express creative visions that might not have been possible otherwise.

New creative media come into cultural use in several ways. Sometimes a tool or technique from an unrelated field, such as engineering or the military, will be appropriated by artists and used in a completely new way. Often though, if an artist has a specific goal or vision that can only be expressed through the use of a tool that does not
yet exist, he or she must create that tool. Other artists may then find new uses for that tool as well.

Recently, artists working in visual art, literature, and music have begun using the computer as a tool for creative expression. Not only have artists using this digital technology produced new works within each individual field, but they have also used the computer as a means of combining aspects of these fields into a new cultural form known as digital multimedia. In addition, digital technology is also affecting the audience. In fact, in certain works, the very notion of who is the artist and who is the audience is often unclear. Both creators and consumers of digital culture find themselves having to reconsider their role in the production and development of culture.

Initially conceived in the early part of the 19th century by Charles Babbage and Augusta Ada King, Countess of Lovelace, the modern computer has quickly evolved into a small, high-speed device that is capable of digitally processing input and subsequently outputting data in the manner for which it has been programmed. At first, the computer was seen as belonging exclusively to the realm of science and math, since it could process equations and statistics in a fraction of the time it would take a human. However, as creative scientists and mathematicians began to experiment with the computer’s possibilities, it became clear that this machine could find applications in a wide range of disciplines. In the arts, visual artists, writers, and musicians found the computer to be a useful tool for creative expression, and many even began to write their own programs for the computer in order to accomplish specific creative goals. In this way, digital technology has begun to blur the traditional division between the arts and sciences, as described by C.P. Snow in *The Two Cultures* (1959). In doing so, it has called into
question the traditional concepts of "scientist" and "artist" (Sommerer & Mignonneau, Introduction 13).

As the potential of digital technology was further explored, it was found that one could create interactive art forms that allowed the consumer/audience to make choices and have a hand in determining the form and function of a piece. The first group of visual artists to focus specifically on the interactive capabilities of the computer in the creative process was centered around the Städelschule Institute for New Media in Frankfurt (also known as “The Frankfurt School”) in the early 1990s (Sommerer & Mignonneau, Introduction 11). The nature of these interactive digital works has caused the line between creator and consumer to become blurred, much like the line between artist and scientist. Paul Théberge observes that “with the introduction of digital technologies and their attendant uses, the distinction between production and consumption has become increasingly blurred and, to a certain degree, meaningless” (242). Other critics espouse similar views (Bolter 114; Fleischmann & Strauss 138; Gaggi 103; Landow & Delaney 29; Levy 366). Also, it was found that computers allowed one to have a "virtual presence," especially with the introduction of the World Wide Web. Jeffrey Shaw notes:

One of the pertinent issues in this immaterial cyberspace of forms and ideas is the telepresent extension of our bodies through space and time that these technologies afford us. The technological deconstruction and artistic reconstruction of our identities in the digital ether is an almost meta-physical enterprise. (164-65)

While an artist may physically be in the studio while working on a digital piece online, he or she is also "present," in a sense, in the virtual space of the computer as the piece is created. The viewers (especially if they are interacting with the work) are also both
physically present in front of their computers as well as virtually present in the digital space.

Artist/scientist, creator/consumer, presence/absence — each of these notions is challenged by the digital revolution. It becomes difficult to even use terms like "creator" when discussing digital art forms, since there is no longer one specific entity responsible for the entire piece (Gaggi 139; Lovejoy 9). In this way, the concept of ownership of a piece is also challenged. If a work is altered every time someone interacts with it, then how can any one person claim exclusive ownership of the work? Rather, “the art of involvement . . . places us in a creative cycle, in a living environment in which we are always already co-authors . . . It is an art that bears no signature” (Levy 367). Artists who choose to work in the digital realm must accept this inevitability if they are to exploit the medium successfully.

This thesis will examine new digital cultural creations in art, literature, and music, as well as the composite form of digital multimedia. While there are myriad new cultural forms spawned by the digital revolution, this thesis will focus on those forms that can be defined as "interactive," since the roles of artist and audience are most in flux in interactive digital works. Specifically, the areas explored will include interactive art on the World Wide Web, hypertext fiction, digital music, and the interactive multimedia CD-ROM. In each case, the roles and responsibilities of the artist and audience will be examined in relation to the changes brought about by the new digital cultural form.

New cultural forms often demand new terminology as concepts are redefined. In the case of the interactive digital cultural forms explored in this thesis, the terms "creator" and "consumer" no longer apply in the traditional sense. Instead, the terms "source artist"
and "mix artist" will be used to delineate particular roles within the creative process. These roles and their attendant responsibilities will be discussed in detail later.

The link between these new cultural forms (besides the fact that they are digitally-based in some way) is a common structure and flow in the way they are produced (Théberge 254). Web art, hypertext, digital music, and multimedia CD-ROMs all begin with a source artist of some kind. The source artist provides the "blocks" of data (be they images, text blocks, or sampled music) that the mix artist will utilize to produce the work. Also, a framework within which these blocks will be arranged must be designed. In some cases, such as multimedia CD-ROMs, the source artist decides on the framework. In other cases, such as digital music, the mix artist determines the framework. Once the framework and blocks are in place, the mix artist then makes choices among the blocks, based on his or her perception of what should be accomplished. Then, the computer digitally processes the mix artist’s choices and outputs the product. At this point in traditional culture, one would say the piece was "finished"; however, in digital culture works are rarely "finished" or "complete." Instead, they often become new source blocks from which another mix artist can draw.

Artists have found that these new digital forms encourage collaboration. As stated previously, interactive digital works discourage the traditional notion of a discrete work with a single author. A source artist working in interactive digital media cannot claim to be the sole author of a work, since anyone who interacts with the work is necessarily in collaboration with the source artist. Many artists find that this aspect of interactive digital media frees them to be able to work with other artists without the usual constraints of jealousy and rivalry. On the other hand, many artists (most often those who are source
artists without their knowledge or permission, as in the case of samples of previously recorded songs in digital music) do not embrace this collaborative spirit, and lawsuits are not uncommon. Landow and Delaney recognize this, noting that “collaboration . . . invokes a deep suspicion of working with others, something both aesthetically as well as emotionally ingrained since the advent of romanticism,” but they argue that critics of collaboration “fail to recognize or even suppress the fact that artists and writers work collaboratively with texts created by others” (15). This viewpoint echoes the postmodern theories of Roland Barthes, who observes that “the text is a tissue of quotations drawn from the innumerable centres of culture” (Image 146). In digital culture, artists who are willing to give up their exclusive rights to a work are often rewarded by a collaborative piece that would have been otherwise impossible.
Chapter Two – Effects of Digital Technology

Cultural Forms

Artists working in visual art, literature, and music have begun to incorporate
digital technology into their creations. In each case, they have either appropriated existing
technology or created new technology to suit their particular needs. The result has been
new cultural forms that have called into question the nature of the fields within which
they are created, as well as the nature of the artists themselves and the roles and
responsibilities of their audience.

Visual Art

In the field of visual art, new forms have included both two- and three-
dimensional works produced on computer, collaborative online art, and World Wide Web
or CD-ROM-based galleries. Many artists have chosen to use the computer as merely
another tool in their creative toolbox; these artists often combine traditional and digital
techniques in their work, such as scanning a traditionally created watercolor and then
manipulating it digitally. Many of these works are retained digitally, but often they are
printed to paper (or another support, such as canvas or vinyl) and displayed like
traditional artwork. Other artists maintain a similar approach, but produce three-
dimensional instead of two-dimensional images, and these must necessarily remain
digital. Three-dimensional images are technically "interactive" in that viewers can rotate
the image to see it from different angles or zoom in and out on details, but viewers often cannot make any lasting changes to the image.

Artists working in two- and three-dimensional digital art have found online collaboration to be a useful tool. An artist can upload the beginning of a piece to a common server (often the World Wide Web is used), and then other artists are able to access the piece and add to it (Lovejoy 223). While artistic collaboration has certainly existed since the beginning of art itself, online collaboration gives artists physically located vast distances from one another the ability to work together as if they were in the same studio. And in a sense, they are; it’s simply that the studio they are occupying is virtual, rather than physical. This has provided opportunities for collaboration that might never have occurred due to physical logistics.

Both digital and traditional art can now be found in virtual galleries on the World Wide Web and in CD-ROM format. These galleries may or may not have a corresponding traditional presence in the material world. For example, one can view selected works of art from the Louvre in Paris either in person or virtually on the World Wide Web. On the other hand, the äda’web site on the World Wide Web has no corresponding physical presence in the material world; it exists solely in virtual space.

Some of these virtual galleries, such as the previously mentioned äda’web site, focus on interactive digital art. It is within this arena that digital technology can be most fully exploited. Interactive digital art installations have appeared in museums for several years, but only a small fraction of the populace has been able to experience these installations in person. In contrast, interactive art on the World Wide Web can be experienced by anyone with a computer and an Internet connection. While it is true that
the "wired" still comprise only a small fraction of the populace, it is certainly a far greater number than those who have the means to travel halfway around the world to view an interactive installation in person.

Even if Web-accessible galleries held only traditional art that existed physically in museums somewhere, they would still be a great boon to those unable to travel to those museums. With the addition of interactive art, however, the viewer can now easily become involved in the creative process, even if he or she is physically many miles away from the work. Toshiharu Itoh, discussing the ICC ‘95 website, states, “This new site contains the potential to do away with geographical boundaries and cultural differences, as well as the momentum to transcend the limitations heretofore posed by material physicality. In other words, it possesses the potential to re-materialize and re-describe human beings” (202).

