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Author's Note

This portion of *Selections 2.0* consists of texts of the lectures I gave at Multimedia University in Cyberjaya, Malaysia, as a Visiting Fulbright Scholar in 2006. Initially, I offered to present a series of talks to the University community, over the course several weeks, focusing on Digital Poetry (which I had intended to model after John Clarke's approach to presenting a poetics in *From Feathers to Iron*). Instead, the Dean of the Faculty of Creative Multimedia, Dr. Ahmad Rafi, requested that students be introduced to my research by way of presentations on specific but related topics. Over the course of six weeks, I presented two lectures each to Alpha, Beta, and Gamma (roughly Freshman, Sophomore, and Junior) students, and one lecture to the Delta group (Seniors). For my own sense of exploration, and to make things more challenging, I did my best to avoid re-using materials while addressing the disparate groups, although some cross-over could not be avoided (which is a tribute to the effectiveness and relevance of the poems I introduced). Each of the lectures is accompanied by a WWW site of links/references used during the lecture, noted at the beginning of each lecture, and made available for students who wanted to follow-up on the materials after the session(s). It is impossible to replay the lecture for the reader, and in some ways difficult to replicate these sessions on the page. In an attempt to do so, I have left notations for where I showed various digital poems on a projector—indicated by the word “demo” followed by a title or author—although the sorts of off-the-cuff commentary or readings of the work that often ensue are missing from these texts. The reader should refer to the WWW page for each lecture to review a work, when possible, and be aware that any time an [http://](#) link is shown in this Acrobat (.pdf) file, she or he can click on it to access an online text. The Bibliography presented at the end of the lectures includes only the references to online essays or printed texts. I have decided to let the WWW sites for each of the lectures serve as the bibliography for electronic works; of course, some of these links will become defunct over time—should a link not work, I recommend entering the title into a search engine to see if the missing piece has simply moved elsewhere.

The success of these lectures owes a great deal to several individuals on the Faculty of Creative Multimedia at MMU, who I wish to thank (again) for their feedback and assistance in various capacities: Yap Sau Bin, Khong Chee Weng, Nor Hazleza Binti Mohamad, Mohammad Rozi bin Amin, and Ziaulhak bin Md. Saim. Gratitude should here be offered to Fauzee Nasir and Nazura (Fishie) Rahime, from whom I became acquainted with MMU in 2001. Finally, I would like to express my appreciation to all of the students and faculty who responded enthusiastically to these lectures. I am glad to say that almost everyone who attended the sessions were open to this practically new thing under the Malaysian sun, and that I have greatly valued further exchanges with both students and Faculty since the lectures concluded; I will not be surprised when I see digital poems emanating from this corner of the Multimedia Supercorridor in the coming years.

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Cyberjaya, Malaysia
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Origins of Multimedia and Interactive Art in the United States: New Forms, Materials, Attitudes

[<http://web.njit.edu/~funkhous/mmu/1/>]

“nothing is possible without doing it”
Charles Olson, *Poetry and Truth* (64)

“A multiphasic experience sought a multiphasic form”
Robert Duncan, *The New American Poetry* (435)

"The art work is not a thing, not a static object; rather, it is the process of interaction among receiver, performer, and composer. All three are equally important, equally indispensable, but the composer is only an initiator in the last analysis and, after the performance the work exists at one flash, a memory, finally independent of the time it took to reveal it"
John Cage (cited by Hammond)

The history of multimedia can be described as a field of experimentation involving new procedures, media, methods and aesthetics. It is an undisputable fact that Black Mountain College—an experimental college that hired an extraordinary faculty which was open from 1933 to 1957 in the foothills of the Appalachian Mountains in North Carolina—is the site where multimedia art and literature were first intensively practiced in the United States, at least two decades before computers became popularized.¹ Today I will begin by introducing some of the general philosophies and pre-digital multimedia events that transpired at Black Mountain, then trace subsequent developments in layered art that precede use of computers before discussing the ways in which computerized expression may fall in line with this lineage. As noted above, this discussion has a companion website that organizes links to various relevant sites on the World Wide Web, including a couple of timelines, historical resources, and definitions that I think you will find helpful.

¹ Among the important artists and thinkers that were on the faculty, who are not mentioned in this essay, are Anni Albers, Robert Motherwell, Franz Kline, Alfred Kazin, Merce Cunningham, Ilya Bolotowsky, Jacob Lawrence, Gwendolyn Knight, Willem de Kooning, M.C. Richards, Paul Goodman, and Walter Gropius. Albert Einstein and William Carlos Williams were among the entities on the school's board of directors.

A historical and theoretical aspect of importance in this discussion is Walter Benjamin's idea that, "One of the foremost tasks of art has always been the creation of a demand which could be fully satisfied only later" (237). This view resulted from Benjamin's belief that Dada attempted to create by pictorial--and literary--means the effects which the public would later seek in film.² I mention this quote to suggest that the professors and students at Black Mountain were striving to achieve, by mixing different media, something that could only be rudimentarily realized at the time, although it can now be easily accomplished in the digital sphere. What was happening in the mid-twentieth century in terms of the development of art was that the slow mechanical nature of a linear, sequential process was not equipped to deal appropriately with an environment whose circuitry provides a total electric field and simultaneity of events. The Black Mountain vision for education and presentation of art—with its emphasis on process and materials—required a capability to act, to create, change, and recover particular encounters within the developing body of knowledge.

The other imperative of the college was to serve as a progressive educational institution. "We have no inclination to play at being Greeks, Troubadours, or Victorians; for we consciously belong to the second third of the Twentieth Century," writes Josef Albers in an early Black Mountain leaflet (Harris xix).³ The fundamental goal of Black Mountain was to function as an integrated community, which would interact in a variety of settings, and "believed it wise to pay attention to past experience, and to keep all formulations tentative" (Duberman 25). When Charles Olson became leader of the school in the early 50s, its poetics were further articulated; Olson writes, in "A Draft of a Plan for the College" [1956]: "It is not the appreciation or the listening or the creation of music, but the work side of music as of dance--the direct necessity of either, if you make, as we do, work in writing and theatre pivot on process." (Byrd 65) Olson is referring to the clearly processual and multi-layered art which developed at the school over time, which Robert Creeley described as, "a

² Dada movement inspired later interactive artists was because the Dadaists departed from painting as it was known historically and placed more of an emphasis on ideas through the appropriation of media and modern technology.

³ The website [designmatrix.com](http://www.designmatrix.com/pl/cyberpl/cic.html) proclaims: "Perhaps the world's foremost master of color is Josef Albers, whose paintings are essentially case studies in color, demonstrating how the same color can look radically different (or even how two different colors can look the same) depending upon their contexts" <<http://www.designmatrix.com/pl/cyberpl/cic.html>>.

way of thinking of the process of writing that made both the thing said and the way of saying it an integral event." (Creeley 76)

To describe one example of the type of work nurtured at the school, which is usually credited as being the birth of multimedia arts in the United States, I quote the "Foreword" by unconventional composer John Cage in his book *SILENCE*, which describes the famous performance this environment led to:

At Black Mountain College in 1952, I organized an event that involved the paintings of Bob Rauschenberg, the dancing of Merce Cunningham, films, slides, phonograph records, radios, the poetries of Charles Olson and M.C. Richards recited from the tops of ladders, and the pianism of David Tudor, together with my Juilliard lecture, which ends: "A piece of string, a sunset, each acts."

The maximization of resources which occurred at Black Mountain was a crucial and direct influence on performance art and poetry in the United States after the Second World War. These developments in twentieth century art and poetry, undoubtedly influenced by dada and other precursors, result from the technological ability for the composer to allow and/or control numerous variables of the human senses within the framework of a performance situation or any sort of presentation. A preoccupation with and desire for effect upon an audience is what leads creative minds to multimedia. As former Black Mountain faculty member Robert Creeley wrote in the Introduction to the *Poetry In Motion II* cd-rom, "...poets particularly need to be heard, need an active and defining presence, need physical sound and sight" (n. pag.).⁴ At Black Mountain, this was not only a possibility, but a requirement.

⁴ In fact, of all the utterly profound artists involved with Black Mountain, Creeley, whose collaborations with visual and musical artists are too numerous to mention, most embodied Olson's ideals in a continuum of a multi-layered

A trajectory of multi-layered expression in the United States has kept in-step with the localized activities at Black Mountain, and came to be known as “Intermedia” work, a concept that is defined by Dick Higgins in his book *Horizons*: “When two or more discrete media are conceptually fused, they become intermedia. They differ from mixed media (q.v) in being inseparable in the essence of an artwork” (138). Through the late 50s and 60s, the arts were juxtaposed through activities—known as “Happenings”—created by Allan Kaprow and FLUXUS. Kaprow was a student of Cage's, and saw the importance of breaking down separations between the arts. Happenings were art events that evoked symbolic and universal themes while at the same time integrally involved spectator participation. Artworks were also not restricted to museums or galleries, and were typically staged in public places. In general, artists did not strictly pre-plan events but instead outlined the conditions for an event and then let it play out on its own [see <http://www.geocities.com/Athens/Acropolis/5422/kaprow.html>].

Fluxus artists focused on performance and also emphasized the projection of clear concepts through the implementation of simple actions. As in Happenings, the artwork depended upon the performance of viewers, who participated in the artwork. Obviously, including the audience was a radical departure from traditional performance, where there was a finite division between the performers and the audience. Higgins’ “*A Winter Carol - Contribution #6*” is an example of one such piece. The instructions, as detailed on Petr Kazil’s “Adventure Art” website were: “Any number of people may perform this composition. They do so by agreeing in advance on a duration for the composition, then by going out to listen to the falling snow.”

poetry for over forty years, checking out "all the possibilities inherent in the physical situation and associative values pertaining" (Real 83-4). As editor of the *Black Mountain Review* and beyond, Creeley frequently included, and wrote about, visual works by the artists with whom he was associated; his music, and verbal "dancing", continuously explored the electric possibilities for poetry until his death in 2005.

In literature and other expressive forms that involved language, while there are certainly variances in approach, similar activities would later be carried out by writers involved with The Living Theater, the Judson Dance Theatre and other groups. Jackson Mac Low, Jerome Rothenberg, Carolee Schneemann, and David Antin are writers who used multiple voices and sounds in formal or informal communal poetic events. Purveyors of the Black Arts Movement also recognized the value of multi-layered performances. Amiri Baraka's late 60's collaboration with Sun Ra's Arkestra, *A Black Mass*, would be but one of many examples where collaborative, intermedia forms would arise in the spirit of Black Mountain. Allen Ginsberg describes the "glorious ferment" in New York in this period in the "Foreword" of the *Out Of This World* anthology, writing, "The literary, musical, and cinematic avant-garde, as well as civil rights, censorship, and minority problems, all came together at one point, one spot in time, in the early sixties" (Waldman xxvi). Many particular aspects of the Black Mountain continuum solidify and make clear the importance of performative and intermediary forms in the latter part of the twentieth century.

While Black Mountain College fell into demise in the 1950s, other collegiate programs, such as Rutgers University in New Jersey, began to introduce participatory art into its curriculum, and inevitably, by the late 1960s high tech, interactive art began to emerge as a result of various corporate sponsored events. The first such events, called "9 Evenings: Theatre and Engineering," were organized by Billy Kluver and Robert Rauschenberg in 1966. In this collaborative event, Bell Labs engineers and artists such as Cage, Robert Whitman, Yvonne Rainer, Deborah Hay, and Rauschenberg designing new uses for technologies such as infrared video and wireless radio transmitters. The level of interest shown in the event led to the formation of an organization called Experiments in Art and Technology (E.A.T) that facilitated artists and engineers meeting and collaborating between 1967 to 1993.

A capacious if not curious alternative approach to intermedia arts—mostly speculative at the time—began to develop in the 70s and still occupies our attention in the present. Ted Nelson writes in *Dream Machines* [1974]: "...a very basic change has occurred in presentational systems of all kinds. We may summarize it under the name branching, although there are many variants. Essentially, today's systems for presenting pictures, texts and whatnot can bring you different things automatically depending on what you do" (44). In the 1960s and 70s, Nelson promotes the computer as a mechanism which collects and organizes disparate texts, and suggested the terms "hypertext" and "hypermedia" for presentational media which performs in multi-dimensional ways. Several writers have subsequently chosen to adopt cybertext as a term which attempts to broaden yet create a unified field for computerized and other interactive texts.

Contemporary artists using digital multimedia gain the ability to mechanically process and cross-index amounts and types of information inconceivable to artists, writers, scholars of previous generations. A movement toward encompassing multiple forms through electronic networks is appropriate anywhere where the artistic milieu is energetic, varied, and surrounded by various forms of media. Though art and writing have always been layered, and "branched" in certain senses, increasingly computer technology has come to play a role in the projection and performance of a poetry of layers. With hypertext, writes Michael Joyce, "The text becomes a present tense palimpsest where what shines through are not past versions but potential, alternate views." (3) A range of intertextual associations, and graphical combinations become possible via the computer screen.

Of course, it is a radically different situation to be in front of a computer "reading" than it is to be in an audience witnessing a performance: an abstraction exists in the absence of the presence of a group or human energy. Among concerns that exist at present regard the new media's ability to effectively enact a transference of experience and art. Can digital multimedia possibly carry the gestalt or community of Black Mountain? If not, it can, at the very least, carry the blend of media in publication form and, more importantly, lend itself to some of the important artistic methods and philosophies at the core of Black Mountain philosophies. In fact, technological/hypermedia manifestations of literature and art practically demand intermediary collaborations. Creative modes

of "interactivity," expansive databases, and knowledgeable designs for digital multimedia relieve some of the obvious concerns about art relying on computer interface for effective transmission. Meaning is revealed or evoked through the programmatic, yet malleable, transmission of the "performance."

Artists associated with Black Mountain were able to create a matrixed/non-matrixed multi-layered field for art. With the development and proliferation of mass-media, electronic networks, and hypermedia, terms for performance have unquestionably shifted since the 50s. It is impossible to suggest that computers are a catalyst for various circumstances and ideal possibilities described above. Still, the increased number of parameters in simultaneous projections and sounds enabled by new media imply new combinatorial creative procedures resulting from art, music, and writing which cannot rely implicitly on either unique approach. Nevertheless, nothing like a Black Mountain poetry or poetics exists in cyberspace to this date.

The success of multimedia depends on content and a constructive and passionate energy put forth by the author or composer. Conceivably, it could be decades before anyone finds a way to synthesize a grand poetic vision and the computer. We do know for a fact that electronic composition, vast storage and telecommunications systems now allow for different types of poetic literature to be designed and created. These new systems have the potential to transplant the most effective attributes of the old techniques into the new in a process of using "a word" to absorb and transmit a voice or vision outward.

Using Black Mountain as a model for such artistry demands further scrutiny. Charles Olson, directing Black Mountain at its very end, states his conception of the school: "What Black Mountain College sets itself to do is to breed the first-rate alone. And it does it by opposing, as of knowledge, the particular to the general; as of the person, the common to the special; as of culture and belief, the active to spectatorism..." (Harris 180). The first consideration here, toward the development of progressive forms for expression, of favoring the particular over the general, is not a problem. At the same time, according to Harris, just before Black Mountain closed, "Olson formulated what was by far the most visionary of his schemes for the college. The new college, described by Robert

Duncan as the center of a 'dispersed force,' would retain a nucleus faculty...and sponsor a program of satellite projects...located in cities all over the world" (180). The location of such a poetics may be precisely and effectively enacted through the electronic passages and connectivity enabled by machines. Conflation of these electrified communities may be debatable because the artistic activity at Black Mountain stemmed from a physical and living space. A digitized presentation of poetry in a non-spatial, non-cotemporal form might even be considered by some to be antithetical to the purposes of Black Mountain. In contrast, I see it as an opportunity to renovate an innovative the arts, useful to persons interested in expression that is comprised of varied activities happening independently of one another. Spontaneous, creative, potentially globalized approaches may be simulated by computer processes, as a disembodied poetics grows cross-culturally.

Multiplex is precisely the word which defines the context of cybertext in the current creative and technological moment. Multiple layerings, and the use of telephone circuitry and television receiving equipment capable of carrying two or more distinct signals, are symptomatic of a growing body of literature today. A potential inclusivity, anthological and transgenral, exists through the media's layering abilities. We have reached a point in the age of mechanical reproduction where the demands of the multi-layered poetry born at Black Mountain can be at least immaterially satisfied by manifestations from the new machines. It is an extremely demanding, highly processual, type of work but the tactics and machinery are in place to invent a vibrant poetry as a result of the invention and proliferation of digital media. Given the computer's ability to be programmed to create, change, and recover particular encounters within a textual body of knowledge and forms, it is possible that creative effects born at Black Mountain may be cooperatively carried to the present.