**Literature**

In literature, the involvement of digital technology has produced the cultural forms of word processing and hypertext. Word processing is, quite literally, the processing of words, in that the user inputs his or her choice of letters in order to form words and sentences. Today, users have a great deal of control over the processing of their words; they can change fonts, type size, style, and even the layout of the page if they are so inclined. These changes can be quickly applied to the entire document and modified at will. Also, entire blocks of text can be rearranged to suit the author’s purpose.

Word processing has changed the way literature is written. Fragments of ideas can be quickly input as the author thinks of them, and then later expanded and moved around with a few mouse clicks. An author no longer needs to interrupt his or her train of thought
in order to deal with the structure or mechanics of the writing; changes can always easily be made later. However, while digital technology does allow the author to compose his or her thoughts in a non-linear manner, the final document, whether printed to paper or retained in digital form, almost always assumes the linear format of traditional written or printed text. There is a definite beginning and end, and the document is designed to be read linearly.

Hypertext, unlike word processing, is a completely non-linear format. It requires the reader to navigate through linked blocks of text, creating a unique path that may or may not be retraced during subsequent experiences with the work. Often the reader is also able to add his or her own links to the existing hypertext structure. Other readers can then incorporate those links into their own paths if they so choose.

The World Wide Web, in itself an important piece of digital technology, is essentially a gigantic hypertext. In its initial incarnation, the Web was solely text-based. It wasn’t until the introduction of Mosaic, the first Web browser able to process graphics as well as text, that Web pages began to include images, sound, and other non-textual data. Although the proprietary language of the Web is referred to as Hypertext Markup Language (HTML), the content presented on the Web is better described as "hypermedia," since links are not strictly limited to text blocks and may lead to images, video clips, program files, or any of a growing number of other types of data.

The traditional novel’s digital counterpart is hypertext fiction. Authors such as Stuart Moulthrop, creator of *Victory Garden* (1991), have used hypertext to produce fictional works that allow readers to choose their own path through the story, starting at any of a number of entrance points, and encountering a different story line each time they
experience the work. Readers find themselves “empowered in a way never before possible. In hypertext there is no primary axis, no clear road in or out, no coordinates that have priority over any other coordinates — except as the reader determines. Thus lacking an authority or guide, the reader is thrust back onto his or her self” (Gaggi 103). By empowering their readers in such a manner, these authors have expanded the possibilities for literary creation.

Music

Musicians have been working with digital technology since its inception, and have found the computer to be a useful tool for everything from generating random sounds to controlling a sophisticated digital symphony. In recent years, a new musical genre, called "techno" (or more broadly, "electronica"), has emerged. Essentially, techno music can be defined as music that consists of mostly digitally created and sampled sounds and beats, or “grooves,” arranged in a repetitive, rhythmic manner and usually played at clubs and parties for the purpose of dancing. While there are myriad subgenres in the broad category of techno (drum ‘n’ bass, jungle, ambient, and trance, to name only a few), they all share one common element: the involvement of digital technology in their production (hence the name techno).

Techno music is created by mixing together clips of sound, known as samples. These sound clips can be culled from existing sources, such as a music CD, or they can be created from scratch using specialized computer software. Also, mixing can be done in the studio or live at an event such as a rave. Artists who mix in the studio often burn their creations to CD for distribution purposes, but many are turning to the popular MP3 format, which allows music to be compressed into a small file with virtually no loss of
quality. The artist can then distribute these files via the Internet and reach a much larger audience.

Mixing sound samples together is not a new technique exclusive to digital technology; hip-hop artists have been manually mixing beats for years using only two turntables and a mixing board. In fact, many techno DJs today still rely exclusively on analog equipment. While vinyl, for the average person, has all but disappeared in deference to the CD, in the specialized world of the DJ one finds entire stores devoted exclusively to vinyl, and most techno artists (as well as a surprising number of artists from other musical genres) release their albums in both CD and vinyl format. Despite the ubiquity of analog equipment in DJ culture, most techno artists who produce their music in the studio do use digital technology at some point.

Herein lies the essential difference between a techno artist and a techno DJ. Techno DJs, equipped with only two turntables and a mixing board, are limited to mixing only two samples at once (or three, if they use a microphone to incorporate “voiceovers” into the mix), and since they must mix in “real time” at live events, their options for experimentation are somewhat limited. The DJ’s emphasis is on performance, and DJs are judged by their skill in seamlessly mixing one song into the next, as well as their ability to match the music to the changing moods of the crowd. A good DJ is constantly engaged in a musical conversation with the crowd. Sometimes the DJ senses that the crowd wants a particular type of music and obliges them; other times the DJ decides what to play and the crowd adjusts accordingly. It can be argued that this encourages a sort of interactivity, but not in quite the same manner as in other interactive digital media.
Techno artists, on the other hand, usually produce their music in a studio full of digital equipment. The most common pieces of equipment in these studios (besides a computer, of course) are MIDI sequencers and drum machines. The MIDI sequencer is a device that digitally processes sound samples through a keyboard interface. The techno artist can collect these sound samples individually, or packages of pre-recorded samples can be purchased for input into the MIDI sequencer (Théberge 4). Drum machines, programmed with preset rhythmic patterns, or “grooves,” are used to create the rhythm track. The output from the MIDI sequencer and the drum machine can then be mixed on the computer using specialized software. Théberge states, “computers allow for random access of material stored in memory, thus facilitating the block, ‘cut and paste’ style of editing familiar to word-processing and other kinds of computer applications” (229). Because techno artists working in the studio are not subject to the limitations experienced by the DJ, their opportunities for experimentation are expanded, and they can produce music that is more complex than that of the techno DJ.

**Interactive Multimedia**

In addition to affecting the cultural fields of visual art, literature, and music, digital technology has also produced a hybrid cultural form known as digital multimedia. While multimedia did exist before the advent of digital technology, digital multimedia is quite different from its predecessor. One major difference is that most digital multimedia works exploit the interactive aspect of digital technology. Viewers are able to travel through virtual space and interact with the digital forms they encounter, thereby creating new forms and pathways that they and other viewers can experience. Interactive digital multimedia is most often encountered in CD-ROM format, since the bandwidth issues of
the Internet in its current state make Web-based interactive multimedia impractical for all but the most high-end user. However, new technologies are currently being developed in both file compression (i.e. Flash for animations and MPEG for streaming video) and bandwidth delivery (i.e. cable modems and DSL) that promise to greatly improve the capabilities of the Internet and make Web-based interactive digital multimedia commonplace in the near future.

It is within interactive digital multimedia that one finds the traditional roles of artist and audience most in question. One is no longer strictly a visual artist, writer, or musician, but rather a “critical cultivator, first searching to comprehend the possible meanings that emerge from this accumulation of nanocircuitry and indeterminate layers of code, then trying to reconstitute those emergent phenomena in such a way that they can become part of an evolving cultural discourse” (Shaw 165). Even the genre-neutral terms "producer" and "creator" are troublesome, since the aspect of interactivity in digital multimedia makes the audience as important an influence on the development of the work as the so-called "creator." While these issues do occur in other digital cultural forms as well, the very nature of interactive digital multimedia provides the most fertile environment for the exploration of these issues by both artist and audience.

*Artist/Audience*

Postmodern theorists such as Roland Barthes and Michel Foucault anticipated digital culture in their writings with concepts such as the readerly vs. the writerly text and the loss of the authoritative voice of the artist. These concepts are being realized in interactive digital media, and this has necessitated a redefinition of the roles of artists and audiences and the responsibilities demanded of them by digital culture.
**Theory of Artist/Audience**

The traditional concept of the artist since the Renaissance has been that of an individual genius who produces a specific work, and thus the artist retains certain rights as the creator of that work. The work, once declared finished by the artist, is rarely altered. Also, there is a definite distinction between artist and audience, with the artist occupying a rarefied realm that is unattainable for the average person (Levy 366-367). The traditional audience is relatively passive, and while some individuals may come away from works of art with different messages than others, they are not usually allowed to effect any changes on the work, and thus their experience does not alter the work itself.

Postmodern theories concerning the artist and audience show a marked shift from traditional ideas. The artist as individual genius no longer exists (Barthes, *Image* 143-148), and the usually passive audience has become intimately involved in its experience with works of art (Fleischmann & Strauss 138). As the audience’s and artist’s roles have changed, so have their responsibilities. An artist working in interactive digital media must be willing to relax his or her hold on a work and allow it to be transformed as audiences interact with it. In return, an audience experiencing an interactive digital work must be willing to "get involved" with the work in order to fully experience what it has to offer. In fact, some postmodern theorists hold that a work does not even exist until it is experienced by an audience (Sommerer & Mignonneau, “Living System” 148-149).

Even though many postmodern theorists wrote before the advent of digital culture, it is clear that their ideas anticipate the manner in which the roles of artist and audience would be changed by digital culture. Roland Barthes espouses a number of theories that can be directly related to digital culture. He foreshadows the loss of the
voice of the author in interactive digital media, stating that “writing is the destruction of every voice, of every point of origin. Writing is that neutral, composite, oblique space where our subject slips away, the negative where all identity is lost, starting with the very identity of the body writing” (Image 142). He also sees all texts as mere amalgamations of already existent cultural texts; to him, the author never produces an original work, and instead “his only power is to mix writings, to counter the ones with the others, in such a way as never to rest on any one of them” (146). Interactive digital works are excellent examples of this sort of amalgamated text, and both source and mix artists working in interactive digital media select and mix texts, much like Barthes’ postmodern author.

Barthes also postulates that there are two types of texts: the readerly and the writerly. He defines the readerly text as a classic text, one in which the reader is “plunged into a kind of idleness . . . he is left with no more than the poor freedom either to accept or reject the text” (S/Z 4). Conversely, the writerly text is one in which the reader can actively participate; the writerly text is not passively consumed, but rather encourages the reader to become involved in the creative process. To Barthes, “the goal of literary work (of literature as work) is to make the reader no longer a consumer, but a producer of the text” (4). It is clear that interactive digital media is a realization of this writerly text.

Barthes also discusses the idea of “interpretation,” which he defines as the appreciation of what “plural” constitutes the text being interpreted; in other words, an acknowledgement of the many ways in which a text can be grasped. He speaks of a “triumphant plural,” an ideal text in which “the networks are many and interact, without any one of them being able to surpass the rest . . . 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” (5). Again, interactive digital media appears to be an embodiment of Barthes’ theory, since one of the major qualities of interactive digital media is its “plurality,” its ability to be approached and experienced differently by each person who encounters it, without any pre-determined entrance point or path to be followed.

Michel Foucault also addresses issues pertinent to digital culture. He discusses the notion of the reader’s return to the text, seeking to resolve an omission by looking in the “empty spaces.” This concept is realized in the repeated interactions of a mix artist with an interactive digital work, attempting to experience different parts of the work that might have been missed in previous interactions. Foucault states, “It follows naturally that this return . . . constantly introduces modifications” (135), and indeed, an interactive digital work is modified every time a mix artist interacts with it. Foucault also notes that “these returns . . . form a relationship between ‘fundamental’ and mediate authors” (136). These fundamental and mediate authors can be seen as analogous to digital culture’s source and mix artists.

It can be argued that these postmodern theories were ahead of their time, since it wasn’t until the postmodern cultural forms of the digital revolution came into being that these theories could be fully realized. One could say that digital culture is the real-world embodiment of postmodern theories.

Many postmodern theorists believe that the changing roles of artists and audiences (exemplified in digital culture) will produce a more culturally aware society that takes a greater role in the production and consumption of works of art (Mattei 36). In answer to those critics who claim that digital culture will destroy traditional culture as we know it, it can be argued that traditional culture will most likely remain, but its impact
may be diminished. Landow and Delaney note, “The black and white photograph remains viable, but is no longer the absolute standard of representation that it was in the nineteenth century. Similarly, the printed book will remain a central element of culture even as the new ways of interacting with texts make their own claims on our attention” (8). Another possibility is that some traditional cultural forms might be rediscovered (in slightly altered form) in digital culture. For example, a hypertext poem, which would produce a different variant each time it was experienced while retaining certain common elements through each transformation, can be seen as an extension of the ballad tradition, and each version of the poem becomes a sort of performance (Dickey 150).

Others believe that “as transmitters of information (communications), each new medium builds upon and extends the previous media . . . The residue of earlier forms of communication persists as integral moments in the whole configuration of a culture’s communication network” (Heim 66-67). For example, the In Memoriam Web (detailed in Landow 51-57) enhances and extends Tennyson’s original work by linking together related sections of the poem and establishing link paths that trace certain motifs throughout the poem. Links also lead to textual variants, graphic overviews, and critical commentary. According to Landow, these links “map and hence reify a text’s internal and external allusions and references — its inter- and intratextuality” (51). By bringing these allusions and references together with Tennyson’s work in a common space (albeit virtual space), and linking them to one another in a variety of ways, the In Memoriam Web allows the reader to explore the poem in a manner that would be difficult or nearly impossible to achieve in traditional print culture.
Another criticism of digital culture is that since the rarefied world of the artist is now apparently open to practically anyone with a computer, our culture will be overrun with “bad” works of art (Heim 210, 219). A radical viewpoint would argue that there is no such thing as "bad" art; since each person experiences a work differently (and even more so with interactive digital works), it is up to each individual to determine what he or she believes is "good" and "bad" art. Ultimately, according to this viewpoint, digital culture has the capacity to liberate individuals from an elitist system that determines what we experience culturally. Indeed, there are examples of this trend in digital culture today. The aforementioned MP3 technology, which has been criticized by some musicians who claim it violates their ownership rights, is used by many unsigned musicians who would probably never see commercial airplay in the current environment of corporate radio. While some of these artists produce computer-based techno music, many could be considered "traditional" musicians, in that they create music with non-digital instruments such as guitars and drums. Instead of being overshadowed by digital culture, these musicians have chosen to use it to their advantage. They circumvent the system by putting their music on the Internet to be freely downloaded and enjoyed by anyone.

Problems do sometimes occur when traditional and postmodern notions clash. A notable example is the unauthorized sampling of a traditional artist who strongly believes in his or her rights to a work (as established by the traditional ideas of "artist" and "work") by a postmodern mix artist who feels no compulsion to uphold these rights. Usually, the mix artist is sued and then legally compelled to acknowledge the traditional artist’s contribution and pay royalties for the use of his or her material. As long as traditional notions of the artist remain entrenched in our culture, this trend will most
likely continue. However, as digital culture’s impact on society grows, postmodern theories of the artist may become more influential.

Indeed, it is nearly impossible to adhere to the traditional theories of artist and audience when dealing with digital culture. Margot Lovejoy states, “Electronic tools and media have shattered the very paradigm of cognition and representation we have been operating under since the Renaissance” (12). By their very nature, interactive digital works demand very different artists and audiences than traditional works. Traditional theories are simply inadequate for dealing with the types of artists and audiences required by digital culture. Postmodern theory, on the other hand, finds its best examples in digital culture.

**Roles & Responsibilities of Artist/Audience**

It is difficult to use the traditional terms “artist” and “audience” when discussing interactive digital art forms, because these terms, in their traditional sense, are inadequate for describing the roles and responsibilities demanded by interactive digital media. Postmodern theorists did continue to use the terms “artist” and “audience,” but they attempted to redefine them. I believe that the terms “source artist” and “mix artist” more accurately describe the roles of those involved in interactive digital media. The source artist and the mix artist are real-world examples of the postmodern artist and audience.

As mentioned previously, the source artist determines the blocks of data (and often the framework in which these blocks are presented) that will form the basis of an interactive digital work, and the mix artist then chooses among those blocks in order to create an individualized version of the work. Other mix artists may also experience the
work, and they may choose either to build upon what previous mix artists have done with the work or to create a completely new path.

The role of the source artist in the creative process has some similarities to the role of the traditional artist, but interactive digital media present unique challenges that require different responsibilities of the source artist. The traditional artist usually considers his or her audience while creating a work, but audience response is not necessarily the focus of the work. In fact, on rare occasions traditional works have been created without any regard for the audience’s response whatsoever. On the other hand, the source artist of an interactive work must constantly focus on how mix artists will interact with the work and the most effective way to present blocks of data so as to encourage useful interaction. John Slatin observes that “for the author, the difficulty at any given moment is to provide freedom of movement and interaction, while at the same time remaining able to predict where the reader/user will go next” (161).

The source artist must also be willing to let go of the “lone genius” image found in the traditional idea of the artist, and be open to collaboration with other source and mix artists. Interactive digital media provide opportunities for collaboration that were never possible before, and by allowing the work to be affected by other source and mix artists, source artists will encourage a more expanded creative environment, with input from a variety of viewpoints and backgrounds. Not only will this ostensibly create unique works of art, but it is also possible that “through a cybernetic approach to art and a collective creative work project, it is possible to reach superior levels of knowledge” (Mattei 36). This could lead to intellectual and creative growth in our society as a whole.
Finally, a source artist must accept that an interactive work will never be
“complete.” Interactive works “are by definition open-ended, expandable, and
incomplete. If a work that is conventionally considered complete, such as the
*Encyclopedia Britannica*, is put into a hypertext format, it would immediately become
‘incomplete’” (Landow & Delaney 13). Therefore, if a source artist wishes to effectively
participate in the creation of interactive digital art forms, he or she must focus on
ensuring that the work remains as open and fluid as possible, rather than concentrating on
producing a “finished” work.

Like the source artist, the mix artist also resembles its traditional counterpart, the
audience, in certain aspects. Once again, though, the mix artist’s role in the creative
process is far different from that of the audience in traditional culture. In traditional
theory, the audience was allowed to determine its own opinion about an artist’s intended
message, but no changes could be made to the work itself. While criticism did afford
audiences the opportunity to review other opinions about a particular work, this criticism
did not physically alter the work itself in any manner. In digital interactive media, the
mix artist is just as responsible as the source artist in determining the direction the work
will take (Ascott 166). In an effectively designed framework, mix artists should be able to
choose which blocks of data will be processed and alter the work according to their
individual response. Also, successive mix artists should be able to incorporate other mix
artists’ contributions into their own experience with the work. Ideally, “we become our
own authors, determining the structure of the text for the next reader, or perhaps for
ourselves in our next reading” (Bolter 116).
The responsibilities demanded of the mix artist by this expanded role are far greater than those of the traditional audience. First of all, mix artists should develop their cultural awareness in order to better fulfill their role in interactive digital media. According to Barthes, “The text is a tissue of quotations drawn from the innumerable centres of culture” (146), and “the reader [mix artist] is the space on which all the quotations that make up a writing are inscribed without any of them being lost” (148). These quotations are analogous to the blocks of data in an interactive digital work, and they are drawn from the whole of culture, described by Barthes as an “immense dictionary.” By developing their cultural awareness, mix artists gain greater access to this dictionary. As a result, they will be better prepared to meaningfully interact with the blocks of data, or quotations, that they encounter in interactive digital media.