Electronic Creative Writing

[<http://web.njit.edu/~funkhous/mmu/2/2links.html>]

Introduction

This is a presentation on electronic creative writing, the organization of which - in my point of view - can be separated into at least four different fundamental areas: language, image, linking, and thought. In comparison to writing as it has been known historically I believe it is important to acknowledge that one's expectations on electronic creative writing should be different than what we would have heretofore considered forms of creative writing such as fiction and poetry. That is not to say that it shouldn't be held to a standard, but that the standards and qualities of electronic works are inherently different. One central aspect of electronic works is that they are partly derived from human sensibilities and partly formed by machines (or computers and programming); thus, they may be fairly described as cyborgian. This is important to recognize, as a range of possibilities thereby open up. One of the great benefit of working with software or programs is that they are not rational and do not think, and thus are capable of doing things, like forming speech or treating an image, that you or I would never come up with on our own.

Another important thing to consider, especially in works that are generated by a program, is that texts that can always be edited and/or re-versioned. The initial version of a text can be seen as a starting point, a metaphorical piece of clay that can be further shaped through the human author's cognition. A number of writers in the United States, including John Cage, Jackson Mac Low, and Charles O. Hartman, have considered their programs to be first draft writers that make texts that can be further refined through their own minds, sensibilities, and imaginative capabilities. This would be one type of example where human senses are layered upon the machine.

All writing – and perhaps all art making in general – necessarily begins with inspiration, or a vision. This remains true with electronic creative writing, as does the fact that the author or

programmer typically begins with a blank slate. Once the decision to create is made, the process of writing in the electronic formats then begins to differ from the act of putting pen to paper. But I must add that I always recommend to students – especially those working with hypertext – that they outline what they want to create on paper before ever sitting down at the computer.

My approach to creating electronic texts sees it as an investigative, process-based endeavor that demands the understanding and application of some challenging human concepts in conjunction with potentially (though not necessarily) complex conditions of design. To learn and succeed as online producers of text, one must understand that design demands copious amounts of patience, organization, forethought (research and consideration). Fundamental areas of attention synthesized in creating electronic documents, as I have already mentioned, are: language, image, and linking. These are so much the keys to invention in this area. Technical and aesthetic aspects or problems of document construction may be later addressed through a series of questions and considerations associated with these principles and areas of attention.

Philosophical Principles: Human

I reiterate these so-called principles constantly, and single them out because, first of all, they are most useful, and secondly, when I began to develop texts using digital media, no one gave me such helpful advice (a little of which, at the beginning especially, would have helped immensely).

Patience

So many aspects of design and programming confront the digital author, and so many problems are encountered and need to be solved. As well, readers of electronic works may encounter challenging interfaces. Do whatever you can to BE PATIENT with technology at every stage. One can be ambitious and work hard at understanding, but without patience with the machine, the enormous, steady frustration that invariably occurs will adversely affect the programmer's or user's life. Since practically every mechanical problem arising from hardware,

software, coding, and networks has a solution, it is a terrible mistake to let the process get the best of your physical presence and spirit.

Of course, patience is really not the type of thing one can impose. Without patience, however, stress taints any possible success. The entire system and process of electronic production, from digital creature to creator, to end producer and user will benefit from, and will achieve a sensible equilibrium with “the machine,” by understanding the operational elements involved with a given project. This may not occur instantaneously, as certain works will require more time in strategizing and solving technical problems than can be initially expected: do not give up or be angered quickly by something that is not progressing smoothly. To some degree patience is about time; leave enough ample time for invention and process rather than racing for the end product.

Organization

Compared to practicing patience, organization—that is, keeping things together—is a much easier and more enforceable principle to manage, and is fundamental to programming. Just do it! In some cases this means keeping all the files for any given project in the same digital folder, and if possible backed-up on the same clearly-labeled disk. Developing a logical directory structure, and keeping related materials proximate to one another is an absolutely necessary strategy. These procedures may seem obvious to someone who deals with information as a profession, but operating on this level is a critical skill and should not be considered secondary but primary. Multi-tasking—working on more than one project at once—is inevitable for student and professional programmers. Everyone is well advised to keep files organized from the very beginning, and backed-up regularly, or else.

Forethought

Sustained project analysis, establishing objectives and sensible schemes for documents, and, though it perhaps sounds archaic, pre-project brooding are requirements. From the initial idea

onward, producers should continuously ask themselves a series of questions: what are the materials being used in this project, and how shall they be structured / layered? How does this structure facilitate the content? How does content facilitate the structure. Then, in certain cases, How is the topic already covered and broadcast on the Internet? Is it possible to grow and innovate? To be unique? Add content, don't just borrow it. Before any code is written, or any page has begun to be constructed, these or similar questions are asked, answered, and asked again. This might also be called the research phase

As soon as a direction in any project is determined, a litany of particular questions will ensue, along with suggestions. A practice of organizing the materials around a concept presented by the subject itself, if possible, is encouraged.

Forethought demands that research on the topic be conducted on and off of the Web, and that materials be gathered accordingly. The use of search engines is recommended, as is library / database research. Being flexible about the "content" enables a kind of investment into process, i.e., patience and organization that builds good content and design. This learned process can then be transferred to a range of disciplines and occupational arenas.

Aspects: Design

When someone has mastery of how to synergistically blend or balance language, image, and linking, they will almost surely be successful in whatever electronic writing endeavors they pursue. These are the most important issues in the composition of electronic documents, even if each of them is not present in every example text. By delineating the major attributes of each of these elements of design I hope to provide a useful formula for creativity in this area. The first two are familiar forms of communication, aligned with the activities of presenting texts in print.

The ultimate objective, particularly in visually-based and hypertext works, is to use hardware and software effectively to create and design texts appropriate to the settings the work is applied. I

encourage everyone to invent a style or design of their own rather than using some sort of template for information.

My intent here is to characterize briefly procedures and aspects of composition I have effectively used and seen implemented, hoping that the ideas can be of value on a practical level. Effective implementation of these ideas will then be both demonstrated and challenged by examples of electronic writing I will demonstrate shortly.

Language

First and foremost, writing involves creating content or shaping relevant information. Not all files or pages will contain language of course, although those that do should communicate with a clear point, if that is the task at hand. I'll paraphrase Allen Ginsberg's dictum, "maximum amount of information, minimum number of syllables" to indicate what my preferences are—though pertinent substance should never be lost!

Further (and indirectly relating to considerations of "image") is the matter of how the language looks when it is presented, and how the words take up electronic space. This is the "style" of how the words appear (i.e., font choice and color, the labeling of tables, illustrations, or other attributes), which is complicated on the Web by the fact that not all users' browsers employ the same selection of fonts, or allow other manifestations such as java scripting.

Another question especially pertinent to hypertext presentations is: how many words on a page are too many? Is linking paragraph to paragraph—file to file—preferred to scrolling down a long text, even if this complicates printing out the whole work? As with so many questions, no definitive, uniform answer may be given. In confronting such issues, I encourage producers to be instinct driven: give the matter some serious thought, do not be entirely careless or spontaneous, then do what they think is best.

Below the surface, language means html, dhtml, javascript, VRML, or any number of other languages. I do not think it is necessary for electronic creative writers to know all of these languages, though one should know what they are capable of and how they may bolster expression.

Image

Primarily, this area concerns the use of images (still or animated), and how these affects “work” to accentuate the body of information being presented. The use of images should be practiced, but never just for the sake of using images. Effective visual communication will add greatly to a project, whereas careless efforts will hinder utility. Consider how pictures and graphical elements can be used to amplify and represent the content. Naturally, the subject matter is the greatest influence on this matter. The overall appearance—the gestalt—is usually one of the producer’s main concerns, although the overall function of a text, if determined in advance, will often impart greatly assist in imparting a design on its own. As the poet Robert Creeley famously said, which Charles Olson picks up on in his essay “Projective Verse,” “Form is never more than an extension of content.”

Linking

This attribute can ideally extend the communicative properties of any text. In organizing materials, it is crucial to foresee how sets of words and images correlate, and connect files accordingly. Linking allows a narrative to be imposed. In order to bring variant qualities to a text, I recommend moving away from the 1:1 link-node model that is highly pervasive on the Web. In many circumstances, this type of link cannot be avoided, especially if the information needs to be streamlined. However, it is possible to create an index of links from a linked word. If “cybertext” is at all a viable alternative, where a viewer is removed from a guided sequence of events (a linear flow of subject matter) and is given narrative control of the experience, so that their selective movements effectuate a semiotic sequence, I completely condone it. It is this type of linking model that will

make electronic texts more interesting in years to come. The scope of online textuality has not advanced to this stage yet, so for now linking really means a viewer selecting where they want to move in a text from a range of options. In academic projects, the more disarming, or obvious, a link can be in its appearance, the more useful it is. In other cases links can be mysterious and hidden for its own benefit.

In all circumstances, we stare at the product of links, wired or wireless, as metaphorical mineral conductors of texts in the historical present. From this vantage point, we see that all electronic writing involves some type of link. In hypertext, the link is the primary mechanism by which a reader negotiates text. In graphical and multimedia works (which foreground sonic and visual elements), different elements are composed together as simultaneities. Text-generators present another type of linking, between the algorithm or program and the text as it comes to the reader. Links—literal or conceptual—are always present in this extended environment; the activation of computer coding creates a textual spark that is the foundation on which any digital poem is built. The surface of the work appears as a result of the links between directions in the code.

Technology will perpetually change, but I am confident that the areas I have outlined here will be the fundamental considerations for any interlinked, networked texts in the future. With that in mind, I have developed some QUESTIONS TO HELP GUIDE ASSESSMENT OF COMPOSITION, which mostly pertain to conventionally styled text.

- 1) How thoroughly is the topic at hand verbally “covered”?
- 2) Is the work original / does it add content to the WWW (or whatever textual sphere it is a part of)?
- 3) How well do images propel or accentuate the written text?
- 4) Are links presented usefully; do they contain useful information without unnecessarily distracting or disorienting the viewer?

5) Is an overall sensibility established, where the content and form work together to engage the reader?

For unconventional texts, which are typically artistic in nature, the purposes of verbal transmission are less about direct communication and more interested in the transmission of an aesthetic, or developing new forms of expression.

Working Works

I will spend the rest of this session demonstrating how electronic creative writing manifests on practical levels, and will present a few examples for your consideration. If you happen to do a Google search on electronic creative writing, you will come up with a few dozen sites essentially pertaining to teaching the composition of hypertext. However, to my sense, the field is much larger than that.

The first types of digital writing ever developed were algorithmically based: programs that were written that used various procedures to automatically produce writing. Such practices certainly continue today. This has to be viewed as a form of electronic creative writing. Graphically based visual poems and other sorts of writings that are produced using software certainly should be considered a form of electronic creative writing, as should animated works that include language in motion. How could this not be a type of writing, even if it is videographic? Finally, there is hypertext, which although conceived more than forty years ago by Ted Nelson, did not see any works produced until the 1980s. All of these forms are new in comparison to the forms of writing we are accustomed to historically, I suppose representing alternatives to the norm. So let's take a look at a few of these different types of electronic writing.

We'll start by looking at programs that generate, manipulate, or process texts. The first is a program that was created in 1988 called "Your Personal Poet," which enables the production of simple and trite occasional poems that emulate a generic, if personalized, holiday greeting card rather

than a text suitable for an anthology of quality poetry. The user establishes a number of topical variables (e.g., who is to be addressed in the poem, including their name and descriptive traits), as well as stylistic variables (e.g., “light and amusing”/“serious and sentimental”). Let’s make a poem with the program. Until recently, this program was available at a gaming site, and you can download a copy from my Digital Poetry course site (<http://web.njit.edu/~funkhous/2005/403/POET.zip>).

The next piece I want to show you is by a Finnish artist named Leevi Lehto, who has programmed a site that creates “poems” from Google search strings, appropriately titled the Google Poetry generator. You can use this tool to create unconventional works of poetry [example: make one using the term petronas towers]. Lehto has also created within this project a device called Googlism, which I like even better [example: Multimedia University].

Another site I want to show you mimics a program that was designed by Hugh Kenner and Joseph O’Rourke in the 1980s called “TRAVESTY.” TRAVESTY analyzes a text file and identifies successive patterns of letters and spaces (known as “character groups”) and makes a “frequency table” for each character group in a document’s source text (55). The user is prompted to set the desired amount of output and to set the size of the pattern length up to nine characters in the original version of the program. The user is responsible for providing the input text; the program itself supplies no dictionary or database. TRAVESTY scrambles (or permutes) the text by replacing each character group in the text with another (of the same size) located elsewhere in the source. So here we will put the text of this lecture into the program. Several excellent programs created for Macintosh computers are also available, including Charles O. Hartman’s “MacProse,” and works in John Cayley’s *Indra’s Net*.

I’ve selected a few visual works that I would like to demonstrate, mainly from the Web but I also have a couple of pieces from cd-rom. In mIEKAL aND’s, “Mesostics for Dick Higgins,” the text [demo], which is arranged in mesostic form is seen to perpetually, rapidly replace itself. Jim

Andrews has created an abundance of graphical poems, sound poems, and even an elaborate textual game on his VISPO site [demo "A"] . For now, I will just show a couple examples of his visual works. Giselle Beiguelman, a Brazilian artist, has created numerous inventive works that are included in her portfolio, including Recycled [demo] and "Ceci n'est pas un nike" [demo] Another Brazilian, who was one of the instigators of the Concrete poetry movement in the 1950s, Augusto de Campos, has also designed some powerful electronic works, including "Sem-Saida," which is included on the cd-rom that comes with his volume *Não Poemas* [demo]. Loss Pequeño Glazier's "COG" uses kinetic language to transmit a basic message about the expansion of the visual possibilities of a poem.

Other, like Richard Kostelanetz, literally write on the screen, permuting words and letters before the viewer's eyes. [demo CD-ROM] Another artist, Maria Mencia [demo] has used various techniques to present alternative modes of communication in literary works. For instance, her poem "Birds Singing Other Birds Songs" does not contain any language—words as we know them at all—yet the title of the piece tells us what we need to know, and we see and hear the rest. Brian Kim Stefans' "The Dreamlife of Letters" [demo if time] is another asyntactical piece of writing—which is actually made from another piece of writing by Rachel Blau duPlessis, which is cinematographic, not to mention beautiful in its presentation. As Janez Strehovec has observed, the "meaning" of the poem is created by the "quick transitions to anti-words, derivative words, and even non-words" (n. pag.). Words become something else when put into motion, and certainly different from what they are on the page.

The final types of work that I will briefly show are hypertexts, which by definition are non-linear productions. I have selected just four examples, which we do not have time to explore thoroughly, but will give you a sense of yet another contemporary literary dynamic. Michael Joyce's "Twelve Blue" [demo] is a radically non-linear piece, which implements a couple of different linking techniques (text-based and image map) to guide the viewer through its narrative. Because of the way

its properties are programmed, text disappears, and one cannot possibly read through the text the same way twice. Aya Karpinska [demo] has created an innovative type of graphical hypertext in her piece “The Arrival of the beeBox,” which layers text in a very unique way, giving the reader many different possible ways to read the same fundamental texts: the poem pivots on a wheel and emerges while being navigated. Diana Reed Slattery, in *AlphaWeb* [demo], uses a combination of language and graphical imagery to entice the reader through the text. Stephanie Strickland’s, “The Ballad of Sand and Harry Soot,” is a hypertext with stimulating graphical qualities that also uses standard link-node methods to read through the text. [demo]

I also wanted to mention that you can find links to these and many more texts on the syllabus to a course that I taught last year called Digital Poetry, which is linked at the bottom of this lecture’s WWW page. [<http://web.njit.edu/~funkhous/2005/403>]

Many years ago, the French semiotician Roland Barthes redefined and expanded the concept of text for the world, so that anything can be considered and read as a text. Given the new forms of writing we can tell that activities for at least some writers have changed drastically, as the conditions of textuality are now so different. Electronic Creative Writing is even more than words; it is in some cases a synergistic blend of various forms of expression, in others entirely programmatic. Electronic writing does not emphasize one particular approach but rather uses many different techniques. Some texts retain some of the historical conventions, and others are entirely unconventional. Electronic texts have developed so intensely and rapidly since the 1990s, time alone will tell which events will prove crucial in the progress of this still relatively new art form, as creating artful texts evolve alongside technology.

Electronic Resources for Literature and Art

[<http://web.njit.edu/~funkhous/mmu/3/>]

Today's presentation focuses on online resources for art and literature, and we will do that by looking at a number of websites that I either know and use regularly or have recently sleuthed out while preparing for this session. We will take at least a quick look at each site, and I will explain why I think that each resource may have value to you as an artist and/or researcher. Perhaps you will have seen some of them already, perhaps not. My hope is that knowing about them will expand your horizons and provide you with some background information the next time you are writing about art, or are in need of inspiration. In addition, there are at least three other important aspects that are brought forth, and proven through this information:

- 1.) the Internet clearly creates networks for artists;
- 2.) the Internet does reduce the cost of accessing this information (which is often critical for artists; and
- 3.) the Internet does encourage reviewing the past before proceeding.

My background, and area of expertise, is in the field of digital poetry, which by definition is creatively situated between the domains of art and literature. This afternoon I will begin with the art sites, and then we will take a look at the more literarily inclined resources.

The first document here, Art History Resources on the Web (<http://witcombe.sbc.edu/ARTHLinks.html>) is a massive site designed and maintained by Dr. Christopher Witcombe, a professor at Sweet Briar College, that has been growing on the WWW for more than a decade. As you can see it is global in perspective, and covers essentially art throughout the ages: from the prehistoric period all the way to the 21st century. Not only does it provide overviews of art movements and individual artists, it links to many museums and galleries. For instance, through this site I came across a link to the National Gallery of Art in the United States,

which links to a database on all of the more than 100,000 objects in the museum's collection (including the image I now use on my desktop, Robert Rauschenberg's *Malaysian Flower Cave*, 1990). Although I have not been able to review all of the links on this site, which would take weeks if not months, I can safely quantify it as an indispensable site for the history of art.

The next site I want to introduce, ArtSource (<http://www.ilpi.com/artsource/welcome.html>) refers to itself as "a gathering point for networked resources on Art and Architecture." The materials, while less expansive than the previous site, are contemporary and useful. In addition to containing links to many basic resources, the site links to journals, electronic exhibitions, libraries, educational programs, and arts organizations. The site contains a section on new media (where I found an amusing DADA server) and a virtual ceramics exhibit. An "Image Collection" (<http://www.ilpi.com/artsource/images.html>) section is also very potent, as it links to about ten different, largely alternative (in comparison to Witcombe's pages), off-site resources for finding images; one link goes to Giuseppe Zito's Algorithmic Image Gallery, another to Art Crimes, a gallery of graffiti.

The next site, the WWW Virtual Library: Art History (<http://www.chart.ac.uk/vlib/>) is sponsored by CHArt (the Computers and History of Art). It is completely up-to-date, and thorough in its coverage of the Arts. In one section you will find selected important archives of images called "Large Image Collections" (<http://www.chart.ac.uk/vlib/images.html>), which links to the University of Michigan's Mother of All Art History websites, and *The Web Gallery of Art*, which contains more than 14,000 images! In addition the WWW Virtual Library site makes links to online discussion lists, resources for imaging and digitization, specialty art suppliers, online teaching resources, and other tools.

Another great site for locating images is the University of Delaware Library's Digital Image Collections page (<http://www2.lib.udel.edu/eresources/digitalimages/>), which connects, as do some

of these other resources, to massive databanks of images, such as the esteemed J. Paul Getty Trust (<http://www.getty.edu/>), which allows users to explore works from the Getty Museum's expansive collection. From the Delaware site you can also connect to the up-to-the minute photosharing site Flickr (<http://www.flickr.com>). Flickr is, at this time my absolute favorite image site, as it gathers, and hypertextually organizes through user-provided tags and other means, thousands of photographs every day, which anyone can view for free.

For those not looking for images, but information about photography, I have included the site A History of Photography (<http://www.rleggat.com/photohistory/>) because it offers a dense and detailed history of photography from the 1830s to 1920s, and biographies for most of the important photographers since photography was invented. This is, unabashedly, a historical site. Those who wish to know more about the early period of the form, or want to know more about the great photographers, will highly value this resource. A lengthy scholarly bibliography is provided, making the site even more useful.

Also along scholarly lines, I wanted to be sure you are aware of the ArtLEX Art Dictionary (<http://www.artlex.com/>), which as the site advertises, defines "more than 3,600 terms used in discussing art/visual culture." Terms are defined, and artistic movements are also introduced. The utility of this hypertextual resource cannot be overstated. Of course, one can also refer to wikipedia to find out information about artists and movements, but I think the information found in this dictionary is more reliable, even if the entries are generally briefer than what you will find in wikipedia.

A commercial site, World Wide Art Resources (<http://wwar.com/>) is another massive portal, mainly focusing on the works of contemporary, practicing artists. The site claims to hold 100,000 "diverse and high quality collection of contemporary artworks," which are organized through artist portfolios and gallery portfolios. An arts marketplace showcases new works: you can

buy and sell if you are a member. This resource also broadcasts arts news, links to online publications and artblogs, and announces exhibitions. One of the superb features here is that the entire site can be searched by keywords and location, so you can find out what is happening locally, regionally, and internationally.

Along the same lines, Gallery Guide (<http://www.galleryguide.org/>) is the online version of *Gallery Guide* magazine, which is a “comprehensive source of art gallery and museum exhibitions.” The site is updated on a daily basis, providing information on exhibition openings. The publication highlights shows that are important, but also provides a service by announcing many shows. The main drawback for this site is that it is limited geographically to the United States. However, if you want to know what is going on at present in the US, you can always tune in to this resource.

Locally speaking, there are at least two websites that promote the arts and art events in Malaysia that I know of, Art Corridor (<http://www.artcorridor.com/>) and Kakiseni (<http://www.kakiseni.com.my/>). In many ways these sites do in Malaysia what the Gallery Guide does in the US. The Malaysian National Gallery of Art also has a website (http://www.artgallery.gov.my/mod_com/index.php), as does the Islamic Arts Museum, and most other arts organizations in the region.

If you are interested in knowing what is happening elsewhere in the world, you can check out the website Museums around the World (<http://palimpsest.stanford.edu/icom/vlmp/world.html>), which is fairly self-explanatory. This site, in my view, is stronger in some areas of the world than it is in others. A better site, perhaps, is the site titled Museum Computer Network (<http://www.mcn.edu/resources/index.asp?subkey=81>), which links to many other fine sites like “Global Museum” which reports relevant museum news, has museum job listings, and other features in addition to harnessing museum library pages and databases. Yahoo’s Arts page(s) (http://dir.yahoo.com/Arts/museums__galleries__and_centers/)

also contains much useful information, including links to major museums, and resources for architecture, performing arts centers, and arts related activities and components including typography, glass work, folk art, sculpture, and dance.

The last specifically art site I am going to show you briefly, is the Franklin Furnace Archive (<http://www.franklinfurnace.org/>). What makes this site particularly unique is Franklin Furnace used to be a museum/gallery that occupied an address in lower Manhattan, New York City. Now it exists only as a website, yet its crucial activity as a resource for artists has not diminished. Supporting itself by donations, and auctions of artworks, Franklin Furnace continues to “present, preserve, interpret, proselytize and advocate on behalf of avant-garde art.” The site contains online archives and databases that have the effect of decentralizing the museum’s collection, making representations of it available not only to people who can visit their physical location. This organization supports itself by holding auctions, at which works by artists the museum has patronized over the years are sold.

To build a bridge between arts-oriented and literary sites, I will spend a few moments showing you another fabulous site called Ubuweb (<http://www.ubu.com>), which was started in the very earliest days of the WWW, circa 1996. Ubuweb is the brainchild of artist and writer Kenneth Goldsmith. As is, it is the premier site for innovative multimedia art on both historical and contemporary registers, serving as a archive for avant-garde visual, concrete, and sound poetry. The site contains scans of hundreds of works by influential avant-garde artists, as well as critical essays, and many sound files. Beyond the historical works, it also houses important contemporary hypermedia works, such as Brian Kim Stefans’ “The Dreamlife of Letters,” and contains many out-of-print works, making it a truly indispensable resource. If you want to have a virtual crash-course on avant-garde art, this is unquestionably the place to start.

The Electronic Poetry Center (<http://epc.buffalo.edu>) has had an online presence even longer than ubuweb, and is an equally important resource for exploring the works of writers and electronic writers online. Produced by the artist Loss Pequeño Glazier at the University at Buffalo-SUNY, this repository has grown from being largely focused on text and print-based works, to being one an important—if not the most important—resource for electronic poetry. The project has been successful in its goal to “to make available a wide range of resources centered on digital and contemporary formally innovative poetics, new media writing, and literary programming.” At present, the EPC contains about 150 different print author pages, and pages for about 100 electronic writers, e-magazines, and related sites.

A newer site, that is associated with both ubuweb and the EPC, which focuses exclusively on audio poetry, PENNsound (<http://www.writing.upenn.edu/pennsound/>), was launched in 2005 and has quickly become the best of all places for anyone to hear poetry, as hundreds of authors now have works archived at this site, which is hosted by the University of Pennsylvania. In addition to housing thousands of recordings, both historical and contemporary, the site invites scholars to single out “featured mp3s;” selections that are up now have been chosen by renowned American critic Marjorie Perloff. Again, the site puts back into circulation works that are out-of-print, as well as some that are never before published. Numerous audio anthologies are reproduced, as are live events.

The Electronic Literature Organization’s purpose is to “facilitate and promote the writing, publishing, and reading of literature in electronic media.” Their homepage (<http://www.eliterature.org/>) is probably the most important resource for online writing and writers today, as it circulates announcements regarding professional positions, publication information, calls for work, and other news of interest to those working in this field. In recent years it has established

the Electronic Literature Organization Directory (<http://directory.eliterature.org/>), which presents information about electronic artists and authors, and links to their homepage(s) or online works.

Eastgate Systems (<http://www.eastgate.com/>), founded and directed by Mark Bernstein, is, even at this late date in the hypertext and electronic publishing era, really the only professional publisher producing and promoting electronic works. In addition to producing titles on diskette and now CD-ROM) this company's website features a section that is devoted to hypertext resources (<http://www.eastgate.com/Hypertext.html>), and also an online reading room (<http://www.eastgate.com/hypertext/WebHypertext.html>). Just as with the other literary sites I have just discussed, one could lose days looking through all of the materials presented here.

Before concluding, I wanted to mention that if you are interested in electronic writing, you can find links to many more electronic texts via the syllabus for a course that I taught last year at New Jersey Institute of Technology called Digital Poetry. The syllabus is linked at the bottom of this lecture's WWW page. Also, the two other lectures I have recently given at MMU contain links relevant to the topic of multimedia art and literature, so I have made links to the sites for those lectures as well.

If you are looking for online resources for traditional literature, I will recommend the following sites: The Online Literature Library (<http://www.online-literature.com/>), Bibliomania (<http://www.bibliomania.com/>), Classic Authors.net (<http://www.classicauthors.net/>), and the massive archive American and English Literature Online Books for Educators (<http://falcon.jmu.edu/~ramseyil/online.htm>). For Malaysian literary news and information, see the Dewan Bahasa dan Pustaka website (<http://www.dbp.gov.my/lamandbp/main.php>). I am sure that many other literary resources are available, which you can undoubtedly locate by entering specific topics of interest into a search engine.

During the past hour, I have given you a sampling of online resources, which I hope you will be able to make use of, one way or another, in the future. However, I also wanted to remind you to use the library. In my weeks here at MMU I have noticed that the library here has a mighty fine collection of art books too. We are clearly in an electronic age, but this does not mean there is no use for printed materials. For some time, the key will be to glean the best information you can from both domains, until the world's libraries are entirely available online.

What is Digital Poetry?

[<http://web.njit.edu/~funkhous/mmu/4/>]

Today's presentation is about Digital poetry, which is a new genre of literary, visual, and sonic art unknowingly launched by poets who began to experiment with computers in the late 1950s.⁵ Digital poetry has become not a singular "form," but rather a conglomeration of forms that now constitutes a genre containing heterogeneous components. Digital poetry is an evolving process, employing various techniques that began to form before the advent of the personal computer and continues to refine itself in the World Wide Web (WWW) environment. In it, poets explore a variety of computerized techniques, from interactive installations to randomized and visual attributes. My talk aspires to reveal the development, range, and construction of digital poetry, as well as what constitutes the genre.

In his preface to the 1973 anthology *Computer Poems*, Richard Bailey identifies four poetic tendencies that influenced the works included in the collection: "concrete poetry," "poetry of sound in verbal orchestrations," "imagistic poetry in the juxtaposition of the unfamiliar," and "haiku" (n.pag.).⁶ The poems in the anthology reasonably support his (somewhat) dated viewpoint, and there is a correspondence between poetry and digital poetry. Of course, beyond digital poetry's relationship to literary works and theories, it would be remiss to omit mention that early works were also influenced by trends and possibilities in mathematics (stochastic operations and other types of equations), computer science (hypertext theory), and other fields. Further, digital poems share so

⁵ The pursuit of composing poetry by using computer operations began in 1959 when Theo Lutz made "stochastic" (i.e., random variation) poems written on a program-controlled ZUSE Z 22 computer. At the time, he was a student of Max Bense, who suggested using a random number generator to accidentally determine texts. Examples of this work, which applies tools of mathematics and calculation (i.e., logical structures) to process language, along with descriptions of its attributes, were published in a 1959 article ("Stochastic Text") in Bense's journal *Augenblick*. The article was published in *Augenblick* 4 (1959) and is republished on the WWW at <<http://www.reinhard-doehl.de/poetscorner/lutz1.htm>> (7 July 2003); see also <http://www.stuttgarter-schule.de/lutz_schule_en.htm> (9 July 2005).

⁶ Bailey also cites Mallarmé's emphasis on the role of chance promotion of chance (see paragraph below) and the "imposition of order on disorder" as important tendencies present in the works he was able to collect.

much with other forms of multimedia art that it can be difficult to make distinctions between works that employ sound, imagery, language, and animation.

[demo mall1.html] It is important to recognize that digital poetry is pluralistic in the creative (poetic and poetics) influences it embraces, the media it employs, and genres it fuses. Many poems embody expressive potentials realized on the page by previous generations of poets; it is not difficult to find stylistic elements associated with previous epochs of literary history in many digital works. Digital poetry's stylistic foundation is first established by pre-Modernist literary beacons. French Symbolist writing, particularly Stephane Mallarmé's late 19th century poem, "A Throw of the Dice Never Will Abolish Chance" (1897), pages of which are being projected here, is unquestionably one artistic predecessor that directly impresses upon the disruption of textual space and syntax found in digital poetry.⁷ The variations in typography, incorporation of blank space, and the liberal scattering of lines often found in digital poems can be discerned as having roots in Mallarmé's work (which also strongly influenced the development of Concrete Poetry in the 1950s). Such patterning has been extended by the addition of interactive and kinetic components. Mallarmé's importance was previously acknowledged (albeit briefly) from a different perspective in Bailey's preface to *Computer Poems*, which largely featured randomized poetry created by computer programs:

Mallarmé published a slogan for modernism: A throw of the dice will never abolish chance.

Chance is not abolished by the computer's randomizing power but is re-created in different terms. The poet-programmer finds this power a tool to create a new set of dice, multi-

faceted and marked with elements of his own choosing. (n.pag.)

⁷ As divulged and reconstructed in the body of work that appears on Florian Cramer's *Permutations* WWW site, the programmed permutation works that emerged near the outset of digital poetry have even earlier predecessors in combinatory works that date back as far as 330 A.D. In the essay "Combinatory Poetry and Literature on the Internet," Cramer defines combinatory poetry as "literature that openly exposes and addresses its combinatorics by changing and permuting its text according to fixed rules, like in anagrams, proteus poems and cut-ups" (n. pag.). Samples and re-inventions of writings by Optatianus Porphyrius (*Carmen XXV*, 4th century A.D.), Julius Caesar Scaliger (*Poetices*, 1561), Georg Philipp Harsdörffer ("Fivefold Thought Ring of the German Language," 17th century), and other works are capably presented on the *Permutations* site, illustrating how the mechanics of contemporary (and prehistoric) digital poems have roots in works produced several centuries ago.

Here Bailey privileges the power of Mallarmé's thematic content, although I would assert that the aesthetic properties of "A Throw of the Dice," particularly its visual attributes and the fact that it requires readers to make decisions about how to read the poem, are equally important, if not more so.