Also, mix artists must be truly active in their experiences with interactive digital media and explore the possibilities they offer. The active involvement of the mix artist is essential for the interactive digital work to exist: “the artist . . . only conceives the framework; it is the visitors who form the art work through their interaction with each other, with the system and the image processes of the work” (Sommerer & Mignonneau, “Living System” 160). If a mix artist does not assume an active role in the creative process then the potential of the work is left unfulfilled. A well-informed mix artist will be better equipped for active participation, but by striving to get the most out of an interactive digital work, novice mix artists can expand their cultural awareness and become better informed themselves.

Finally, and most importantly, a mix artist must abandon the notion of a “right” or “wrong” way to experience a work, and realize that all active interactions are valid. In
their experiences creating interactive digital installations, Sommerer and Mignonneau found that:

only if the visitor agrees to become part of the system, will he comprehend that there are no pre-defined solutions to be found within the art work but that instead he himself essentially determines what he sees. Each visitor will hence create his own artwork that is essentially a reflection of his inner expression and expectations. (“Living System” 159)

An effective interactive digital work should provide an open and fluid space that can be explored and experienced by mix artists with as few boundaries and limitations as possible. Obviously, interactive digital media have inherent limitations that can be difficult or impossible to transcend, but mix artists should not limit themselves simply because of misguided notions. If mix artists misunderstand their role as being that of the traditional audience, then they are likely to focus on choosing the “right” blocks that will produce the “correct” version of the work rather than exploring the work’s possibilities. Alternately, if mix artists believe they are assuming the role of the traditional artist (another misunderstanding), then it is likely that they will feel that their contribution must be something spectacular in order to be important, and may avoid interaction with a work completely if they feel they are not creative enough to produce something “worthy.” Successful mix artists should be open to all the possibilities a work has to offer, and should focus on their personal experience with the work, rather than whether they are “doing it right.”

It is important to remember that source and mix artists are not rigidly separated categories, as in the traditional notion of artist and audience. When initially selecting and
arranging blocks of data, the source artist performs many of the same functions as the mix artist. Mix artists become source artists when a mix artist chooses to incorporate previous mix artists’ changes into his or her own experience of the work. The flexible nature of these roles is especially apparent in digital music, where “popular musicians who use new technologies are not simply the producers of prerecorded patterns of sounds (music) consumed by particular audiences; they, too, are consumers — consumers of technology, consumers of prerecorded sounds and patterns of sounds that they rework, transform, and arrange into new patterns” (Théberge 3). Some members of these “particular audiences” may then choose to use this music they have “consumed” as a source in their mix. The result of this mix may then be used as a source by another mix artist, and so on. Openness and fluidity are essential elements of interactive digital media; therefore, source and mix artists must remain flexible in their roles if they are to participate effectively in the digital creative process.
Chapter Three – Examples of Digital Cultural Forms

Now that the roles and responsibilities of the modern artist and audience in digital culture have been defined, it becomes necessary to introduce real-world examples of interactive digital cultural forms in which these new roles and responsibilities can be most fully explored and developed. As mentioned previously, four specific cultural forms will be explored: interactive art on the World Wide Web, hypertext fiction, digital music, and the interactive multimedia CD-ROM.

*As Worlds Collide* is an interactive online art project which allows viewers (at certain times) to download images from its website, manipulate them, and upload them back to the website to be viewed by others. Also, visitors to the site can browse through the submitted images, with each particular image linked to others’ versions of that image.

*Victory Garden* is a hypertext novel written by Stuart Moulthrop. The “main” plot line (if such a thing can be said about a hypertext work) involves a group of university students as their lives criss-cross during the events surrounding the Gulf War of 1990-1991. Of course, each reader is free to choose his or her own path through the story, with each successive reading revealing new details previously undiscovered, and often resulting in a completely different story altogether. Each individual reading can be taken as a “complete” story in itself, and also used to help illuminate previous readings. In this way, the reader is able to form a unique, yet multi-dimensional impression of the novel.
The Chemical Brothers are a British techno duo, Tom Rowlands and Ed Simons, who produce digital music using both originally created beats as well as sampled bits of speech and music. They are well known for their particular style of techno, known as “big beat.” In addition to producing music in the studio, they often “play out” (perform live at a club), mixing music and beats in real-time using a complicated setup of computers, synthesizers, and turntables. During live performances, the Chemical Brothers remix both their own music and the music of others, providing a unique experience to the audience unavailable on any studio-produced recording.

*EVE* is an interactive multimedia CD-ROM developed through the collaboration of musician Peter Gabriel and artists Helen Chadwick, Yayoi Kusama, Cathy de Monchaux, and Nils-Udo. The CD-ROM is presented in the style of an interactive video game, but it differs greatly from the typical “shoot-em-up” or adventure video games commonly available on CD-ROM. While there is a gaming element to *EVE*, in that viewers are encouraged to solve riddles in order to find the “return to Paradise,” it is most effective as a virtual world which viewers can explore and interact with, experiencing and creating music and art.

These examples of digital interactive cultural forms explore the relationships between source artists and mix artists and their respective roles and responsibilities. Also, these works experiment with the possibilities for creation and collaboration in their genre (and culture as a whole) through the use of digital technology. It is important to note that none of these examples exhibit *every* characteristic of a “successful” interactive digital work (as defined in this thesis), nor can any one of the examples by itself provide a complete picture of the theories that have been presented herein. However, this is not
unusual, considering that interactive digital culture is still in its infancy. As technology improves and artists gain more experience working in this new medium, interactive digital works should begin to approach the ideal discussed in this thesis. The examples presented have been chosen, not because of their perfection, but because they illustrate the current state of interactive digital culture and attempt to explore the full potential of the medium using available technology.

*As Worlds Collide*

*As Worlds Collide* is a collaborative, interactive art project on the World Wide Web. The project was developed by a group of faculty and students in the Department of Art Media Studies at Syracuse University in the fall of 1997, although the project itself is hosted on a Bowling Green State University server. The website explains that *As Worlds Collide* is an event-based project and was available for collaborative input during ISEA 97 and SIGGRAPH 98 (and may be available at future events, as well). The site currently allows only viewing of the pieces created during its active collaborative phase, but the viewing process is an interactive work in itself, allowing the viewer to choose his or her own path through the linked collaborative pieces.

On the “Concepts” page of the project website, it is asserted that while interactive multimedia is touted as the melting pot for various forms of expression to come together and form a new mode of communication, the majority of supposed “interactive multimedia” falls far short of this vision. The impetus behind the *As Worlds Collide* project is to create a work that “integrates the principles of 2D, 3D, and time-based expressive worlds” (*As Worlds Collide*) into a truly interactive multimedia piece. Also, the developers of the project believe that one of the main benefits of interactive
multimedia is the encouragement of virtual communities that transcend cultural and geographical boundaries, allowing diverse groups of people to interact with one another in a meaningful way. Their hope is that by encouraging international collaboration without emphasizing any one particular medium, a shared creative vision will develop, and they ultimately believe that “influence and inspiration coupled with individual visual style and conceptual realization provide building blocks for the manifestation of collective creative outcomes” (“Concepts”). It is important to note that As Worlds Collide’s idea of “interactive multimedia” is not the same as that in an interactive multimedia work such as EVE. Instead of incorporating multiple artistic genres, As Worlds Collide instead makes use of primarily visual artistic media, such as 2D and 3D digital art.

The project begins with a series of “starter worlds,” each created by an individual source artist. These starter worlds combine 2D and 3D artwork into a flat image, which is then converted into QuickTime VR format. QuickTime VR (or QTVR) technology causes a flat image to appear to panoramically surround the viewer; the viewer can use a mouse to look up and down, as well as rotate 360° within the image and see it as a seamless “world.” The viewer can also zoom in and out on portions of the image. During the collaborative phase, those wishing to participate (the mix artists) begin by selecting which of the starter worlds they would like to manipulate. After filling out a form on the website, the mix artist is able to download the image of the starter world from an FTP site. This image appears on the mix artist’s computer as a flat image, which can be added to, modified, or completely reworked as the mix artist sees fit. The mix artist then uploads his or her version of the image to the FTP site, and a script (a small portion of
programming code that automatically performs a specific action when certain conditions are fulfilled) converts the newly uploaded image to QTVR format. Another script then generates a new web page (which is linked to the original image the mix artist chose to manipulate) showing the new QTVR image. Finally, another script generates a web page listing the information provided by the mix artist on the website form, so future viewers can see a list of everyone who has contributed to the project so far. The list of contributors allows the viewer to click on the mix artist’s name to send that person an email, or the viewer can click on the title of the work submitted by the mix artist in order to view that work.