[demo "IO Sono at Swoons"] The term digital poetry can be used with certainty; its strongest definition is found in the introduction to the volume *p0es1s: Aesthetics of Digital Poetry*, which proclaims that digital poetry: "applies to artistic projects that deal with the medial changes in language and language-based communication in computers and digital networks. Digital poetry thus refers to creative, experimental, playful and also critical language art involving programming, multimedia, animation, interactivity, and net communication" (13). The authors of this essay [Friedrich Block, Christiane Heibach, and Karin Wenz] identify the form as being derived from "installations of interactive media art," "computer- and net-based art," and "explicitly from literary traditions" (15-17). Digital poetry is a reasonable label to use in describing forms of literary work that are presented on screens with the assistance of computers and/or computer programming. A poem is a digital poem if computer programming or processes (software, etc.) are distinctively used in the composition, generation, or presentation of the text (or combinations of texts). The genre combines poetic formations with computer processing or processes. As Janez Strehovec writes in the essay "Text as loop: on visual and kinetic textuality" (2003), digital poetry incorporates "kinetic/animated poetry, code poetry, interactive poetry, digital sound poetry, digital 'textscapes' with poetry features, and poetry generators" (Text n. pag.). As a genre, it "intersects the literary avant-garde, visual and concrete poetry, text-based installations, net art, software art, and netspeak"

(n.pag.).⁸ Given these observations, it can be asserted with confidence that digital poetry is a genre that fuses crafted language with new media technology and techniques enabled by such equipment.

Computer programs that write sonnets or haiku, videopoems, interactive sound poems, and hypertexts, despite their stylistic differences, all qualify as digital poetry. Multiple types of computerized production can be analyzed as one generality that includes hypermedia, hypertext, computer-generation, and other digital manifestations of poetic text. All forms of digital poetry comprise a singular genre that contains multiple subcategories, just as the genre of “poetry” contains many different styles (i.e., free verse, the sonnet, haiku, and so on). Work constructed using “programmable media” (a phrase author John Cayley promotes)—individually and as a whole—could be labeled anything; since no strict appellations exist, an author can choose to call it whatever name he or she wishes; labels such as “e-poetry,” “cyberpoetry,” and “computer poetry,” have been used to describe creative work in this area.⁹ Establishing a singular term with which to classify digital poems—a genre that has been developing in stages—is certainly debatable, as these forms, while built on similar principles, are always being technically, culturally, and imaginatively redefined. These variations of forms—related by technological agency—encompass many techniques as they serve both to represent (i.e., simulate) classical literature (in programs that implement classical forms, or by assembling CD-ROM anthologies of classical poetry) and, more profoundly, embrace new forms of literature and methods of communicating verbal information.

⁸ The term “netspeak,” according to Strehovec, implies that, “the language of zeros and ones, and of ASCII and HTML characters is involved in new poetic structures with striking visual, animated, and tactile features” (Text n.pag.).

⁹ For example, in discussing the same general sort of works in a recent entry in *The Facts on File Companion to 20th-Century American Poetry*, Catherine Daly intelligently uses the label cyberpoetry (“concerned with the machine control of the writing process, delivery of poetry in more than one medium, and machine-mediated interactivity between audience and reader or writer and text”) to discuss the various formulations of digital poetry (114). Daly’s view sees the genre as divided into three parts: “procedural,” “multimedia,” and “hypertext and cybertext” poetry (she distinguishes “cybertext poetry” as a form that “involves readers’ queries, assumptions, and actions, which change readers’ perceptions of the cybertext during the interaction”) (116). Obviously many labels are plausible, each of which acknowledges that digital poetry is a practice—a presentation of expression—that is open enough to include many fringe forms and methods in producing writing and art, as long as they are mechanically enabled by digital hardware and software.

[demo “Golden Lion” (Cayley), and page with bullet points of text-generator] Poets initially used computer programs to synthesize a database and a series of instructions, in order to establish a work’s content and shape. Labeled by its authors as “Computer Poetry” and “computer-poems” (among other terms), these works are generated by computer algorithm, arranged as a sequence of words according to a programming code. All works of text-generation can be seen as performing some type of permutation in that they transform or re-order one set of base texts or language (i.e., word lists, syllables, or pre-existing texts) into another form. The permutation procedures of algorithmically-generated poems can be devised into three classifications. Works are either permutational (recombining elements into new words or variations), combinatoric (using limited, pre-set word lists in controlled or random combinations), or slotted into syntactic templates (also combinatoric but within grammatical frames to create an image of “sense”). The creative spirit and impetus to combine randomness with order through intricate, technical art, alters the human relationship with language. Cyborgian poetry, works co-created by humans and digital machinery, emerged from these experiments. Works by many artists have proven that language can be digitally processed into sequences to create a type of synthetic poetry. [demo one of each type here: Permutational = Porto (*Alire* 8), Combinatoric = Carmona (*Alire* 8) and Peter Howard’s Haiku Generator; Slotted = MERZ (semi-random haiku)] The text that has been running while I’ve been speaking is John Cayley’s 1994 “Golden Lion.” Cayley’s programs, which you will see more of later, use “given” texts and kinetic processing. “Golden Lion” involves the presentation of two levels of text at once, that continually appear and dissolve; collocational procedures drawing from various source materials generate the output. These base texts include the author’s own poem and a text written by the Chinese Buddhist monk Fazang (AD 643-712), translated by Cayley, into which letters of Cayley’s line are sequentially embedded in bold typeface.¹⁰

¹⁰ Cayley’s collocation process actively produces content through generative algorithms embedded within the

Text generators usually rapidly produce many poems, using a programmatic formula that selects words from a database to create output. Computers cannot be programmed to engineer a “perfect” poem; some poets use the computer to alter or subvert typical forms of expression, others seek to be imitative. Either way, selecting appropriate input text is the most important element in the process of pronouncing meaningful expression. Whoever establishes the database co-authors the poem with the writer of the program; the user of the program also has authorial prerogatives in selecting from and editing output. This type of computer poem challenges and invites the reader to participate imaginatively in the construction of the text; some mock the conventions of poetry, others reify them. From a general point of view, the majority of combinatoric and permutation works produced feature variations, extensions, or technological implementations of Dadaist technique. Many aleatoric poems contain few parameters and also share sensibilities common to open-form poetry. Of course, and somewhat ironically, the poems are not pure chance occurrences—they are preconfigured to be randomized, and some examples contain fixed attributes, as in slotted works, where the author strives to imbue rigid syntax or comply with established parameters. Digital poetry made with text-generating programs gradually developed into a multifaceted form of its own, exploring many styles of literary expression.

[demo slideshow of pix; graphical bullet-points] By the mid-1960s, graphical and kinetic components emerged, rendering shaped language as poems on screens and as printouts. Since then, videographic and other types of kinetic poems have been produced using digital tools and techniques. This advancement—foregrounding the visual aspects of language at least as much as the verbal—marks several changes in the development of digital poetry. In contrast to computer poems

program that shuffle language using a formula to determine word placement. Describing some of the details of collocational mechanics (i.e., the imposed programmatic constraints) in the Introductory section of *Moods & Conjunctions: Indra's Net III* (London: Wellsweep, 1993-94), Cayley writes that the, “transformation can proceed with any word in the given text, which we then may call ‘the last word chosen.’ Any other word—occurring at any point in the given text—which follows (collocates with) the last word chosen may then follow it and so become in turn the word last chosen.” (*Moods & Conjunctions*, n. pag.).

introduced above, these visual and kinetic works largely employ mutation as opposed to permutation. Static and kinetic visual works introduce a poetry of sight, overtly conscious of its look, sited on and incited by computers; standard typefaces became a thing of the past. Digital poets began to work with prosody that was literally in motion.

The earliest works by Marc Adrian (1968) and Carl Fernbach-Flarsheim (1970) were, like text-generated poems, automatically spawned by viewers encountering a program in an installation setting. With the development of graphics software, subsequent works embodied visual methods that approximated concrete and visual poems, non-interactively rendered and fixed on the page. The computer became a convenient tool to manipulate the appearance and presentation of text. Some titles closely follow earlier manifestations of visual poetry; others (like the videographic and hypermedia productions) venture further afield and do not aim to simply reconfigure the style of poems that are read and understood exclusively through alphabetic language. By the 1980s, poets increasingly presented moving language on screens as a result of the development of PCs. Kinetic poems long predates a style of digital poetic practice that erupted with the emergence of the WWW, typified by works such as Stefans's "The Dreamlife of Letters" as well as those found archived on Komninos Zervos' *Cyberpoetry* site, and elsewhere.¹¹

The influence of poststructural critical theories, such as deconstruction, spurred poets to challenge their imaginations, and invent new appearances to poetry. However, language was not rejected but worshipped more deeply, a spirit divulged boldly on the dbqp WWW site: "Once the religion of the sacred word became obsolete, the word itself became the object of our reverence" (Incunabula).

¹¹ Groundwork for today's animated digital poems (such as those made with Macromedia Flash) was in fact underway by the mid-70s, in coded works such as Arthur Layzer's "textured animated poetry" (written in FORTRAN) that featured words "streaking" down the page (McCauley 118).

Digitally rendered poems portray at least three different traits: words are arranged into literal shapes; words show patterns that represent dispersal or displacement of language; or, words are combined with images (as in a collage). In static poems words that do not move are placed on the screen. In kinetic works, optical mutation of words and letters is the operative principle; poems, by design, move and change before the viewer's eyes. Poems that inscribe kinetic language can be divided into two general categories: projected and interactive. Projected works set poetry in motion in two distinct ways. Words are plotted into motion (or letters themselves change shape or morph in appearance), or are presented as part of kinetic collages in which elements of language are combined with visual objects or symbols in single or multiple visual scenes/scenarios. In the few interactive works that are kinetic and do not involve overt hypertextual operations, viewers are invited to set some of the poem's parameters (used in the activation or appearance of words), or interact with a virtual object that is fixed in position on the screen. [demo mIEKAL aND "Seedsigns for Philadelpho Menezes" (WWW), Komninos Zervos, "Beer;" R2 "Poesia Extática" (*Cortex* CD-ROM); Augusto de Campos "SOS" & "sem-saida" (CD-ROM)]

In kinetic works, poets find dozens of ways to portray poetic text as shifting, vibrant verse. Palimpsest is used powerfully; images can be a mélange of fragments of words complimented or replaced by imagistic forms. These poems show that many different expressive elements can be plotted at once, or in a short period of time, layered on top of one another. Putting phrases in motion as sliding, spinning objects, and otherwise synthesizing words, lines, and symbols are the techniques established as typical of all visual works. The inclination to display poetic work in such ways developed alongside the technology capable of accomplishing the task, which has only increased with the technical developments in the WWW era, where even games have been developed [demo Jim Andrews "Arteroids"].

Experiments by those who made activated or interactive works represent an important and fascinating step in the production of poetry. Using computers to make visually charged language and programming it to move were novel applications of technology; digital poetry's emphasis on cultivating active language added to its canon of generated and graphical texts. Graphical poems as such are not new to literature, though the tools for producing them now alter, accelerate, amplify, and, ultimately, animate the process. Contributing to a trend that fosters changes in the act of reading, an increase of poetry containing graphical elements has intensified in recent years because both the software and publishing medium of the WWW enables (if not encourages) the incorporation of visual elements.

[demo: "The Arrival of the beeBox;" hypertext bullet-points] In the 1980s, hypertext (non-linear texts that are intrinsically, mechanically interconnected) developed in sync with the increasing availability of the personal computer. Theorist Michael Joyce classifies presentational modes used by authors into two distinct categories: "constructive" and "exploratory" (Minds 41). These models are useful towards establishing the broadest codification of hypertextual poetry. Thus far, nearly all works are explorative, and various forms emerge within this vein of production which pertain to the media inscribed and methods of navigation. As defined by Joyce, exploratory hypertexts allow their audience to guide themselves through a text as interest, engagement, and curiosity dictate, and reflect the author's sense of structure. This mode, according to Joyce, ideally allows the audience the ability "to create, change, and recover particular encounters with the body of knowledge, maintaining these encounters as versions of the material, i.e. trails, paths, webs, notebooks, etc." (41). A reader explores a body of work that has been set before them on the computer. Constructive hypertexts, on the other hand, are steadily built by their audience, as part of a process of transforming the knowledge previously presented; Joyce has described dynamics of such texts as "versions of what they are becoming, a structure for what does not yet exist" and "serial thought" (179, 189).

Programmers developed tools that facilitated such non-linear writing, enabling authors to create links within and between texts while simultaneously incorporating visual, kinetic, sonic, and static verbal texts. In these works, a number of different files (comprised of various media) are programmed into arrangement with each other, presenting poems in segments through a series of links, or may be otherwise conceived, as Jay David Bolter observes in *Writing Space: Computers, Hypertext, and the Remediation of Print*, as “visual objects with which the reader interacts” (156). Once hyper- works were developed, all the principle possibilities of contemporary digital poetry were available—the genre has proliferated in the past twenty years by synthesizing and cultivating each of its modes. We can identify distinct characteristics in every digital poem, but the accumulation of styles confounds any single critical definition of artistic works which merge poetry with digital technology.

Essentially, four types of hypertext works were designed: 1.) those which feature only text presented as a series of nodes which are directly interlinked (sometimes with some sort of “map” that can be used as guidance); 2.) those that feature significant graphical and kinetic components (i.e. hypermedia), also based on the 1:1 link-node premise; 3.) those that present a virtual object that the user negotiates (without having to constantly “click” on links to traverse that text); and 4.) those that are formed through methods of aleatoric progression. [demo: text-only: Robert Kendall; significant graphical components: Stephanie Strickland; virtual object: Jim Rosenberg *Intergrams*, Maria Mencia “Birds Singing Other Birds Songs;” Gyori; methods of chance progression: Cayley’s *riverIsland*]

Internet publications, network writing initiatives, digital projects conducted in physical space (including holographically presented poems), and audio poetry have been produced since the 1980s. In these manifestations of digital poetry, the expressive issues do not include whether or not the computer can write poetry, or graphically enhance it, but how various types of machinery can be used to accentuate and modify poetic process and range. The collaborative composition of online

texts, as practiced by groups, in MOOs and elsewhere, extends previous forms of written collaboration into a virtual environment. Atypical modes of design and quick delivery are characteristics of these publications. In the network era, computers are also being used as a mechanism to circulate contemporary and historical productions. Digital sound tools and processes alter the way voices are constructed, heard, and combined. In so many ways, computer technology has been used in conjunction with poetry, as writers invent new practices, and re-invent old ones with digital media.

The WWW unquestionably ignited a proliferation of digital poetry, boosting the confidence of artists who had previously been wary of the instability of technologically-based writing. Growth of the WWW undoubtedly benefits and increases the visibility of digital poetry, so the form has grown and works have been refined. Nonetheless, earlier endeavors clearly define the boundaries of the genre, despite advancements in hardware, networks, and software. Despite the transitory, ever-evolving technologies and elements, the principles and features of digital poetry—text generation, flexible and collaborative language, use of sonic and visual attributes, interactivity and intertextual linking—have only been altered slightly if at all in texts that have been produced since the dawning of the WWW. Digital poetry is still forming and gradually progressing, though it largely continues to embrace the characteristics of its forbears.

Techniques used by digital poets galvanize, or synthesize, media in the construction of poetry, in which meaning is produced through the recognition of differences between instances in the chain of pre-programmed sequences. Poems in this style thus impart a type of deconstruction through their shifting, activated rhetorical structure. As E.M. de Melo e Castro writes in his essay “Videopoetry,”

Poetry is always on the limit of things. On the limit of what can be said, of what can be written, of what can be seen, even of what can be thought, felt, and understood. To be on

the limit means often for the poet to be beyond the frontier of what we are prepared to accept as being possible. (140)

Building a context for digital poetry within a broader historical spectrum, Melo e Castro outlines the central elements of this neoteric form, which emphasize, as poets have throughout the ages, “the importance of phonetic values in oral poetry, of scriptural values in written poetry, of visual values in visual poetry and of technological values with computer use and video for the production of poetry, and not only for simple repetitive and non-creative tasks” (141). Melo e Castro sees such a synthesis as an inevitable response to the challenge of new technological means for producing text and image. In some instances, messages are succinctly and directly transmitted, but more often the combination of words, symbols, and images requires viewers to decide what this conflation or concatenation of elements means.

Digital poems are more inclined toward abstraction and are largely de-personalized, especially as the media used in composition has become hybridized. Randomization, patterning, and repetition of words, along with discursive leaps and quirky, unusual semantic connections are almost always found, though sometimes these effects are so amplified that the poems would not be considered poetry by someone using traditional definitions. Digital poetry is not a fixed object; its circuitry perpetuates a conversation. Ideally, as in the case of many text-generators and other forms of interactive work, the poems can perpetuate themselves. Poetry is a socially constructed art form, always situated within other texts (not limited only to poems) and extended by readers. Meaning and significance are not completely dependent on the verbal material itself; they are formed in the mind of the reader, who synthesizes various tiers of influence (inputs) and, potentially, extends them (outputs). In the essay “We Have Not Understood Descartes,” André Vallias encapsulates the essence of digital poetry as literature in a broad sense:

It seems to include within itself and to transcend technologically a whole series of poetic manifestations which started out with the avant-garde movements of the twentieth century, such as visual poetry, phonetic poetry, performance poetry, etc. Interactivity allows a work to be modified according to internal criteria (those defined in the programming language) and also according to the repertoire and interests of the reader; it opens up a field of unlimited dimensions for poetic research, and provokes an irreversible subversion of the traditional relationship between author, work, and reader. (157)

In this passage, Vallias provides a useful summary of the enterprise of digital poetry in relation to historical forms, while simultaneously suggesting its most potent characteristics.

[demo Stefans(PC)] Made obvious in viewing any digital poem is its release from a fixed format.¹² A dramatic break from sharing real physical space occurs, whereby the signs that constitute the poetic text are immaterial. Contemporary modes challenge authors to avoid looking at any part of the systems involved—audible, alphabetized, imagistic—as discrete or independent units. Building a widely conceived philosophy of text is the responsibility of authors working with fully integrated (audio/video/alphanumeric) and layered (linked and coded) texts.

Poet-programmers have devised numerous methods to handle computer coding, the (often) unseen language responsible for formulating a digital poem. As yet, however, methods of creating

¹² Taking this idea one step further, in the contemporary era Jacques Derrida and others have theorized that words are not rooted in anything—they only have meaning in relation to adjacent words and texts to adjacent texts. This is certainly true in randomly generated digital works, in works that appear in sequences (either static or animated), and in many hypertexts (which are typically presented as a series of interlinked fragments). When we encounter the various forms of digital poetry, we see a representation of our highly technological world; within the myriad types of expression, the artist often seeks to expose, and sometimes subvert, the various binary oppositions that support our dominant ways of thinking about literature (and, perhaps, about communication in general). The deconstructive contention that texts intrinsically contain points of “undecidability,” which betray any stable meaning that an author might seek to impose on a text, is certainly a feature of many digital poems. These undecidable aspects of text situate, for Derrida, “the places where discourses can no longer dominate, judge, decide: between the positive and the negative, the good and the bad, the true and the false” (*Points* 86). In several forms of digital poetry—particularly in text-generated and hypermedia works—discovering the methods used to produce digital poems reveals that which has been suppressed (underlying computer code or intervention of software) and, typically, texts cover over materials that have been previously shown on the screen. Hierarchically structured binary oppositions within poems are undermined, despite the use of binary (coded) operations used in their production.

digital works are dwarfed by the number of forms of written poetry. For example, more than seventy-five unique forms of poetry are discussed in the *Handbook of Poetic Forms*, a useful guidebook for students of poetry edited by Ron Padgett, and many more are reviewed in *The New Princeton Encyclopedia of Poetry and Poetics*. This coverage is unsurprising, considering that these books address poetry across centuries whereas digital poetry is (mechanically) less than fifty years old. Though many different variations of digital poems are available, the overall number of general classifications of forms remains relatively small. Computerized literature and artifice are still in their early stages, and will become enriched at a gradual pace. The complexities handled by poets using written language, the challenges met despite perceived limits to alphanumeric forms, have just begun to be broached by digital poets. The first decades of the craft established a few models, which may be ultimately regarded as rudimentary efforts when contextualized within any overall history of computerized writing.

In *The Postmodern Condition: A Report on Knowledge*, Jean François Lyotard proposes that contemporary discourse can make no claim to finality, even if it does not seek to put an end to narration. He argues that the computerization of society, which shifts emphasis from the ends of actions to their means, has made metanarratives (as a means of legitimizing knowledge) unnecessary and intolerable because technology is self-legitimizing (108). Cultural transformations (especially the growth of technology) have altered the historical tenets of science, literature, and art. His pluralistic, relativist views suggest that art is no longer required to seek or produce truth and knowledge, and may abandon standards and categories. Lyotard's argument that what he calls performativity "brings the pragmatic functions of knowledge clearly to light" and "elevates all language games to self-knowledge" is certainly substantiated in the diverse traits reflected in digital poetry (114). The text's identity as a computer form, containing expanded semiotic operations, often subjects the reader to an unfamiliar type of reading. In negotiating the interface, a reader's experience involves

thoughtfully participating in the textual activity and thereby experiencing the poem on compounded visceral and cognitive levels.

Programmed works literally assemble language (if not other media components) to the specification of the programmer; formal, precise programming commands are written to perform particular tasks. The earliest works of digital poetry strictly involved coding as there were no other possibilities, although software increasingly shouldered the burden as the genre progressed, facilitating the poet's conceptual application and aesthetic (thereby enhancing prospects for digital poetry and widening the field). As code, the task of handing language is used more often than not to order, rather than disorder, poetry. Even if the poet-programmer wishes to instill disorder, the process calls for prescribed stylistic elements. Alternatively, with software, the programming generally involves establishing frameworks in which disparate elements—whether the different elements of a visual scenario, or files that contain different verbal passages—negotiate with one another, or are negotiated by the viewer. As is always the case with its written counterpart, digital poetry relies on the author's senses, thoughts (or inspirations), and vocabulary to form words (which can be accompanied by other media) into expression. As always, the poet enacts language amidst a range of possible treatments.

Some digital poems—even those assembled by a machine—are grammatically flawless while others completely disregard linguistic conventions. Digital poems do not exist in a fixed state, and may be considered less refined as a result of this condition. Author(s) or programmer(s) of such works presumably have a different sense of authorial control, from which a different sort of result and artistic expectation would arise; consequently, the purpose and production would veer from the historical norm. Because of this shift in psychology and practice, digital poetry's formal qualities (made through programming, software, and database operations) are not as uniquely pointed and do not compare to highly crafted, singular exhortations composed by historic poets. Instead, digital

poets bridge layers of text(s), images, and other effects, that result in reaching beyond the machine to affect the reader's imaginative, intellectual, and other aspects of her or his non-virtual world. The vitality of digital literature relies on how textual possibility and human ingenuity (vis-à-vis programming) are combined to synthesize poetic thought and programmatic expression.

[demo: “MERZ pictures”] Digital poetry has always been a multi-continental, de-centralized practice. Works have been created in many languages. Not only is digital poetry an unusual idiom of creative expression, it is also an idiom that for more than three decades has resisted, as if by definition, the need to embody a singular set of mannerisms in its use of multiple languages (including computer code) and stylistic approaches. Digital poetry has steadily redefined itself with the development of new tools and artistic interests. Utilizing and relying on more technology than any other era before it, the twenty-first century presents poetry—one of our most intimate and intricate forms of expression—with at least two significant charges. Poetry should continue to remain accessible to its audiences by engaging important social and technological issues, and cultivate readers through the production of stimulating works in all forms. Poetry—stylized language—can allow for innovation and accept adaptations within its forms and tradition. As a craft that remains a vital cultural interest and pursuit during the first decade of the century, poetry is apparently prepared to weather these challenges. At this historical moment, in fact, the fruits of these two charges appear to be interrelated and enhanced by technological advancement.

Widespread computer usage and improvements in digital systems and networks have particularly altered the disciplinary sense of what poetry can be, while intimating what the dynamics of literature may contain in the future and how it will be presented to readers. Digital poets have not labored to experiment and invent out of cultural necessity or desperation; works have sprung from self-driven exploration of computer media and the individual desire to craft language with technology that, in

turn, modulates and modifies traditional approaches to writing. The computer has presented both a puzzle and formidable sounding board for poetic ideas and articulations.

Digital Literary Arts

[<http://web.njit.edu/~funkhous/mmu/5/>]

[*Alive* cd-rom shown as base-text, starting with issue 1; play files as essay is read] The conditions of textuality in digital literary works often blur the boundaries between poetry and prose, or literature and art. Richard Lanham has described this circumstance of text as “digital equivalency,” meaning that, “we can no longer pursue literary study by itself: the other arts will form part of literary study in an essential way” (17). In the 1989 essay “The Electronic Word,” Lanham writes, “the personal computer itself constitutes the ultimate postmodern work of art. It focuses all the rhetorical themes advanced by the arts from Futurism onward...” (17).

Over the past several decades, poets have invented numerous ways to produce works using computer technology. Sometimes devised as simulations of old forms and models, many examples hypertext fiction or digital poems can be considered “new” by virtue of their presentation. The development of these genres parallel the rise of new technological apparatuses—as computing has become more centrally integrated with culture, more people have become involved with using computers for creative endeavors. Digital literary art may not have developed to the point where people are willing to pay money for it, as they do in bookstores, but in some regards the genre has progressed to the point where it has begun to alter our perceptions and expectations of what literature is. Growth within various forms and the overall aesthetics of digital literary arts during the past four decades is impressive, and commercial titles have been occasionally produced. It is likely that such developments would have stopped dead in their tracks had the experiments failed to produce compelling results. Instead, the growing numbers of digital authors—and readers—reflects a burgeoning interest in the expressive capabilities of computers.

Digital literary works are visually shaped and animated by software and programmed into lyrical forms of all sorts through computer coding; their integrated fragments are initially arranged by

the author and then re-ordered by the viewer. Poetic language plays various “roles.” It animates language and dynamically infuses the computer screen with atypical elements. In contrast to those who use technology to market and sell products, digital literary art subsumes old forms, and invents new ones, and more intensively explored the possibilities for alternative forms of communication. Without the expectation or pressure to turn a profit, poets have had the liberty to consider and employ unconventional material aspects. As Eric Vos writes in “New Media Poetry – Theory and Strategies,” his consideration of approaches to new media literature, "The innovative force of new media poetry lies not in the communicative channels used (e.g., computers, video, holography) *per se*, but in the exploration of their ramifications for syntactic, semantic and pragmatic aspects of verbal/poetic communication in general" (215).

As writing mixes with digital media, computer-based compositions have been conceived using a variety of methods; words are configured into texts that are surprisingly expressive, assembled by devices built for calculation and used mainly as mechanisms for the exchange of capital and information (though increasingly for the transmission of entertainment and communication). Poets and programmers working with hardware and software continue a tradition of writing that merges poetry with image, programmed language, cultural observation, and expressive symbols; many of the artworks produced in previous decades are clearly related to challenging verbal-visual techniques of the past, even if they endeavor to find unique, contemporary ways to process and refine language. From a consideration of the past emerges a mechanical display of the postmodern present, as artists strive and successfully cultivate language in what would have been, fifty years ago, futuristic communicative styles.

Digital literary arts in all forms reflects and exploits the highly processed, mechanical aspects of the cultural moment we now live in, and computer programming and software change the ways in which text(s) can be manipulated. Writers open to working in visual and hypertext forms can take

advantage of aesthetic fusions, layering dimensions that are difficult if not impossible to enact on a printed page because they are kinetic and/or cyclical, disconnecting from one another by design. Text-generators and other language processing programs have helped poets to both re-inscribe and wildly distort conventional forms of writing. In prose, and in poetry, a type of translation, of (or from) the world occurs in digital works. However, creating art presented by or for computers requires other processes than writing words down—the verbal climate of the digital material depends on the successful implementation of many procedures, both technical and artistic.

Literary art in digital form takes on many different appearances and its textual dynamics are not uniform. Authorship engages with technology; writing mixes with other elements empowered by digital media. Despite the challenges of evolving software, computer platforms that become obsolete, and other fragilities, digital machinery is increasingly used as a staging area for poetry. Computer coding allows authors to synthesize multiple layers of text for the viewer/reader; hardware and software amplify and generate writing, presenting visual, oral, and/or alphabetic dimensions of text. Digital technology is now part of a compounded form of writing, whether in the form of word processing, desktop publishing, or in the movement of work created beyond the “permanence” of the page. Writers who use digital media combine their vision and linguistic skill with visual and auditory communication and are creating a genre of new forms within the multitudinous realm of poetry. In its transformation from code to computer, digital writing and presentation use the alphabet and other symbols/images in electronic space, creating a tactile sense of language and expression that effusively pours out of computer screens. Language—poetry’s principle vehicle—is no longer lodged on a fixed, silent page, as it is in print (even if readers “sound” poems as they read). Words from one language enter a dynamic and transmittable circuitry through another—computerized—language that establishes built-in links, intricate graphical components, soundtracks, and other capabilities. Vivid literary art is now charged with additional

dimensions, and poets continue to cultivate a complex relationship with language in a society of linguistically simplified popular media.

It is no surprise that by now many artists have made earnest attempts to employ new media to advance digital literary arts on the WWW. New capabilities, developments, and trends will continue to transform the appearance of texts (at the very least), and may very well contribute to further areas of formal investigation that surmount text-generation, graphical representation, and hyperlinking. As the WWW's platform and composition tools have become popular, writers have become more willing to explore writing and design (literally *de*: or *from* the sign) on the WWW, where words become images and can also be voiced. Computers allow a type of expansive communication through electronic networks and connect readers who have become accustomed to a screen rather than a page. The cultivation of such a media-oriented culture in general is underway; the combination of human curiosity and technical capability will be what determines the advancement of expressive digital works.

Each type of digital literary art bears elements of performance and translation. As performances, digital poems are not (yet) dramas with actors on stages, but are sometimes interactive, a quality not usually encountered by theater audiences. Digital writing is a creative, interdisciplinary exhibition or "screening," where language and computers serve as mediators, as contemporary interpretations of verbal articulation. A completely different language, the language of computer "programming," intervenes and re-creates sense and vision within the poetry. Code, translated by the machine, is the language that handles writing.

Quickly, I'd like to introduce an idea that I feel is important to the growth of all types of expressive digital works—which I mentioned in my first lecture to this group—and then we will look at some contemporary works. In *The Human Use of Human Beings*, Norbert Wiener writes, "Feedback is a method of controlling a system by reinserting into it the results of its past

performance...if the information which proceeds backward from the performance is able to change the general method and pattern of performance, we have a process which may well be called learning” (84). Espen Aarseth’s notion of cybertext, introduced in the book *Cybertext: Perspectives on Ergodic Literature* (1997), may accelerate developments in digital poetry—not as a style or form of text but, rather, as “a perspective on all forms of textuality” (18). Defining cybertext, Aarseth returns to the origination of the “cyber-” prefix in Wiener’s concept of cybernetics. At its root and essence, cybernetics is a “system that contains an information feedback loop” (1). Aarseth defines “cybertext” as a specific type of dynamism where the reader/viewer makes selective movements to effectuate a semiotic sequence, where “nontrivial effort is required to allow the reader to traverse the text,” as ergodic literature (1).¹³ In other words, more than clicking on a link (or, analogously, turning the pages of a book) is required to traverse an ergodic text. An information feedback loop is the inscription of an input mechanism which leads to output particular to the present reader, a type of openly-structured call and response, or process of ongoing decision and result. Cybertext transactions focus attention on the reader, calling for intervention and response, rather than (or in addition to) interpretation. Through creative and experimental application in any medium (paper, radio, television, computer monitor, etc.), cybertext makes the viewer a driving force, with narrative control. Aarseth writes: “The cybertext reader *is* a player, a gambler; the cybertext *is* a game-world or world-game; it *is* possible to explore, get lost, and discover secret paths in these texts, not metaphorically, but through the topological structures of the textual machinery” (4). Within his general concept, Aarseth has developed an intricate and thorough typology, with which readers can make distinctions among types of works created in any media. Aarseth’s typology, which I won’t go into now (you can read about it in a footnote attached to this essay) is complex; he introduces

¹³ This distinction is necessary, for instance, because the effort required to click on a link in a typical WWW production would be considered trivial in most cases; thus most WWW pages are no more ergodic than an ordinary novel.

concepts and terms in order to identify, discuss, and chart the most tangible aspects of any text.¹⁴

[demo J.M. Dutey's "Voies de Faits," *Alire* 2]

What I would like to do at this point is pause to show you a few examples of digital literary art, some of which is an extension of familiar forms, and some that are entirely unconventional and technologically "new." As we look at the sites, I will comment on the degree to which each possesses cybertextual ideals.

The first example is the digital manifestation of one of the most popular poetry devices in the world, known as Magnetic Poetry, which has been brought into the digital realm through Java as Online Magnetic Poetry [<http://www.magneticpoetry.com/magnet/index.html>]. The site contains a number of different thematic sets, which the user can manipulate however he or she wishes. This is a basic type of cybertext. Although it is self-contained and the user is unable to add (mechanically) new content, he or she can arrange words according to their own wishes, and thus integrally participates in the construction of expression.