The project is structured thusly: each starter world can be modified by two people, and each of the resulting images can be modified by two more people, and so on, creating a tree-like hierarchy among the images (the As Worlds Collide website describes it as a “sophisticated circuit structure”). When a viewer enters the website to browse through the images, the initial page of the project displays the twelve starter worlds and prompts the viewer to begin by selecting one of the starter worlds. A new page appears that shows the starter world image, along with one arrow pointing up and two arrows pointing down. This basic page layout is repeated with each new image. Clicking on one of the down arrows takes the viewer to a mix artist’s version of that image. If the viewer clicks on the up arrow, he or she is taken back to the previous source image. The viewer can continue through these linked images until he or she encounters a down arrow that states “No Worlds To Explore,” indicating that no mix artists have chosen to build upon that image.

Because the project was only in its collaborative phase for a few days during each event, the number of images available for viewing is not immense (approximately 120
images to date), and the viewer, by retracing his or her steps several times, can eventually navigate through all of the images. However, the viewer is free to choose which of the two down arrows to click, and therefore can follow numerous paths through the project. In doing so, each viewer creates a personal experience of the project based on the series of images in the path he or she has chosen. Therefore, even if the viewer is unable to collaborate by uploading an image, he or she is still able to interactively participate with the project by determining which path to follow through the archived images. However, an additional element of interactivity could have been achieved by using the QTVR technology to create "hot spots" in the image that could be clicked to link to another image, possibly one of the mix artists' version of that image.

As Worlds Collide is an excellent example of digital collaboration and the relationship between source artists and mix artists. While a distinction is made between the source artists who designed the starter worlds and the subsequent mix artists (for example, the web page with information about the source artists is far more detailed, while the contributor web page simply provides a list of names with links to email addresses), no one source artist claims to be the “author” of the project. An argument could be made that the source artists appear to be given higher status than their fellow contributing artists, but it should be realized that digital collaboration is still in its infancy, and it can be expected that the deeply entrenched idea of the separation of artist and audience, with the artist occupying a higher sphere, has not been completely erased yet in digital culture. Also, the website makes it clear that the intention of the As Worlds Collide project is to help shape a collective creative vision, not single out any individual artistic achievement.
Victory Garden

*Victory Garden* is a hypertext novel developed by Stuart Moulthrop. Moulthrop uses digital technology to empower his readers to choose an individualized path through text blocks he has provided, thus creating their own unique versions of the story. In doing so, Moulthrop encourages his readers to become active and “writerly” (to use Barthes’ term). Rather than being restricted by a predetermined linear structure with a definite beginning and end (as in traditional books), readers are given the freedom to pursue their own motivations through the text, autonomously determining the path the story will take and when the story will end. While this freedom may initially seem chaotic to readers unaccustomed to the openness of hypertext, with practice the seemingly chaotic structure of hypertext becomes a powerful tool for experiencing literature in a manner not possible in traditional books.

Readers are offered several options for navigating through the text. The reader can choose to press the `<return>` key on Macintosh computers, or `<enter>` on Windows-based computers, at the end of a page, which activates the default link for that page. In this sense, *Victory Garden* can be read more or less linearly, but the full potential of the hypertext is not discovered until the reader begins to make his or her own choices among the available links. Also, despite its apparent straightforwardness, following the default link may not lead to the place expected, and the reader must reassess his or her assumptions about the story. Even if the reader tries to approach *Victory Garden* in a passive, linear manner, the very nature of hypertext urges the reluctant reader to actively participate in the creation of the story. For example, if readers start at the opening screen of *Victory Garden* and simply press `<return>` at the end of each page, they will soon find
themselves in an infinite loop between the places “Paths to Explore,” “Paths to Deplore,” and “Map Overview.” Each of these places offers several paths for readers to follow, but they must make the decision about which one they will choose; simply pressing <return> will get them nowhere. Once a link has been chosen from one of these places, readers may continue to press <return> if they so choose, but eventually they will very likely encounter another infinite loop that will again force them out of passivity.

Upon pressing the <option> and <command> keys on Macintosh computers, or <control> on Windows-based computers, the reader is shown which words or phrases in the text are “yield-words,” in that they will trigger a link if clicked. The reader must then make assumptions as to where particular links might lead and choose the link that appears to be of greatest interest or relevance. Thus, the reader is empowered to follow a path of his or her own choosing. However, the link may not lead where the reader expects. The place “Ask the Marshall” consists of a quotation from Neil Postman: “To understand what this means, we must read Marshall McLuhan,” and the phrase “Marshall McLuhan” is indicated as a link. The reader may assume that clicking this link will provide more information about McLuhan, or perhaps explain McLuhan’s connection to the story. Instead, it leads to the place “Patron,” and the reader encounters a classroom conversation between three students in which McLuhan is mentioned as being “into” mind expansion. The reader must then decide how to interpret this information. Does the fact that McLuhan is connected with mind expansion indicate that one must approach the story with an open mind, or perhaps look for a mind-expanding experience within the story? Or maybe the cynicism expressed by Victor and Amanda (two of the students involved in the discussion, who also appear in other parts of the story) towards McLuhan’s ideas
indicates that they are unable to “understand what this means.” The reader’s interpretation of the information he or she encounters will affect further decisions as he or she moves through the story, resulting in a unique and personal reading.

By selecting the Browse or Links button, the reader is presented with a list of all paths leading out from the current page. Interestingly, some paths will not appear until the reader has fulfilled certain criteria, such as encountering the page in a particular sequence, after other information has been discovered or revealed. In this way, the author of the hypertext is able to subtly direct the reader, keeping certain information hidden until the necessary conditions are fulfilled to properly make use of that information. Again, in choosing among the provided paths, the reader must make assumptions about where each may lead; these assumptions may prove to be false upon following the link, but the link may be interesting and useful nonetheless. As stated previously, readers may encounter unexpected information when following a link, but it is this very uncertainty that encourages active, writerly readers who must be willing to reassess their assumptions as new information comes to light.

Hypertext is an especially appropriate way in which to present *Victory Garden’s* content. The manner in which the reader navigates through the text, choosing links and forming impressions based on where those choices lead, mirrors the characters’ search for information and meaning amidst the chaotic events of the Gulf War. Those experiencing interactive digital works often find that they become aware of the process they are going through as they interact with the work — how and why they make certain assumptions about the work or choose a particular path to follow. This “extra” awareness often provides insight into not only the work itself, but into human nature as well. In
essence, *Victory Garden* is both a hypertext novel about individuals dealing with the events surrounding the Gulf War and an analogy for life itself.

In his introduction to *Victory Garden*, Michael Joyce observes that “what goes on here is the sad, sweet, synchronous truth of the day–to-day stories of all of us at war with the meaning of our lives as our lives and that meaning alike are bestowed, unbeknownst, on us” (14). As the reader navigates through the story, information is revealed based on the reader’s choices. The reader then makes assumptions about the story and its characters based on that information, attributing a meaning to the text that may change in subsequent readings (or as new information is brought to light as the reader continues to navigate through the text).

A text block that appears to mean one thing in a particular reading of the story may mean something totally different when encountered in a subsequent reading, depending on the context in which it appears. For example, the place “Insidious,” which is a conversation between Thea Agnew and Boris Urquhart (professors of humanities and science, respectively) in Thea’s office, appears in several different contexts. In one reading, “Insidious” appears after “Thea’s Mail,” which describes Boris giving Thea her mail for the day. In this context, “Insidious” doesn’t have much significance; it is merely Thea reacting to what Boris has given her, which leads to a discussion about Thea’s struggles with the university. In another reading, “Insidious” is encountered after “Solid Foundation,” which is part of an interview with Thea’s rival, Erich K. Heidel. The fact that Thea picks up the transcript of that interview in “Insidious” and reacts with disgust is much more significant in this context, since the reader has just arrived at this place after reading the transcript as well. The reader can then decide whether to agree or disagree
with Thea’s point of view. Also, the conversation between Thea and Boris that follows
“Insidious” becomes a sort of retort to Heidel’s statements.

The reader’s struggle to attribute meaning to the information he or she encounters
is analogous to the characters’ struggle to find their place in the events occurring around
them in the story, which is further analogous to every individual’s struggle to attribute
meaning to his or her own life. Other individuals’ lives, or stories, often interconnect with
one’s own life, revealing information that helps form a clearer idea of the path one has
chosen. As new information comes to light through these encounters, one often reassesses
previous assumptions, and one may even decide to follow a different path based on that
information. Continuing with the previous example, if the reader encounters “Insidious”
after “Thea’s Mail,” Heidel’s involvement in Thea’s problems may appear minor, but
when “Insidious” appears after “Solid Foundation,” the reader realizes how vehemently
Heidel opposes Thea. This new information may then affect the reader’s subsequent
decisions in the story, possibly encouraging a further exploration of Heidel’s character or
of Thea’s ideas.

*Victory Garden* also illustrates the idea that one is surrounded by individuals,
each with his or her own life, and while one may interconnect with these other lives from
time to time, they continue regardless of the events occurring in one’s own life. The
reader of the hypertext gets the sense that the characters he or she encounters are not
merely descriptions on a page, but rather individual entities with entire stories of their
own, only parts of which can be accessed through *Victory Garden*. Robert Coover
observes, “As one moves through a hypertext, making one’s choices, one has the
sensation that just below the surface of the text there is an almost inexhaustible reservoir
of half-hidden story material waiting to be explored” (10). As the events of the story unfold, subsequent encounters with characters take on different meanings, depending on the information available to the reader. This gives the impression that these characters’ stories continue uninterrupted until the reader encounters them again later. Subsequent readings may reveal more of a character’s story, clarifying some ideas while confusing others, leading the reader to further refine his or her concept of a particular character.