Another type of production is the text generator, of which there are many varieties. This one, Peter's Haiku generator, by Peter Howard [<http://www.hphoward.demon.co.uk/haikugen/framset1.htm>], uses javascript and will automatically compose haiku (or tankas) for you all day long [add stuff about haiku]; the author has

¹⁴ For instance in Aarseth's scheme, "scriptons" is a term that describes strings of text as they appear to a reader, "textons" describes the strings as they exist in the text, "traversal function" is the mechanism by which scriptons are revealed or generated from textons and presented to the user (62-65). The seven variables of Aarseth's typology (Dynamics, Determinability, Transiency, Perspective, Access, Linking, and User Functions) create a multidimensional space of 576 media positions from which a cybertext profile can be charted and any text's qualities quantified. Analyzing these elements within texts in all media, he provides a cross- or trans-media vocabulary, an apparatus by which to discuss and analyze all forms of textuality in a neo-textual world (65). Areas outlined within Aarseth's function-oriented perspective are: 1) Dynamics: the changing of the textons to its scriptons (the way textons change to create different scriptons); 2) Determinability: the predictability of the text, whether it is randomized or if it is constant; 3) Transiency: the pace at which the text moves (i.e., the rate of the appearance of scriptons); 4) Perspective: the involvement the reader has with the text (personal or impersonal); 5) Access: Random access means all scriptons of the text are accessible at all times; if there are hidden parts that a viewer must work to discover, access is controlled; 6) Linking: the text's most direct association with other parts of the text, which can be explicit, conditional, or non-existent; 7) User functions address subjective aspects of a text, with explorative, configurative, interpretive and textonic functions (65).

provided a page that describes his process and links to another work called a “poetry engine.” The only control the user has over the creation of the haiku, is choosing from a short list of vocabularies (i.e., standard, silly, erotic, noir, not silly, light). This work has little cybertextual value, because the machine does most of the works once the user has established the parameters. Above all other forms of automatically generated works, the programming of computer haiku has been the most widely explored of this type of practice. Because the haiku seeks to dispatch a lot of imagistic information in a short amount of time and space, it is perfect for computer re-formulation. Not only did programmers have to deal with fewer lines and words (only seventeen syllables), the form in essence asks for quick, compulsive leaps. In some cases, as in MERZ Poems, which is a Mac Program I am unable to show today, the user can alter the database, making it a cybertextual event.

Advanced examples of automatically generated, user controlled digital texts can be found on *Permutations* [<http://userpage.fu-berlin.de/~cantsin/permutations>], where several “server-side computer programs written in the Perl programming language” emulate a range of historically conceived combinatory poems (such as anagrams, proteus poems and cut-ups).¹⁵ *Permutations* is a useful, interactive, and informative site, wisely designed to work in all browsers without requiring downloads or plug-ins. In many works, viewers can identify any WWW site (by entering a URL), or insert her or his own documents, as the source text to make a poem. Users can set further parameters in some programs via menus containing processing options (e.g., size of alphabet or type of numerical conversion in Cramer’s “Gematria/Anagrams”), or—as in this site’s version of Queneau’s *100,000,000,000,000 Poems*—by selecting the source text to output from a range of choices on pull-down menus. In addition to inviting the input of text or a URL, the program that demonstrates Tzara’s cut-up method uses a pull-down menu to give the viewer a choice of twenty

¹⁵ The WWW site first went online in Spring 1996. See <<http://userpage.fu-berlin.de/~cantsin/index.cgi>> (21 Mar. 2005).

online newspapers to cut up. Texts are generated quickly, and the viewer can watch how each poem functions. [demo examples]

Leevi Lehto, a Finnish poet/programmer, has created a “Google Poetry Engine” that makes poems from Internet search string titles <http://www.leevilehto.net/google/google.asp>. This is a relatively new program, which can be tremendous fun to play with. The user truly participates in the construction of text by providing the input (search string) that is used to create the poem. Lehto’s project features a couple of different types of generators that create different types of poems. [demo]

I now want to show you another style of ergodic text, which usually goes by the name of hypertext. This piece is a work of fiction by Michael Joyce called “Twelve Blue” (a story in 8 bars) [http://www.eastgate.com/TwelveBlue/Twelve_Blue.html]. The user accesses the writing via either text links that appear at the bottom or side of the interface, or by using an image map that appears at the center of the opening screen or in a sidebar of subsequent screens. The user has multiple choices as to how the narrative is controlled (visual and textual), and it is unlikely that the story would ever be read the same way twice. Multiple layers of textual information are presented (through prose, browser tool bars, etc.). So on the surface, the work may seem basic, if unconventional but the author’s writing is complex, and demands that readers devote their full attention to it, as one is supposed to do with any piece of literature.

A more graphically spectacular hypertextual piece is Aya Karpinska’s “The Arrival of beeBox,” in which interactivity is crucial to the reading of the work. Karpinska uses 3-D modeling software (3D Studio Max) to render three separate planes of language, each containing seven clusters of layered words. The poem pivots on a wheel and emerges while being navigated by the reader, who is required download the piece (made with Director) and acquired the necessary plug-in device. These constellations of language are at first indecipherable; the viewer must discern how to

negotiate, plot a course, and read through the multiple dimensions of words. By manipulating the computer mouse, the viewer can magnify the text(s) and bring any area of the document to the foreground.

By the twenty-first century literature, for some, has also begun to embrace gaming technology. Jim Andrews' piece "Arteroids" may be the best example of this style of interactive work [<http://www.vispo.com/arteroids/arteroids.html>]. Based on the 1980s video game, Andrews has built a structure with which the user can both play a game and create unconventional texts at the same time. [demo]

In 2002, in collaboration with George Taylor, I launched "Moby-Dick," an interactive, cybertextual piece that contains aleatoric functions and allows viewers to enter their own input according to pre-established parameters. At first, several acrostic poems written in a notebook are presented in plain text on the screen [<http://web.njit.edu/~funkhous/2001/mobydick.html>].¹⁶ At a second level of text, which is now (temporarily unavailable) a javascript randomly rearranged the original sixty-four words into new permutations and automatically renews the text every five seconds. Some of the re-creations surpass the original poems. At the next and final level, which is working [http://web.njit.edu/~funkhous/moby-dick/aug_moby_add.php], the information is ergodically re-programmed to allow readers to contribute verbal content. The original association with Melville's book is unlikely to be sustained in this interactive version, as contributors are not likely to reflect on (and probably will not recite from or listen to) *Moby Dick* as they input words. This is a secondary and perhaps irrelevant point. Since so many human predicaments are encompassed in the novel, I believe that any words that enter the poem are relevant to the intent of

¹⁶ The words in the original acrostics stem from a lecture about *Moby Dick* and readings of the novel by students at "Reading for the New Millennium: A Global Dialogue on American Literature and Culture in a Time of Change Conference" (Peking University, Beijing, China), 2001.

the piece. This experiment is part display, part investigation into the mechanics of the acrostic form, part reading game.

In my view, computer science and creative expression have integrated well with one another but digital literary arts, despite the technological advancements in recent years, has not reached its optimum level of performance. Progress in all aspects of computing has led to complicated verbal and vibrant multimedia works that are far richer and more spectacular than the days in which ascii texts were the only possibility. Language is presented in alternative creative forms (sometimes generated, sometimes fixed), enhancing the visual qualities of texts. As a matter of fact, language may be secondary to the visual scheme of any given work. In general, viewers are presented with a stimulating and challenging textual scenarios, which have made some works quite successful so far.

DIGITAL POETRY TODAY

[<http://web.njit.edu/~funkhous/mmu/6>]

This afternoon we'll be looking at recently produced works by several of the most prominent and active digital poets. What I'd like to do in this session is show some works, and then engage in a discussion with you about them. As the poems are projected I will offer a few observations and some commentary, but I am just as interested in your impressions on the work as I am in my own perspective. We'll look at all of the pieces first, and then proceed with discussion.

Before looking at the work, I wanted to briefly sketch out some historical background on digital poetry, borrowed from my book on the subject, *Prehistoric Digital Poetry: An Archaeology of Forms 1959-1995*, which was written, in part, because many people incorrectly think that before the WWW there was no such thing as digital poetry. In the book, I establish the fact that all of the foundations for digital poetry, which are, essentially, automatic generation of text, graphical/visual works (static/kinetic), hypertext/hypermedia (including sounds) were all established by the late 1980s or early 1990s. The book illustrates these early works, and argues that digital poems in the future, no matter how advanced technology becomes, will be comprised of these types of textual formations. In the very contemporary works that we will explore today, you will notice that while the poems are in many cases highly refined, if not spectacular, that they all can be discerned as all fall into these categories.

You hopefully remember that were introduced to these forms (or types) of digital poetry in the last lecture, and that you were shown a few works. Since that lecture is available on the Web (<http://web.njit.edu/~funkhous/mmu/2>), I do not feel inclined to reiterate all of those details here. In reviewing the index of poems that I showed before, I noticed that only one of the pieces was produced after 2003, Leevi Lehto's "Google Poetry Generator" (<http://www.leevilehto.net/google/google.asp>), which I hope you've all had the opportunity to play

with since then. So, today's lecture serves to bring you up-to-date about the state of Electronic Creative Writing—in the form of digital poetry—at present.

The piece that is being projected now, John Cayley's "lens" (<http://www.shadoof.net/in/>), was initially designed for 3D presentation at Brown University's VR "Cave" as a graphical world of textual objects; this rendering is a "maquette" made with QuickTime. Words are layered in different dimensions and in different colors that do not always contrast well. Their presentation in this form projects a commentary on legibility and the necessity of developing reading strategies when textual surfaces are inverted. The impact of such a text is more profound when experienced in 3D. As Cayley writes,

In the Cave version of 'Lens,' the effects are far more striking, disturbing and spectacular. The letters of 'Lens' obey previously cited rules so that their surfaces turn towards the tracked point of view, and the textual objects in the piece are fully 3D as is the space itself. The lens text can be moved in relation to the reader's point of view, drawn close or sent out amongst the distant darker texts, like an investigative spotlight. Most spectacularly, because of the immersive characteristics of the Cave system, the literal surface of the lens's letters can be, as it were, moved so close as to touch or pass 'behind' the reader's body and point of view. The surface light of a lens letter can even be brought into the very eyes of the reader. When this happens, the reader's vision seems to be flooded with the white light of this literal surface and the most spectacular spatial inversion/subversion occurs. The whiteness becomes a 3D space. In fact it becomes the enclosing 3D space of the Cave, taking the place of the dark space previously inhabited by both reader and the various textual objects only a moment before. The distant dark blue texts still drift in this space, but now they do so, distinct and legible, in a space of light and clarity. If the reader then moves the surface-literal lens-light 'out' of her eyes, the enclosing space, as suddenly, reverts back to darkness.

In this work, a poet is working in three dimensions in virtual space, using some of the most sophisticated technology available. A far cry from the work that poets engaged in with ink and paper!

I'll now show you Loss Pequeño Glazier's "Baila," (<http://epc.buffalo.edu/authors/glazier/e-poetry/london/>) which was produced for last year's International E-Poetry Festival in London. It is extremely interesting to me that this work incorporates – in its "live" presentation – dancers. Although Glazier is not the first to combine digital poetry with dance, his gesture speaks to the ideal of multimedia: that is contains and emphasizes more than one media. Of course, we don't have the benefit of the dancers today, and I have not seen the piece performed live, but we can imagine that as the different images and texts (which are probably generated by java) appear and the poem is read, the dancers begin new movements in response to what is being projected.

In Giselle Beiguelman's "Desmemórias" (<http://www.pucsp.br/%7Egb/portfolio/web/desmemorias/index.htm>), the viewer essentially creates the poem with their own associations. Given the fact that the title roughly translates to mean "without memories," the presentation of the contents is somewhat paradoxical, and somewhat appropriate. While I am familiar with most of the samples presented, you may not have any recollection of them, and will have to formulate or imagine your own sense of association (as I have to do in some of the sections). As you see, the work uses audio and visual samples, animation, and hyperlinks to transmit an unusual collage. The media in use obviously makes a degree of impact, but it is the content and the presentation of content that transports the individual users to wherever s/he may go. Here the use of image outweighs the use of word.

Sandy Baldwin's "Whack," which I have downloaded from the WWW (<http://www.as.wvu.edu/~sbaldwin/whack.mov>) is made inside a modification (mod) of the

computer game “Half-Life.” The mod of the program malfunctions in interesting ways, creating the effect of double vision, silhouettes, and so on. The video, made with QuickTime, is then layered with chance-generated text and ambient sounds.

The Australian artist mez, who has long used her own sense of “net speak” language to convey themes and propel dialog, continues to do so at present. The narrative of this piece, “ID_Xor-cism.: Wurk 1 in the W[n]e[t]b.Wurks_Series,” (<http://www.hotkey.net.au/%7Enetwurker/xor/xor.html>) progresses vertically instead of horizontally. And, although the words she uses are not standard, each and every one of them can be understood if the reader reads them closely enough.

“An introduction to the study of hypnotism” (<http://www.secrettechnology.com/hypnostart.htm>), produced by Jason Nelson, an American who is now living in Australia, shows incredibly sophisticated use of layering. Made with Flash, 8 different sections of organized language are linked to an index along the right side of the screen. As the viewer moves the mouse/cursor around the screen, different fragments of text appear, and when areas of the screen are clicked different motions happen on the background; all the while, a cyclical soundtrack plays. [demo sections] The New Media Art section of Nelson’s homepage is also worth checking out (<http://www.secrettechnology.com/newmediaart.htm>).

One of my favorite approaches to the composition of poetry today is very different than any of the texts we have seen so far. “Writing Debuffets Titles” (<http://joglars.org/EnterWriting/index.php?pagename=WritingDubuffetsTitles>), a project spearheaded by mIEKAL aND (who is also a prolific video and hypermedia artist), employs the Web’s WIKI system so that many users can collaborate to compose and organize a hypertextually connected series of poems. When connecting to this particular project, which is designated as “Interwriting” on the site, a viewer encounters more than 80 different titles on the index page, and

can proceed to any section of her or his choice. Most of the pages contain an image and a text, although some contain either one or the other. While certainly not as media-intensive as other works we have seen, the collaborative aspect of this – which is enabled by the technology – opens up new possibilities for the conduction of poetry, or any sort of writing, because the collaborators here do not have to reside in the same physical location. You or I can also easily join the proceedings and add our own lines or edits. I am a firm believer in the power of collaboration, and think that digital poetry will reach a new level of sophistication once artists figure out how to join forces and produce texts fluidly with one another.

Another different approach to the organization and presentation of materials is found in Alan Sondheim's work. When you open his website (<http://www.asondheim.org>), all you are given is an index of works. You will find text files, sound files, images, and video files. While reading the text files (like <http://www.asondheim.org/om.txt>), the viewer will see that some of the written works are associated with media files. The author does not fuse them together, but implies their connection. A unique form of hybridized texts, contains "code work" and other unusual experimental forms of expression. Sondheim explains the method of his performances:

I run video/audio/text segments from a laptop in combinatory fashion, typing a real-time commentary at screen bottom. The result is an extended body and socius, digital problematized by analog, purity by error, language by language-stumbling. If I can't break new ground in performance, I've failed. I present an entertaining implosion of information... (<http://www.mail-archive.com/nettime-ann@nettime.org/msg00049.html>)

When readers encounter his work on the web they must enact the combinations, and take his or her own initiative in bringing them together by opening different windows and pasting URLs into the browsers to read.

Compared to Sondheim's work, and the other pieces we've seen during this session, my own recent production, a poem called "Facts About Durians"

[<http://web.njit.edu/~funkhous/2006/durians/durian.html>] is quite simplistic. Nonetheless, I thought I would take this opportunity to give it its world premier. Created using a combination of Flash, Google, the Google poetry generator, and my own photos and notes, I have been able to build a construction that reflects the mysteries of the durian. Since this is new, and might even be considered a work in progress, I more than welcome your feedback on it. What could be done to make it better?

You can see that a wide variety of digital poems are being produced today. In these samples, we see the artists building on foundations that were established in the pre-WWW era, and capably ushering the genre into the present. While there are a number of other works I could have easily projected, I think what we have seen suitably represents what is going on in the field today. I chose these works because they are indicative of what is happening, and now I am ready to hear any and all of your impressions, so now's a good time to let me know what you think. If you don't have comments, or questions, I will ask you some questions about these materials...