Several places in *Victory Garden* describe events occurring on January 15 and 16, 1991, the first days of the war with Iraq. In “Special Occasion,” a fraternity brother named Billy Van and his friends are joyriding around town in a stolen van, celebrating the start of the war. “Irresistible” finds Thea and Veronica Runbird (whose sister, Emily, is in the military and therefore involved in the developing war) at home, nervously watching coverage of the war on television. “Timely” is Boris’ reaction to the events; he wanders into the Texas desert scrub because it seems to offer him a place of peace. Finally, “10:59” finds Special Agent Madden and Heidel in a bar watching the events unfold on television. Each of these characters’ stories continues after these places, and the reader discovers how each deals with the confusion around him or her. As the reader encounters these same characters in later readings, their reactions to these events become significant when compared to other characters’ reactions to those same events. Madden doesn’t seem too concerned about the war; he is more interested in talking with Heidel. Thea, on the other hand, appears obsessed with what is going on around her; her head is filled with jumbled sound bites and images as she tries to process all the information being pushed at her by the media.
Indeed, in real life our impression of an individual is often developed in response to interactions with that individual as well as events we have experienced and information we have acquired independent of that individual. In Victory Garden, as in life, other stories continue independent of our own, and while we may encounter portions of these other stories as we follow our chosen path, we can never know the whole of an individual’s story, and so our concepts of others (as well as of ourselves) must be continually redefined as events unfold and new information comes to light.

In his essay “Are We Reading Yet?” (included in the instruction manual for Victory Garden), J. Yellowlees Douglas makes some important points concerning the reading of hypertext. He emphasizes the difference between hypertext and traditional books in order to illustrate the potential of hypertext and the opportunities available for readers of hypertext. The reader is encouraged to find his or her own ending to the story; since hypertext does not have a predefined ending like a traditional book, one must “recognize the conclusion of your reading or readings of Victory Garden when you have satisfied the curiosities, interests, predictions and quests which originally propelled you through the narrative” (Douglas, 18). The reader is given ultimate authority as to his or her motivation for experiencing the hypertext, and may explore the text indefinitely until that motivation is fulfilled. There are a few instances in Victory Garden where the story does appear to end, in that pressing <return> to activate the default link does nothing. However, this is only an end for the passive reader. The active reader is encouraged to follow one of the available links if he or she wishes to continue the story. Of course, the reader may also choose to stop reading at that point, in which case the story is at an end, at least for that particular reader.
Unlike a traditional book, hypertext has no predefined linear structure that must be followed in order to form a coherent story. Readers of *Victory Garden* have the freedom to determine the direction the story will take, focusing on links that interest them and ignoring those that do not. As discussed previously, *Victory Garden* is composed of many individuals’ stories as they respond to the events of the Gulf War and interact with other individuals. Portions of these stories may be of interest to the reader, while others may not, and decisions are made based on which story he or she wishes to follow at the time. For example, one scene in *Victory Garden* describes Boris and several others preparing to play some sort of game. It is revealed that this game is called “Dream Along With Me,” and apparently Boris has wired his friend Dr. Miles Macarthur to an EEG machine, indicating that this has something to do with the game. “West” describes the various video screens the players are watching, and by clicking the “Browse” button to show the list of available links, one finds a link reading “bored?” that leads to the place “Endgame.” If the reader is interested in finding out more about the game, he or she is free to continue exploring that path by pressing <return>; however, if he or she is “bored,” then following that link will ostensibly end the game and take the reader to a place that may be of more interest to him or her. Not all the links in *Victory Garden* are this obvious, but any time the reader is “bored” with a particular reading, other links are usually available that may provide a more interesting path.

It is important to note that there are certain scenes in *Victory Garden* that do not allow the reader much choice. The places comprising the episode concerning Jude’s seduction of Victor often have no links leading to new paths; the reader must simply continue through the episode until the author provides a way out. It is as if the author
believes there are certain episodes that should be read in their entirety, and this is his way of forcing that behavior from the reader. On the whole, though, the reader usually finds several links leading out of each place he or she encounters.

Because information is not presented linearly in hypertext, the reader of *Victory Garden* is never completely sure of the “space” of the story; this concept must be continually redefined as new spaces are revealed and new information becomes available. In a traditional book, events and situations that help define the space of the story always appear in the same order no matter how many times the book is read. Therefore, the reader is usually able to get a sense of a story’s space, if not the first time, then in subsequent readings of the text. In *Victory Garden*, however, one reading is rarely the same as another, and events and situations may appear in a different context each time the story is read. Thus, the reader’s concept of the story’s space is constantly changing, and it can never be assumed that the story’s space is “fixed.” This encourages the reader to remain active and aware while navigating through the story.

This also allows the reader to explore spaces as he or she sees fit, forming new impressions based on the sequence in which these spaces are encountered. Since the space of the story is not predefined, the reader can explore whichever space seems most appropriate or interesting. If one thinks of each place in the story as an individual space, it is often found that one place does not always necessarily follow or precede the same place in each subsequent reading. The reader must reassess each encounter with a particular place depending on the context in which it appears. In doing so, Moulthrop “takes us inside the process by which contexts shade our readings of an identical set of sentences and conditions” (Douglas, 19). Once again, the process of reading hypertext
provides insight into a facet of human nature that might not be readily apparent otherwise.

Moulthrop also makes use of the ambiguity of pronouns to encourage his audience to read actively and form its own conclusions about the identity of the characters they encounter. If a specific text block makes reference to “he,” it is the reader’s past experiences with the text and the individual stories and places encountered that will determine, for that reader, who “he” may be. This is not necessarily an easy decision. As Douglas observes, “Ambiguity doesn’t simply hover over the text: it’s embedded in the text” (20). Readers may often find themselves confronted with apparently conflicting information about a possible situation and must decide for themselves what to believe.

Other readers, encountering the same “he,” but in a different context and sequence of events, may make completely different assumptions about the identity of the character. One place in Victory Garden, entitled “A Woman Crying,” describes Victor waking up to a woman crying and confessing she’s scared. The woman’s name is not given; she is merely referred to as “she.” If the reader has previously encountered the scene of Victor’s seduction by Jude, he or she may assume the “she” is Jude. However, the reader may also be aware of Victor and Emily Runbird’s relationship, and may identify “she” as Emily. The reader’s decision will depend on previous encounters with these characters and the sequence in which “A Woman Crying” is encountered. It is the reader’s own choices and the way in which he or she chooses to utilize the available information that will determine his or her perceptions of a character and ultimately, of the story as a whole.
Techno music is another example of an interactive digital art form. As discussed previously, techno music is primarily dance music that is produced by mixing together assorted sounds and “grooves.” A groove is a short sequence of beats (usually drums and a bassline) that is repeated over and over (called “looping”). The groove is then used as the foundation of a techno work, upon which other sounds (such as vocals or sirens, for example) are layered. These sounds and grooves may have been sampled from other sources or created digitally by the mix artist.

Essentially, techno works can take one of two forms. Some works are produced in a studio environment and then recorded and distributed as “fixed” works, similar to traditional works in other art forms. However, studio-produced works, or portions of them, can still be used as sources for subsequent mix artists. Techno works are also produced at live performances, with a DJ spontaneously mixing different sources on turntables. These live performances can also be recorded and distributed like studio-produced works, but they are usually “one time only” mixes exclusive to a particular performance. In this case, no permanent, final work exists as in a studio-produced work.

Techno is a broad genre that encompasses many different styles. The Chemical Brothers are two techno artists, Tom Rowlands and Ed Simons, who produce music that can best be described as “big beat,” which is a subgenre of breakbeat (another style of techno). Big beat is characterized by a harder, heavier beat than most techno music. It is based on breakbeat, which incorporates a rhythm with a repeated pause, or “break,” in between successions of pounding beats. Big beat also uses loud sampled sounds, such as sirens and explosions, throughout the music to punctuate and intensify the driving
rhythm. Its rhythm induces one to dance, as opposed to a “listening techno” style such as trip hop or ambient, whose slow, flowing grooves are more conducive to relaxation than dancing. Other big beat artists include Fatboy Slim, Crystal Method, and the Propellerheads.

It is generally accepted in the techno community that the Chemical Brothers are the founders of the big beat style (Astralwerks, “Biography”). One finds, however, that the Chemical Brothers’ albums often encompass multiple genres. Their album *Surrender* is an excellent example of this. Several of the songs on the album, such as “Music: Response” and “Out of Control,” are typical Chemical Brothers big beat, but other songs are in an entirely different style. For example, “Asleep From Today” and “Dream On” are more similar in style to ambient (much slower rhythm with a new age, “floating” feel to it), whereas “Hey Boy Hey Girl” and “Got Glint?” are more like progressive house (not as heavy as big beat, but still upbeat and danceable; this style has become very popular in clubs in the last few years). This experimentation with other styles is not unusual in techno music.

As a medium, techno music shares many characteristics with other interactive digital media, but there are certain areas where it does differ — in particular the roles and responsibilities of the source artist and mix artist. The techno music mix artist has many more responsibilities than mix artists working in other interactive digital media. Most of the production of a techno music piece is done by the mix artist — selecting which sound blocks to sample, deciding how to mix them together, and creating other beats and sounds as necessary. The creative decisions which are usually the responsibility of the source
artist in other interactive digital media fall on the shoulders of the mix artist in techno music.

In fact, in techno music, the source artist often has little or no responsibility at all. This is because, unlike source artists working in other interactive digital art forms, techno music source artists usually have no intention of being used as a source when creating their work. A techno mix artist may decide to mix in a groove from a James Brown song, for example, and while James Brown may be given credit for the use of the sample, it is clear that the original James Brown song was not created to be used as a source in a techno work. In other interactive digital art forms, the work of the source artist is specifically created to be used in an interactive digital piece; the source artist is well aware of this and expects that his or her piece will be manipulated by mix artists. In techno music, however, source artists’ works are selected by the mix artist, and so involvement in the creation of a techno work is usually unintentional on the part of the source artist.

Because the techno source artist has very little direct involvement in the creation of the techno work, the mix artist has a great deal more freedom than in other interactive digital media. For example, mix artists working in hypertext fiction are free to choose their own path through the available text blocks, but they are restricted to exploring only the text blocks provided by the source artist and can only follow links that have been created by the source artist. Ideally, the “perfect” hypertext work would allow the mix artist to add his or her own text and links that could be accessed by anyone who experiences the work (such as on the World Wide Web), but in reality, most hypertext
fiction has not reached that level of development yet. In techno music, however, mix artists are free to select and mix any samples or beats in whichever way they choose.

In a techno DJ’s performance, in which sources are mixed in real time for a live audience, the mixing is necessarily more spontaneous than in other interactive digital art forms. In hypertext fiction, for example, mix artists are free to take their time in deciding which links to follow; they can weigh several options and even retrace previous paths if necessary. Also, mix artists of hypertext fiction need not be concerned with an audience’s reaction to their chosen path, whereas in techno DJs’ performances, the audience’s response is essential to the experience. For this reason, it is found that techno mix artists must have more training and background experience than mix artists in other interactive digital art forms. In order to be able to spontaneously mix sources in a creative manner, a techno DJ must be completely familiar with the technology being used, such as the mixing board and turntables. In other interactive digital art forms, very little technological knowledge is required of the mix artist in order to successfully experience the work.

It is also important to note that it is the live performance of the DJ that makes techno music an interactive digital art form. As stated previously, one of the major characteristics of interactive digital art forms is that there is never a “final” work; the work continues to evolve as it is experienced by mix artists. If techno music existed only as recorded studio music, it would be more like a digital photo collage, created by juxtaposing varied sources, but existing only as a static, finished piece. While the mix artist may have interacted with the sources in order to create the piece, once the work is finished, it loses any further interactivity. However, when a DJ decides to mix that work
into a set at a performance, the work created by the DJ is neither permanent nor finished. Because it is a one of a kind, spontaneously mixed version, it retains the fluidity of other interactive digital art forms. Also, the DJ mixes grooves in response to the audience and its mood, and so the work evolves as it is experienced by different audiences. In this way, DJs are responsible for the evolution of a techno piece through their interaction with it and through the interaction of the audience with the DJ.

Another difference between techno music and other interactive digital art forms is the number and variety of sources used. In hypertext fiction, there is usually only one source artist. In interactive digital art and multimedia, there may be more than one source artist, but they usually work in collaboration with one another by choice, rather than being mixed together unwittingly by a mix artist. In techno music, source artists are selected by the mix artist from whichever genre and style the mix artist chooses. Essentially, mix artists may choose from the entire catalogue of musical works ever recorded; therefore, the possibilities for creativity and experimentation in techno music are much greater than in other interactive digital art forms.

The shift from source artist to mix artist (and back again) is very common and fluid in techno music. Any time a DJ decides to mix a techno artist’s song into a live performance, that techno artist, while still considered the mix artist of that particular song, immediately becomes a source artist as well. Another example would be one techno artist remixing another techno artist’s song. Again, the original mix artist then becomes the source artist. The Chemical Brothers, in addition to producing their own music, often remix the music of other artists as well. Remixes tend to retain key elements of the original song, such as a vocal track or groove, while the rest is changed around.
Sometimes the Chemical Brothers will sample one part of the vocal track and loop it over a completely new groove, or combine their own new grooves with grooves from the original song. The possibilities are quite endless and invite great experimentation and creativity.

In some remixes, one can easily identify the original song being remixed. Other remixes may completely alter the source work, taking small groove or vocal samples from the source and assembling them into an entirely different mix. Every remixer strives to bring his or her own particular style to a mix, and the Chemical Brothers’ remixes are usually characterized by the loud, heavy big beat sound they are famous for. An example of this is the Chemical Brothers’ remix of Prodigy’s “Voodoo People.” The remix is entirely different from the original song; in fact, the only element in common between the two songs is the sample of the phrase “voodoo people.” In Prodigy’s version, it is looped over a fast-paced groove that is not as heavy as typical big beat, whereas in the Chemical Brothers’ version, it is combined with another vocal sample (“rock the house in”) from a different source and looped over a harder, heavier groove characteristic of Chemical Brothers’ music.

In another turnaround, the Chemical Brothers themselves have been remixed by other techno artists, many of whom produce their own studio music as well. These remixers include Daft Punk, Sasha, the Micronauts, Dave Clarke, Underworld, and the Dust Brothers. As in all remixes, each of these artists has produced a unique version of a Chemical Brothers song that showcases his or her individual style while retaining key elements of the original song.
Interestingly, the Chemical Brothers released an album entitled “Brother’s Gonna Work It Out,” which is a collection of both remixes of other artists by the Chemical Brothers and remixes of the Chemical Brothers by other artists. The Chemical Brothers then mixed these 23 tracks into one another, much as if they were playing a live set. In an interview on the Astralwerks website, they discuss each track of the album in detail, explaining why they chose specific tracks and also, in the case of their remixes, what portions of the original track were used in the mix. It is rare to find such explication of specific works in the techno community; most techno mix artists leave it up to the audience to figure out where a particular sample has come from. It is important to note that it is not essential to know the sources of samples in a techno work in order to enjoy that work; rather, the techno mix artist might include a sample that would be recognizable to those “in the know,” but that to most listeners is simply another sample. Yet the resulting song can be enjoyed by both kinds of listeners. For example, concerning their mix of Carlos Berrios’ “Doin’ It in the Dark,” the Chemical Brothers explain that they often played this track live when performing at an event known as “Naked” at the New Uhrdi, an Indian social hall. When they decided to include this track on Brother’s Gonna Work It Out, Tom Rowlands states, “We just use the groove here. As a nod to those who know” (Astralwerks).

Brother’s Gonna Work It Out is an interesting case, as it is a studio-produced work with the feel of a DJ’s live performance. One of the essential characteristics of a DJ performance is that there is no break between songs; the music never stops. As a song is coming to the point where the DJ wishes to make a transition, the DJ cues the next record, speeding it up or slowing it down in order to match the beat of the first song.
Then the DJ gradually brings up the volume on the second record while lowering the volume of the first. This is done by using a slider on the mixer. As the transition occurs, the audience hears both records playing on top of one another, and then one fades out as the next takes over. This technique is used by the Chemical Brothers on *Brother’s Gonna Work It Out*, and so the album feels more like a live performance than a studio-produced work.

Overall, the Chemical Brothers are adept at producing both studio-based works and DJ-style mixes, and therefore their works showcase the broad creative range of techno music. Also, by remixing others’ works and allowing their own works to be remixed, the Chemical Brothers demonstrate the collaborative nature of techno music. Like other forms of interactive digital media, techno music is participatory in nature, whether the participant is a mix artist in a studio or a DJ at a club. Even the DJ’s audience participates in the creation of the work, since the DJ often chooses music based on the audience’s mood. The Chemical Brothers’ works are examples of the potential of digitally produced music (and interactive digital media in general) to involve a much wider group of people in the creation of art than is possible in traditional art forms.

*EVE*

The CD-ROM *EVE* is an example of interactive digital multimedia. As mentioned previously, a multimedia work can be defined in a number of ways. Most commonly, it is taken to mean a work that incorporates several different genres of artistic media, such as visual art, music, and literature (text). In certain cases, it may be used to describe a work that uses primarily one genre of media (such as visual art), but combines several subgenres of that particular genre (as in the case of the interactive artwork *As Worlds*...
Collide). EVE uses musical, visual, and narrative elements to provide a unique experience for the mix artist. The mix artist is afforded the opportunity to explore virtual worlds created by such source artists as Yayoi Kusama, Helen Chadwick, Cathy de Monchaux, and Nils-Udo, accompanied by the music of Peter Gabriel. The CD-ROM is accompanied by a book that contains photos of the source artists’ works, along with commentary about the works and EVE itself. It also includes instructions for installing the program and navigating through the CD.