Contents of Multimedia Literature

[<http://web.njit.edu/~funkhous/mmu/7/>]

[demo <http://www.albany.edu/~litmag/archives/vol222/kostelanetz>] I see the primary elements of electronic “text” to be language (verbal and encoded), image (static or kinetic), and linking. I do not believe that a balance between these elements is necessarily required, but that these are what any producer of digital art has to consider at the creative moment, which are brought together by the producer or designer’s thinking (or application of document logic). All of these fundamental aspects require active commitment on behalf of the artist; sometimes all of the elements are present at once, and in other productions not all are found. Thought would be the only constant. If you wish to be a transmitter of the types of productions I’ll be showing you today, I recommend considering all possibilities held for verbal expressions and deciding what will work best for you.

So, what I want to do today is expose and discuss what types of forms within each of these elements are presented in digital works.

[demo <http://web.njit.edu/~funkhous/2003/brasil/time.htm>] What styles of language appears in digital writing? Let’s pause, and I’ll tell you where it started, so you won’t be startled when you encounter contemporary works. Computerized writing began in 1959, when a German named Theo Lutz used a Zuse Z22 computer to make poems by reordering selected words from Franz Kafka’s *The Castle* [show image of this computer (on desktop)]. This type of presentation of language continues up to the present, although it has come a long way since then. Lutz made a database of sixteen subjects and sixteen titles from Kafka’s novel. His program randomly generated a sequence of numbers, pulled up each of the subjects/titles, and connected them using logical constants (gender, conjunction, etc.) in order to create syntax. Here’s an example of one of the poems he produced:

Not every look is near. No village is late.
A Castle is free and every farmer is distant.
Every stranger is distant. A day is late.
Every house is dark. An eye is deep.
Not every castle is old. Every day is old.
Not every guest is furious. A church is narrow.
No house is open and not every church is quiet.
Not every eye is furious. No look is new. (n. pag.)

In this excerpt, we can see patterns and repetitions of words, along with discursive leaps and quirky, unusual semantic connections (e.g., “No village is late”). The words themselves are not complicated, but when they are automatically or randomly arranged into syntax via computer program the transaction imposes a non-rational ordering of subjects and thoughts. The text—seen above in translation, a further complication—is readable but disjunctive. Readers must connect and interpret abstractions in the poem (not a new phenomenon in reading or writing), and derive meaning from the verbal associations while reading the text in and against its context. In poems such as these, one might, via the poet’s condensation and computer processing of the materials, rediscover the essence of Kafka’s story, or somehow experience new perspectives derived from the original text. Lutz’s selection of words, combined with his programming method, enables a speculative, self-reflexive, unconventional style of expression; the programming method consists of about fifty commands and could theoretically generate over four million different sentences.

Since then, a wide span of automatically generated works has been contrived by writer/programmers. Some, like Peter’s Haiku Generator [<http://www.hphoward.demon.co.uk/haikugen/framset1.htm>] or the Your Personal Poet program, present straightforward language, which in some cases makes transparent the fact that a computer

composed the work [demo examples of both titles]. Other titles, such as Loss Pequeño Glazier's "Baila," are made with java and are programmed so as to stray far from conventional use of language and communication [demo].

So, it is obvious that programming is used to generate language of various sorts.

On the other hand, at least a couple of projects follow another path, and actually destroy language. I'll show you a couple of related sites that demonstrate what I mean. [<http://text.jodi.org/>; <http://www.jodi.org/betalab>]. This is an interesting idea: destroy in order to create, by using icons and metaphors of computer technology. The idea of destruction—which might, theoretically, be qualified as a deconstruction—is one that has also been taken up by projects such as Sandy Baldwin's "New Word Order," which modifies the computer game "Half Life" by putting words into one of the virtual rooms that the user can destroy with a virtual crow bar or grenade. Additionally, a number of years ago a programmer named Michael Dickman wrote a program called "Text Mangler," which mutilated any text that the user entered. This tactic is also seen in the TRAVESTY project devised by Hugh Kenner and Joseph O'Rourke, although it is important to stress that in this case the destruction is not simply for the sake of destruction; the program recognizes the combination or patterns of letters in the words of the input text, and the words and spaces between words become the basis for the program's output.¹⁷ To give you an example of how this operates, let me drop in the text of this lecture into the online version of TRAVESTY [<http://www.eskimo.com/~rstarr/poormfa/travesty.html>].

As you saw at the lecture's outset, and will see again shortly, graphical /imagistic language in motion is another way in which literary texts are presented. The use of images ranges vastly, and many examples of such work are available; some works have interactive traits, such as Jim Andrews'

¹⁷ As Hartman explains in *Virtual Muse*, the program analyzes a text file and identifies successive patterns of letters and spaces (known as "character groups") and makes a "frequency table" for each character group in a document's source text (55).

“Seattle Drift” [<http://vispo.com/animisms/SeattleDrift.html>]; other profound works are projected onto the viewer as if they were a film made of letters, like Brian Kim Stefans’ “The Dreamlife of Letters” [<http://www.ubu.com/contemp/stefans/dream>]. Other works do not use animation.

Image can be inextricably linked to writing, as a type of illustration or companion, that supports and compliment language, as in Dan Waber’s “Strings” [<http://vispo.com/guests/DanWaber/index.html>]. Images can be as or more important than language, which occasionally plays a subordinate role, as in Ian Campbell’s “Glimpses of an Afternoon” [<http://ezone.org/ez/e10/articles/ianc/1.html>]. Authors like Ana Maria Uribe have forgone the use of words, and use just letters alone to form expression, as in her “Tipopoems” [<http://www.vispo.com/uribe/tipoemas.html>; demo “Panorama from a train”]. In other examples, like André Vallias’ “Nouns n’avons compris Descartes,” the image can be the poem [<http://www.andrevallias.com/poemas/index.htm#>]. Images can be photographic, as in my piece “Packing” [<http://xcp.bfn.org/pack1.html>] or combine literal and artificial images, as we saw in Campbell’s piece. There are many different ways the elements can be manufactured, and the textual activities presented.

In these works, graphics software is used to accentuate language. This area, is, to some degree, a digital extension of the visual and concrete poetry traditions. To show an example, I refer those interested in this vein of work to Jim Andrew’s vispo (visual poetry) site [<http://www.vispo.com>; demo “A a” <http://vispo.com/A/aa.html>]. To learn more about what is happening and has happened in visual poetry, a good place to start is the online catalog for the “International Exhibition of Visual and Electronic Poetry” that happened in Brazil last year [<http://www.ociocriativo.com.br/poesiadigital/mostra/catalogo.htm>]; Geof Huth’s excellent blog, “visualizing poetics” [<http://dbqp.blogspot.com/>] is also an excellent resource on the subject.

Sound has become more and more a component of multimedia literature, although it has existed since the early days of the WWW. There are also multimedia sites in which language is spoken and/or sung, such as “Vocabulary” by Christine Baczewska [<http://www.turbulence.org/Works/Xtine/index.html>]. The best site to hear poetry is probably PennSound [<http://www.writing.upenn.edu/pennsound/>], although much of the untraditional work is very traditional produced; few pieces feature digital processing.

As you can see, or hear, language can be unveiled all at once, or gradually. Sometimes more than one aspect or element of language is presented in a piece. It is up to the author (or producer) to integrate the component he or she wishes to transmit. There are no rules in this newfound literary genre, which joins a tradition of writing in which language has merged image at least since the etchings of William Blake's plates, and before that in various religious texts which use ink and expressive symbols in creative ways - from hieroglyph to illuminations to hypermedia and holography, hundreds of different ways to present poetic language have been developed. In the present, past and future are considered.

[demo Cayley's *riverIsland* for awhile] Finally, a few important words about links, and I want to make an encompassing statement about this most powerful dimension of electronic texts, which is relevant to in forms. Let me quote a text I generated using Charles O. Hartman's program MacProse in 1997:

*You were your dates. We had volunteered. Silver between a victim and the panel stretched; the hutch around an
incident's moment (the term) as stared.*

By choices in time, we stare at the product of links, wired or wireless metaphorically mineral conductors of texts. All computerized writing involves one type of link or another. In hypertext, the link (as in node-to-node connection) is the primary mechanism by which a reader negotiates text. With multimedia, sonic and visual elements are foregrounded, composed together as simultaneities.

With text-generators yet another type of linking is present: (in time) between algorithm or program and the text as it comes to the reader who ignites the involvement between program and the appearance of text. Links of one form or another—literal or conceptual—are always present in this extended environment. This way of viewing digital poems intends to illuminate the fact that activating computer coding, creating a textual spark is the potential foundation of the digital poem and in other forms as well. In some examples, the poem is the code itself. Far more frequently the code is hidden and is used to produce what appears as onscreen output: the link between code and action generated appears on the surface of the work.

With cybertext—and here I am referring specifically to Espen Aarseth's concept as a text that contains some sort of "information feedback loop"—the objective is to make these dynamic, steady but mutable multidirectional links in whatever form they take.

In every instance, inscribed by activation of dynamics written in the code. The moment of activation is mercurial for the viewer, in that it brings something to them or brings them to something (at least temporarily).

The keyboard and screen are the launching points for display and engagement. The manifestation of text or the activation of materials involves interaction, intermedia. To maneuver through three-dimensional space is to link to nodes within the screen's vectors or grids, and perhaps—via hypertext—beyond. The computational, then physical act of linking, ephemeral and delicate as it may be, is what makes work work. With au/oral materials, links emit from screen and through speaker to viewer as multi-sensory interconnection.

Technically speaking, there are a few ways that links can be embedded into literary texts. The writer can, and usually does, impose a 1:1 link, whereby one word or phrase links to another word, phrase, or passage (usually referred to as "lexia" or chunk in hypertext terminology). A work that is typical of this mode is Millie Niss's "Sin and Subways"

[<http://www.sporkworld.org/subway/poemtitle.html>]. This type of basic construction can be used effectively, but personally I am interested in seeing more works that offer more than one node from any given link. Software programs such as Storyspace (manufactured by Eastgate Systems in the United States) offer more versatile linking structures, but on the WWW, 1:1 is usually what it is, largely due to the technology in place. However, there is a way around everything. For instance, an extraordinary hypertext by Davis Schneiderman, “Repeat, Rinse, Sanitize and a Propaedeutic Sight Gag,” is found on *The Little Magazine* Volume 22.2

[<http://www.albany.edu/~litmag/archives/vol222/schneiderman>]. Using frames and multiple anchors, an versatile hypertext is created, which no two viewers will handle in the same way. Links are usually made obvious, but can be hidden also. Obvious links make it easier for the viewer, discrete links can pose certain challenges to users, who are required to negotiate the mechanics of the work in addition to reading it. A piece like Mary Hedger’s “hypertext poetry” would probably confound someone who was not willing to analyze how the work should be read; numerous steps are involved [demo <http://www.mauvezone.screaming.net/pages/hypertext%20poetry.htm>]. For instance, from the very beginning of the piece, one has to determine what to do. Then, as one goes deeper into the poem, the mechanics change. For example, in the “slow” section of the “Patience” node, made with javascript, the linking system is faulty until the user drags one of the words onto the face of the clock. Stephanie Strickland’s “Vniverse” site [<http://vniverse.com/>], which is a companion to her book *Wave Son.nets/Losing L’Una*, also uses unconventional but highly effective hypertext techniques that require both effort and patience by the user, who is required to enter input and manually navigate the virtual heavens in order to read Strickland’s words.

Many types of work have been designed since Theo Lutz’s rudimentary program, and even literary video games have been developed [see Arteroids, <http://vispo.com/arteroids/index.htm>]. In his landmark book *I-V/I*, John Cage writes, “The past must be invented. The future must be revised.

Doing both makes what the present is. Discovery never stops” (435). Sometimes devised as simulations of old forms and models, many pieces of digital literature can be considered “new” by virtue of their presentation. The genre’s development parallels the rise of new technological apparatuses—as computing has become more centrally integrated with culture, more people have become involved with using computers for creative endeavors. In the brief discussion of the merits of film in *ABC of Reading*, Ezra Pound suggests that, “In all cases one test will be, ‘could this material have been made more efficient in some other medium?’” (76). It is not difficult to answer this question for the titles introduced above—if efficiency is the barometer by which the medium is measured, the answer is no. While some non-computerized works mirror digital dynamics—with arguably better results—the software used to craft these poems enables a streamlined implementation of creative expression. Writers can, and have, made hypertextual poems using a stack of cards, but that sort of analog interface is more difficult to negotiate than an ably programmed hypertext. More to the point, as Eduardo Kac observes in his introduction to *Visible Language* 30.2, “A new poetry for the next century must be developed in new media, simply because the textual aspirations of the authors cannot be physically realized in print” (100). While some of the works you have seen today could have possibly been presented in analog form, I hope you would agree with me that their digital presentation has enhanced their qualities profoundly.

Poetic Possibilities for E-Texts

[<http://web.njit.edu/~funkhous/mmu/8/>]

Years before owning a computer I was a musician, photographer, and poet. During the mid-1980s, I started to publish my poems and co-founded a small press (We Press) that published books and literary arts magazines in printed, audio, and video formats. My activities in this area expanded when I was exposed to (and began to practice) non-digital multi-media performance at Naropa Institute in 1986. In 1992, I began to use computers and the Internet to produce poetry instead of Xerox machines and recording studios. Shifting to a more technologized approach to creativity had a strange allure, and I felt making use of new equipment could be rationalized by the fact that poets throughout history have always made use of whatever technology they had at their disposal.

The reason I first became interested in electronic textuality was because it seemed to hold great possibilities for expressive writing, an intuition that proved to be correct. Electronic art, poetry, fiction, and other forms that use multiple texts, as you will see in today's presentation, capably embodies the literary concept of intertextuality and shows that any text has the potential to be a collective text that is composed of (and by) other texts. But, rather than present a historical review of the genre, today, after a brief overview, we'll take a look at what is—and what is not—happening at present.

To get things moving, I thought it would be a good idea to read a poem by one of the earliest digital poets, Lionel Kearns, that was written in 1968. There are a couple of references I should explain in advance. The poem begins "The poem is a machine," which is a reference to William Carlos Williams famous statement that declares a poem is a machine made out of words. The other reference, which I think is extremely useful, quotes the poet Charles Olson's treatise on Projective Verse, "one perception must immediately and directly lead to a further perception," which is a tremendous idea in terms of communicating any sort of idea (poetic or professional). Why

bother considering anything that is a dead end? Why say something, or think something, that cannot be meaningfully followed up by something else? This approach to attention is a way to keep everything progressing, and it is this point most specifically holds promise for the presentation of professional texts. Here is Kearns's poem:

"The poem is a machine," said that famous man, and so I'm building one.

*Or at least I'm having it built, because I want something big and impressive and
automatic.*

*You see, people will stand in front of it and insert money, dimes or quarters,
depending upon the poem's locus.*

*Yes the whole thing will clank and hum and light up and issue a string of words
on colored ticker-tape.*

*Or maybe the customers will wear ear-phones and turn small knobs so the
experience will be more audile-tactile than old fashioned visual.*

In any case they will only get one line at a time,

*This being the most important feature of my design which is based on the
principle that,*

*In poetry, "one perception must immediately and directly lead to a further
perception,"*

And therefore the audience will be compelled to feed in coin after coin.

*Now I admit that the prototype model that you see on display is something of a
compromise, as it has a live poet concealed inside.*

But I assure you that this crudity will eventually be eliminated

Because each machine, I mean each poem, is to be fully computerized

And so able to stand on its own feet.

While we don't have, yet, poetry terminals where users plunk in coins as they might in a video game, what has happened over the past decade (or more) is the development of an electronic arts industry that largely (but not exclusively) happens around academia. If you want to dedicate yourself to the practice or study of electronic art, there could be a place for you to make a living. An independent artist might earn some small prizes, but it is difficult to be financially successful. However, as literacy changes, there may be more and more professional opportunities for engineers of creative texts beyond the circle of the academy. The other idea embedded into Kearns' poem, Olson's notion of the importance of one perception leading to another, gives me a chance to introduce what I feel is an important concept, that I would like to see influence both non-commercial and commercial texts: the idea of a documents "moving" the viewer outside, or between layers of a document. In fact I am here to promote links that provide comparisons, discrepancy, and a sense of openness, and have tried to create this effect in some of the hypertext poems and essays I have produced, such as David Rothenberg's poem "The Zone" [<http://web.njit.edu/~newrev/v2s2/>]. This work (produced in 1998) is in great need of repair, but the idea of multiplicity remains evident.