EVE is presented as a game, in which the mix artist must complete specific tasks and solve puzzles in order to progress through the different worlds. Because EVE is in a game format, navigation through the CD becomes difficult at times; often it is unclear which actions must be performed in order to move on in the game, and mix artists find themselves “stuck” on a particular screen. This difficulty in navigation is unusual in interactive digital culture; usually the aim is to make navigation as clear and easy as possible for mix artists, so they can concentrate on interacting with the work. However, in EVE, trying different approaches and thinking about situations in a new way is essential to the experience of the work, and this is encouraged by the navigational difficulties encountered in the work. Also, if the mix artist performs the correct actions, EVE provides several different rewards. These rewards include short musical samples that the mix artist may manipulate, accessibility to new screens or worlds, and interactive artworks. This system of rewards encourages the mix artist’s continued interaction and ensures that he or she does not become frustrated before experiencing a meaningful interaction with the work.
As described by the book accompanying the CD-ROM, “EVE is organized into worlds. Each world combines one Peter Gabriel song with the art from one artist to create a musical and visual framework within which you can explore the music, the art and the themes that weave them together” (Cornwell & Darke, 53). The first world the mix artist encounters is “Mud,” with the artwork of Yayoi Kusama and the music of *Come Talk to Me*. The second world is “The Garden,” featuring the artwork of Helen Chadwick and the music of *Shaking the Tree*. The third world, “Profit,” showcases Cathy de Monchaux’s art with the music of *In Your Eyes*. Finally, the mix artist comes to “Paradise,” which features the artwork of Nils-Udo and the music of *Passion*. There is also a fifth world, “Ruin,” which may appear between “Profit” and “Paradise,” depending on the mix artist’s choices.

Connecting each world to the others is a panoramic landscape that evolves as the mix artist moves through the game. When navigating the first world, mix artists initially find the landscape to be muddy and barren, but as they continue, grass and flowers begin to sprout, trees grow, and buildings appear. Often the mix artist must perform specific actions in the panoramic landscape scene in order to open the door, or “portal” to the next world. The actions required of the mix artist often involve changing the landscape in some way; for example, to open the door to Cathy de Monchaux’s “Profit” world, the mix artist must break off a branch of a tree in the landscape, match it to another stick in order to form a cross, and then drag it to a rock with a cross-shaped impression in it that is blocking a waterway. Once these actions have been completed, the rock rolls away from the mouth of the waterway, and the mix artist can then click on the waterway, which leads to “Profit.”
EVE indicates an area of the screen is “hot” (in that clicking on that area will cause some action to be performed) by changing the color of the cursor from blue to yellow. This becomes the means by which the mix artist determines the available choices on each screen. Many times, only one choice appears at first, but after the mix artist has exited the screen, performed certain actions, and returned to the screen, new choices often appear. For example, upon entering the first world’s panoramic landscape, the mix artist’s only option is to click on the dilapidated building in the center of the screen. Once inside the building (known as the Human Relations Building), the mix artist must then watch several brief videos of people talking about intimacy and relationships before the exit becomes available and the mix artist can move on. The mix artist encounters this building at the beginning of each new world.

It appears that this is the manner in which the designers of EVE exert control over mix artists (this is not bad per se, and may actually be necessary in some cases) and “force” them to experience certain parts of the work that the source artists felt were important. For example, one of the requirements for moving to a new world is to have visited the screen that shows a video of that world’s artist creating his or her work. Therefore, in order to move on in the work, the mix artist must watch each of these videos. In this way, the source artists guarantee that any mix artist who makes it to “Paradise” has experienced them creating their art. There is certainly nothing essential in the videos that help the mix artist to solve the game, but it is likely a beneficial experience for the mix artist.

The area where the mix artist exerts the most control is in the IMX-Musical Toys (Interactive Musical Xperiences). As mix artists move through EVE, they encounter
screens that reward them for clicking the correct area by playing a small sound sample. As these samples are “collected,” they become available to the mix artist in the IMX building on the panoramic landscape. Each world has its own IMX building, each of which remains as the landscape evolves. Entering the IMX building allows the user to interactively mix together the samples that have been collected, creating individual and unique compositions that can be recorded and saved to disk. This allows for infinite experimentation. The recorded compositions can even be exchanged with other users of EVE, who can then listen to them on their own computer.

There is also a video component to the IMX building. After selecting which “moods” (continually looping background music that sets the tone of the piece) and “fly-ins” (brief samples triggered by the mix artist’s mouse click) will appear (the mix artist is only limited by the amount of available memory), the mix artist can enter the video room of the IMX building, in which each musical element is paired with a graphic element that animates as it plays. When the mix artist clicks a particular part of the screen, the fly-in associated with that area plays and a graphic element associated with that sound animates. In this way, the mix artist can create an experience that is both visual and auditory, dynamically changing elements as the composition plays. In contrast to the traditional means of composing music (or, for that matter, producing digital music in a studio), which involves considerable musical and theoretical knowledge and training (and specialized knowledge of equipment and software in the case of digital music production), the mix artist in EVE needs little to no musical or computer experience, and can even create a composition using visual cues only. In this way, musical composition becomes accessible to a larger group of people and encourages experimentation. Of
course, since compositions can only be played back through *EVE* (and then only if the
mix artist playing it back has collected the same sounds as the mix artist who produced
the composition), the opportunities for mass distribution of these compositions are
limited.

Several scenes recur in each world, each highlighting the contributing source
artist. One of these recurring scenes is the Theme Room, in which the mix artist can click
on the “hot” areas of the screen to learn more about the themes that the source artist is
attempting to convey. There are also Art Galleries for each source artist, where the mix
artist can explore several interactive artworks created by the source artist. The interaction
with these artworks is somewhat limited compared with the rest of *EVE*, but it is
interesting to see how source artists unaccustomed to working with interactive digital
media express themselves in this new context. For example, one of Yayoi Kusama’s
pieces is a yellow screen filled with black dots. As the mix artist moves the cursor
through the piece, more dots appear and music begins to play. Once all the dots have
appeared, the mix artist can move the cursor around the screen in order to mix the
different sounds together. There is no text or narrative presented in these interactive
artworks; the focus is on the blending of art and music. This is not true for the CD as a
whole; while *EVE* has little or no written text (apart from that which appears in the
accompanying book), there are several screens within the CD that consist of short audio
clips of “experts” talking about the themes of *EVE*. These audio clips provide the
narrative for *EVE*, which the mix artist must take into consideration along with the
interactive art and music in order to fully experience the work.
Unlike a hypertext like *Victory Garden*, *EVE* does not provide multiple entrances; rather, the mix artist must perform a series of tasks, such as navigating a sperm cell into an ovum, in order to arrive at the first panoramic landscape. There is no variance in the sequence of tasks; every mix artist must perform the same actions in order to progress. However, once mix artists have progressed further into *EVE*, they are free to retrace their steps back to previously visited screens. In fact, this is encouraged by the structure of *EVE*, as many screens do not reveal all their options until the mix artist has revisited them several times. Again, this is evidence of the designers of *EVE* exerting control over the mix artists in order to encourage continued interaction.

*EVE’s* interactivity varies depending on the screen the mix artist is experiencing. For example, while attempting to open a portal to a new world, interactivity is extremely limited; the designers of the CD require the mix artist to perform a specific series of actions in order to progress, and this series of actions is the same for all mix artists experiencing the work. On the other hand, the IMX-Musical Toys and Art Galleries provide the mix artist with myriad opportunities for interactivity and experimentation. So while certain screens emphasize the source artists’ and designers’ (who can also be considered source artists as well) intentions, other screens allow mix artists to explore their own creativity while considering what they have experienced in the less interactive screens. This combination of control and experimentation contributes to the overall experience of the work.
Chapter Four – Conclusion

In the past, the creation of culture was the responsibility of the great creative personalities — the artists. Traditional cultural theorists upheld this view, defining the artist as a lone genius whose creation of cultural works was a mysterious process, inaccessible to the non-artist. Those not possessing these mysterious artistic talents were relegated to the passive position of the audience, with little opportunity to interact with the rarefied world of the artist or develop their own version of a cultural work.

Postmodern cultural theorists have discussed a new kind of artist and audience, and the roles of these postmodern artists and audiences are markedly different from those of their traditional counterparts. The notion of the artist as individual genius with a passive audience is discarded in favor of an artist open to collaboration with an active, participatory audience that is also intimately involved with the creation of cultural works.

With the influence of digital technology on culture in the late twentieth and early twenty-first centuries, the ideas of the postmodern cultural theorists have been realized in interactive digital media. The roles and responsibilities of the postmodern artist and audience are remarkably similar to those of the source and mix artists working with interactive digital cultural forms. The collaborative relationship between the source and mix artists is also reminiscent of postmodern cultural theory.
Interactive online art, hypertext fiction, digital music, and interactive digital multimedia are major examples of the new cultural forms spawned by digital technology. Each deals with the issues of its particular genre differently, but the manner in which cultural works are created within these new forms is similar across genres. All interactive digital cultural works involve a source artist who provides blocks of information and a mix artist who uses those blocks to create a unique version of the work. Successive mix artists can also interact with the work, building upon the work of previous mix artists or beginning anew with the original blocks provided by the source artist.

Collaboration is one of the most important elements of interactive digital media. This collaboration can be between source artists, between mix artists, or between source and mix artists. In fact, collaboration between source and mix artists is essential in order for the work to exist. This spirit of collaboration, coupled with the possibilities afforded by digital technology, has produced cultural forms that would not be possible with traditional media.

Interactive digital media extend the possibilities for cultural creation, for both source and mix artists. Source artists are able to explore their creative potential in a new digital medium, and mix artists are able to enhance their cultural awareness and thereby enhance their experience and participate more effectively in the creation of cultural forms. As digital technology advances, so will the opportunities for both source and mix artists working in interactive digital media. In turn, this may expand the cultural participation of society as a whole and afford all members of society —
not just the artists — the opportunity to participate in the creation of the culture that we all experience.
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