Overview

Comparatively speaking, only a small body of electronic work predates the WWW. The versatile, massive, global network unquestionably ignited a proliferation of electronic texts, boosting the confidence of artists who had previously been wary of the instability of technologically-based writing. Yet despite the transitory, ever-evolving technologies and elements, the principles and features of digital poetry—text generation, flexible and collaborative language, use of sonic and visual attributes, interactivity and intertextual linking—have only been altered slightly if at all. The coming years will indicate whether a more televisual poetry, such as we begin to see in the highly animated, visceral Shockwave or Macromedia "Flash" poems and WWW works in general will

dominate artistic literacy or the culture at large. The practice is still forming and gradually progressing, though it largely continues to embrace the characteristics, and sometimes the limitations of, its predecessors.

Inventive digital writing began to appear on the WWW as soon as it emerged, and by the mid-1990s, each of the forms that comprise the genre could be found on the WWW. One of the early pieces I want to show, Christy Sheffield Sanford's "Boucher En Vogue" (1996) [<http://fdt.net/~christys/orchid.html>] used the WWW's capabilities to great effect by linking to external sites located elsewhere on the network. She fortifies and expands her poetry with radiant imagery and links to guide the viewer from one section of text to another. Sanford's visual imagery is dynamic: images do not merely decorate the narrative, but layer meaning and sometimes act as navigational levers. At this time many other works sprang up on the WWW. Poets such as Loss Pequeño Glazier, Andrew Stone, and others produced early titles. Stone created a simple but illustrative hypertext poem, "The IndraNet" to illustrate his view of "the entire web as one gigantic interwoven organism," onto which "HyperPoetry" could be an "active lens" (n. pag.), a trait that is outrageously dilated in Heath Bunting's 1997 work "The Telegraph Wired 50" in which every word is a link! [http://www.irational.org/_readme.html]. These experiments prove a point Michael Heim suggests in *The Metaphysics of Virtual Reality* that many disparate motifs can exist within the same textual or media-based structure.

Many works are impressive for their graphical qualities and employ hypermedia to great effect. At the outset of the WWW, there seemed to be more inclination to connect digital poems with exterior materials, but as the WWW became a more popular vehicle for practitioners to share their creative writing in a non-commercial setting, works become more aesthetically sophisticated but less adventurous. More emphasis was placed on an individual's ability to organize her or his own

materials and vision than on positing a text within a larger body of interconnected documents (which was Ted Nelson's original concept of hypertext).

[demo Cayley] By not exploring and exploiting the options available for hypertext or hypermedia, in some ways the form hinders itself. De-contextualizing works, leaving the reader with little post-textual substance to follow up on, strikes me as an antiquated way to present literature in this supposedly expanded form. I always return to Nelson's concept of hypertext as connecting *everything*, and am surprised by the neglect of this pursuit. Practical manifestations of Nelson's vision of hypermedia now have the potential to become manifest in Hypervideo, Virtual Poetry, Holopoetry, formations of animated texts, but the branching qualities Nelson envisioned have not been widely cultivated. At this point, I want to continue to support the idea that digital technology enables a poetic literature that effectively "moves" "outside" itself. There are multiple channels through which to implement this type of practice, which indeed furthers the idea of a "poetry in motion;" the equipment's capabilities could be used to extend the historical limitations of discretely produced literary titles. Programming, as well as the use of networks and software, can be used to create an environment that emulates the complexities of poetry. This would allow mechanically linking texts to exterior sources, and bringing together texts of disparate origin into a hybridized articulation.

Poetry that embodies qualities of separateness, or is built on quickly shifting grounds, is not a new idea. Digital writing can benefit by forging dialects with other texts. This is already accomplished to a minimal degree by including images, sounds, and links; when a more extensive body of materials is synthesized, the effect of breaking with, and reforming texts will be greatly heightened. Certainly performative and visible qualities of language are overstated by the media used by digital poets, which are in fact enabled by the implementation of invisible computer coding. Thus, a combination of texts already makes digital poetry real; this is certainly true in Cayley's work

[which has been projected for the past few minutes] and in many other productions. The next step would be to inscribe these works directly into the larger “docuverse” (Nelson’s expression for “universe of documents” in *Literary Machines*) (4/15).¹⁸

One can organize materials through internet portals, using multi-layered menus, or amendable indexes and search engines, to advance the utility and purposes of any text. One of the few examples I know of such activity is a work that uses the WIKI system entitled “Writing Dubuffets Titles,” organized by mIEKAL aND. While the co-authors of the writing synthesize image and text, links outward—while a possibility—have not been cultivated.

Insular productions are too common and depend too much on an antiquated model of textuality. Though the technology is available, digital poets have only minimally begun to push outward to texts beyond their own authorship. Obviously, when a piece of writing links to a graphic image, or vice versa, it is linking to something “beyond” itself. I am not referring to this kind of intertextuality, but the potential of using myriad links to put the literature into a developed zone of interconnected digital materials. WWW search engines indirectly emulate this idea. Since poets have always intertextually reflected the world before them, why limit texts to discrete, fixed entities? Most approaches to, and treatments of, digital writing are situated well within the boundaries of print culture. In many works, it is difficult to find any sort of radical re-conceptualization of reading or writing.

To truly advance, electronic (or digital) poetry must find a way to weave itself within a much larger textual context. Rather than containing its captivating qualities between its own pages, poetic texts of the future will situate themselves centrifugally into worlds of secondary texts. A de-centralization can then occur, where a poem—and the culture of a poem—is analyzed in terms of its links.

¹⁸ The “real dream” or pursuit of hypertext has always been, as Nelson wrote in *Dream Machines*, “for ‘everything’ to be in the hypertext” (45).

Many animated and video poems have been developed in the WWW era to enliven language using various compositional techniques, and naturally, graphical and hypertextual poems are abundant on the WWW. Even text generators, the earliest form of digital writing, are available; on that front, you all need to be aware of Leevi Lehto's brilliant "Google Poetry Generator," which makes all types of poems out of Google Search string results. [demo]

Nearly every form of electronic text relies on a type of link and indicate earnest attempts to employ new media to advance poetry on the WWW.¹⁹ New capabilities, developments, and trends will continue to transform the appearance of texts (at the very least), and may very well contribute to further areas of formal investigation; the cultivation of a media-oriented culture in general is underway; the combination of human curiosity and technical capability will be what determines the advancement of digital literature. Forward-looking artists are cultivating expression through digital technology, offering something quite valuable for verbal expression (not to mention the preservation and promotion of writing) in a new genre that combines the essential sense of "the word" with imagery, linking, digital layering, and thought.

I will move towards a conclusion by showing you three pieces that represent state of the art qualities of electronic texts, all of which contain profound synthetic, synthesizing elements. The first is by the Australian artist Mez, who is not only inventive in her use of media but also has devised alternative yet understandable languages over the past few years. The work, titled "Shutters of Defunct Meat," does not link outward, but successfully incorporates unusual types of links, sounds, and graphical appearance in its single page

¹⁹ Certainly there are many more contemporary works that could be used as examples. For example, in 2006, Wilton Azevedo is releasing a remarkable interactive video piece, *The Poesia Café*, which he created with the programs After Effects (Adobe), Macromedia Director MX, and Audition (Adobe). An enormous archive of audio works is being constructed at *PennSound*, some of which involves digitally manipulated poetry (see <<http://www.writing.upenn.edu/pennsound/>>). Leevi Lehto, a Finnish poet/programmer, has created a "Google Poetry Generator" that makes poems from Internet search string titles <<http://www.leevilehto.net/google/google.asp>>, and K. Silem Mohammad's book *Deer Head Nation* (Tougher Disguises, 2003) also uses search strings to make poetry. This is but a partial list of additional innovative contemporary works.

[<http://www.hotkey.net.au/~netwurker/shutters%20of%20meat/som.htm>]. The use of roll-over images and text, which has the effect of transforming the messages presented is extensive and quite imaginative.

Another recent multimedia work is Jason Nelson's "Pandemic Rooms" [<http://www.secrettechnology.com/pandemic/>], which the author describes as, "interactive poetic fictional, lives and motions exploring our disaster fetish, our great fear and desire for pandemic fibers, those viruses which redefine how we understand ourselves and our prelationships with others, linear notions, and aesthetics" (n.pag.). This piece beautifully embodies most of the possible forms textual presentation, with a sophisticated, varied interface into which the author inscribes interactive sound, vivid imagery, and written text. In addition, the work is obviously culturally relevant in the era of fear of Bird Flu, SARS, hand/foot/mouth disease, and so on.

The latest project by Joerg Piringer, who is a highly skilled sound poet, is called "[nam-shub web beta 0.1]" [<http://namshub.piringer.net/>]. The author describes the work as "website processor" that "takes the textual content of external websites and applies user defined rules to generate visual poetry out of it." Piringer, in programming the piece, has devised rules "change the text or modify the visual appearance....in case of a dynamic website as the source the visual and textual results change with the dynamic content." A very basic WWW page will thus be represented with a plain appearance, but a site with a lot of visual content will be more visually intense. On top of this, the user can also use several built-in devices to further accentuate and manipulate the text. Though the work runs poorly in Internet Explorer (the author recommends firefox), I will do a demo of it now to give you an idea of how it works. There are other literary productions that use the "website processor" approach, like those found on Florian Cramer's "Permutations" site—this process is not quite a step outward, but rather involves the inclusion of exterior texts.

Conclusion

Many years ago, an early practitioner of kinetic digital poetry named Arthur Layzer wrote in a short article titled “Poets, Birds, Snow, Kites, and the Computer,” “When the creative wind blows on the computer’s personality, shapes it or melts it to an organic form that we recognize as humanly associated—takes the computer’s personality outside of itself—we feel the significance of the human situation in a striking way...” (111). Since the very earliest works, serious poets have explored computerized composition, and have worked not only to transform the audience but the medium of expression itself, and while they are doing a fine job, there is room for progress! Electronic texts are not typically under the control of scientists, but by writers—who either work with or double as programmers—who are laboring to discover methods for inventively reformulating language. What we will find in the future has only begun to be engineered.

Works Cited

- Aarseth, Espen. *Cybertext: Perspectives on Ergodic Literature*. Baltimore: Johns Hopkins UP, 1997.
- Bailey, Richard W. ed. *Computer Poems*. Drummond Island, MI: Potagannissing P, 1973.
- Benjamin, Walter. *Illuminations: Essays and Reflections*. Hannah Arendt, ed. New York: Schocken, 1969.
- Block, Friedrich W, Christiane Heibach, and Karin Wenz, eds. *Poesis: The Aesthetics of Digital Poetry*. Germany: Hatje Cantz Verlag, 2004.
- Bolter, Jay David. *Writing Space: Computers, Hypertext, and the Remediation of Print*, second ed. Mahwah, NJ: Lawrence Erlbaum, 2001.
- . *Writing Space: The Computer, Hypertext, and the History of Writing*. Hillsdale: Lawrence Erlbaum, 1991.
- Bootz, Philippe, ed. *Alire: Le Salon de Lecture Électronique*. CD-ROM. Villeneuve d'Ascq: MOTS-VOIR, 1995.
- Cage, John. *SILENCE*. Hanover, NH: Wesleyan University Press, 1961, 1973.
- . *I-VI*. Hanover, NH: Wesleyan UP, 1990.
- Cramer, Florian. "Combinatory Poetry and Literature in the Internet." Online. <http://userpage.fu-berlin.de/~cantsin/homepage/writings/net_literature/permutations/kassel_2000/combinatory_poetry.html>. 21 March 2005.
- Creeley, Robert. *Was that a Real Poem and Other Essays*. Bolinas, CA: Four Seasons Foundation, 1979.
- Daly, Catherine. *The Facts on File Companion to 20th-Century American Poetry*. New York: Facts on File, 2005: 114-116.
- de Campos, Augusto. *Não Poemas*. With CD-ROM. São Paulo: Perspectiva, 2003.
- Derrida, Jacques. *Points...Interviews 1974-1994*. Elisabeth Weber, ed. Trans. Peggy Kamuf. Stanford: Stanford U P, 1995.
- Duberman, Martin. *Black Mountain: An Exploration in Community*. New York: EP Dutton, 1972.
- Duncan, Robert. In *The New American Poetry*, Donald M. Allen, ed. New York: Grove Press, 1960.
- Funkhouser, Christopher. *Prehistoric Digital Poetry: An Archaeology of Forms 1959-1995*. Forthcoming, U Alabama P, 2007.
- , Belle Gironda, and Benjamin Henry, eds. *The Little Magazine* Vol. 21. CD-ROM. Albany: SUNY Department of English, 1995.
- Hammond, Kira. "Interactive Art: Where Human Input Meets Artistic Creation" 8 Feb. 2006 <<http://www.kiraofthewired.com/interactiveart.html>>.
- Harris, Mary Emma. *The Arts at Black Mountain College*. Cambridge: MIT Press, 1987.
- Heim, Michael. *The Metaphysics of Virtual Reality*. Oxford: Oxford UP, 1993.
- Higgins, Dick. *Horizons: The Poetics and Theory of the Intermedia*. Carbondale, IL: Southern Illinois U. P, 1984.
- Huth, Geof. "Digital Poetry Incunabula." Online blog entry. <<http://dbqp.blogspot.com/2004/07/digital-poetry-incunabula.html>>. 30 July 2004.
- Joyce, Michael. *Of Two Minds: Hypertext, Pedagogy and Poetics*. Ann Arbor: University of Michigan Press, 1995.
- Kac, Eduardo, ed. *New Media Poetry: Poetic Innovation and New Technologies*. *Visible Language*, vol. 30.2, 1996.
- Kazil, Petr. "Adventure art – part 2." 8 Feb. 2006 <<http://www.xs4all.nl/~kazil/advart02.html>>.
- Kearns, Lionel. *By the Light of the Silvery McLune: Media Parables, Poems, Signs, Gestures, and other Assaults on the Interface*. Vancouver: Daylight P, 1969.

- Lanham, Richard A. *The Electronic Word: Democracy, Technology, and the Arts*. Chicago: University of Chicago Press, 1993.
- Layzer, Arthur. "Poets, Birds, Snow, Kites, and the Computer." *The Best of Creative Computing Vol. 2*. Morristown, NJ: Creative Computing P, 1977. 111.
- Lyotard, Jean-François. *The Postmodern Condition: A Report on Knowledge*. Trans. Geoff Bennington and Brian Massumi. Minneapolis: U of Minnesota P, 1984.
- Mann, Ron. *Poetry in Motion II*. CD-ROM. New York: Voyager Co., 1995.
- McCauley, Carol Spearin. *Computers and Creativity*. New York: Praeger Publishers, 1974.
- Melo e Castro, E.M., "Videopoetry." *New Media Poetry: Poetic Innovation and New Technologies. Visible Language*, Vol. 30, No. 2, 1996: 140-149.
- Nelson, Ted. *Dream Machines/Computer Lib*. Chicago: Hugo's Book Service, 1974.
- . *Literary Machines 93.1*. Sausalito: Mindful P, 1992.
- Olson, Charles. *Poetry and Truth; The Beloit Lectures and Poems*, ed. George F. Butterick. San Francisco: Four Seasons Foundation, 1971.
- . "Projective Verse." *The Poetics of the New American Poetry*. New York: Grove P, 1973. 147-158.
- Pound, Ezra. *ABC of Reading*. New York: New Directions, 1960.
- Ranoya, Guiherme, Lucio Agra and Thaigo Rodriguez, eds. *Revista Cortex 1*. CD-ROM. São Paulo: 2003.
- Stefans, Brian Kim. *Fashionable Noise: On Digital Poetics*. Berkeley, CA: Atelos, 2003.
- Strehovec, Janez. "Text as loop: on visual and kinetic textuality." *Afterimage* July-August 2003. <http://www.findarticles.com/p/articles/mi_m2479/is_1_31/ai_113683509>. 1 March 2005.
- Valentine, Rudolph, and Doug Rogers. *MERZ*. Version 3.1. Self-published diskette. 1992.
- Vallias, André. "We Have Not Understood Descartes." *New Media Poetry: Poetic Innovation and New Technologies. Visible Language*, Vol. 30, No. 2, 1996: 150-157.
- Vos, Eric. "New Media Poetry – Theory and Strategies." *New Media Poetry: Poetic Innovation and New Technologies. Visible Language*, vol. 30.2 (1996): 214-33.
- Waldman, Anne, ed. *Out of This World*. New York: Crown, 1991.
- Weiner, Norbert. *The Human Use of Human Beings*. New York: Avon Books, 1967.
- Williams, Emmett, ed. *Anthology of Concrete Poetry*. New York: Something Else P, 1967.