Necro-Techno: Examples from an Archaeology of Media

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CERTIFICATE OF AUTHORSHIP / ORIGINALITY

I certify that this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Abstract: Thesis and Creative Research

Thesis

An increasing number of artists are resurrecting technologies considered practically obsolete. Bygone processes and narratives (particularly those of the pre-cinematic era) are being excavated in what Finnish writer Erkki Huhtamo has termed "media archaeology" [1]

Why are we witnessing the resurgence of these techniques in the context of contemporary art, and what is their relevance today?

In this dissertation, the intentions and methods employed by contemporary artists who enlist archaic technologies are discussed, and the effectiveness of their strategies evaluated against a background of the history of vision, technology and contemporary commentaries on media.[2] While all art involves interaction between the viewer and the artwork, the works discussed here provide a particular opportunity for active engagement in perceptual experience. Magic, humor, immediacy and play are invoked by the following artists as useful means for addressing the complexity of issues surrounding technological "progress"

I will consider the work of four prominent practitioners to exemplify crucial themes and questions relating to the nexus of creativity and technologies of representation. **Ellen Zweig (USA)** extends notions of performance and history by enlisting phantasmagoric and camera obscura effects; **Paul DeMarinis (USA)** invents ingenious optical-audio kinetic sculptures which honour eccentric histories; **Toshio Iwai (Japan)** expands the vocabulary of pre-cinema through his zoetropic and stroboscopic devices; and **Jim Pomeroy (USA)** presents subversive three dimensional (3-D) performances and persistence-of-vision devices. As the practice of these artists attests, technologies do not become obsolete; they can resonate well past their commercially viable use-by dates.

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[1] Erkki Huhtamo, "Time Traveling in the Gallery: An Archeological Approach in Media Art", *Immersed in Technology: Art and Virtual Environments*, eds. Anne Moser and Douglas McLeod (Cambridge: MIT, 1996) 233.

[2] For clarity, the word Media will be capitalized when I am referring to print media and not capitalized when I am referring to media technologies (radio, cinema, photography, etc.).

This thesis shows that by exhuming and extending the sometimes absurd objects and stories surrounding former technologies, these artists are successfully emphasizing the often overlooked role of human engagement and the cyclical nature of technology, rather than fore-fronting the technical apparatus and its lineage. Far from being dead or buried in nostalgia, archaic media are offered as evidence of a lively continuity and multiplicity of both function and meaning.

Creative Research

In my own practice, I have been exploring the sculptural, experiential and sometimes humorous possibilities of light and optical phenomena in installations that frequently feature obsolete technologies (such as camera obscuras, phantasmagoria, periscopes and the photographic rifle), often in combination with newer media technologies such as video, photography and digital imaging.

These exhibitions have incorporated a machine for making rainbows, a camera obscura/fibre-optic journey through the center of the earth, paranoid dinner-table devices (*Liquid Scrutiny* was influenced by a drawing of a 17th century Czech camera obscura goblet), an interactive computer/video rifle (an installation entitled *To Fall Standing* referenced French physiologist E.J.Marey's photographic rifle of 1882), and a periscope birdbath. In the spirit of 19th century chimeras, I merged site-specific portable camera obscuras with garbage bins, flowerpots, portable toilets, birdhouses, mobile homes, removalist trucks, televisions and Tibetan cheese boxes.

These works affirm that our fascination with surveillance and the extension of human vision is not just a recent preoccupation of the electronic age, but part of a lively legacy that continues to find application in the present. My intent is to engage viewers in playful participation while considering historical narratives, natural phenomena and the implications of current media practice.

Preface

Imagination
creates the situation,
and, then, the situation
creates imagination.
It may, of course, be the other way around:
Columbus was discovered by what he found.

James Baldwin, *Imagination*

In the early 1990s, inspired by American composer and sculptor Paul DeMarinis' investigations into early sound technologies and Australian Joyce Hinterding's forays into the materiality and sound of electricity, I began to consider the history of vision (along with optical phenomena and the devices that have emerged) as a point of departure for my work.

In particular, seeing an image of the photographic rifle (1882) by French physiologist Etienne Jules Marey in Siegfried Giedion's *Mechanization Takes Command* significantly influenced my course of action.[1] The photographic rifle represented a startling conflation of culture and technical apparatus; Marey's curious device also made explicit the connections between defense and vision.

I also entered a walk-in camera obscura for the first time. I was struck by how such a seductively simple yet extraordinary occurrence could be so generally unknown.[2]

Ten years on, this is no longer the situation. Artists, museums and civic planners have revitalized earlier-known optical devices, such as the camera obscura and

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[1] Siegfried Giedion, *Mechanization Takes Command: A Contribution to Anonymous History*, (New York: Norton, 1969). Marey is now more widely known as reflected in the publication of two major monographs on his work. Marta Braun has written a terrific account of Marey's accomplishments, which encompasses his scientific mechanical expertise and his photographic works in *Picturing Time, The Work of Etienne-Jules Marey*, (Chicago: University of Chicago Press, 1992). See also Francois Dagagnet, *Etienne Jules-Marey: A Passion for the Trace*, (New York: Zone Books, 1992).

[2] The camera obscura is a darkened box or room with a strategically placed tiny hole facing a brightly lit scene. Light reflecting from the scene travels in a straight line through this opening (or aperture) and projects an inverted view on the opposite wall or screen of the box or room.

pre-cinematic techniques. In *The 1994 International Symposium of Electronic Art* at the Museum of Contemporary Art in Helsinki (in which I participated), eight of the twenty-four artists exhibiting were incorporating aspects of pre-cinematic technologies into their practices. In Australia, The Sydney Observatory playfully enlisted a zoetrope from 1987-1997 to demonstrate the big bang theory (designed by Nick Lomb). At the Museum of Sydney, a video narration incorporating a technique reminiscent of early phantasmagoria was skillfully employed in *The Bond Store* (designed by Ross Gibson, 1994). *Phantasmagoria: Pre-Cinema to Virtuality* at the Museum of Contemporary Art in Sydney, 1996, established connections between the theatrical early films of conjurer George Méliès' and pre-cinema references from several contemporary artists. Opening in late 2001 at the Getty Museum in Los Angeles, a major exhibition, *Devices of Wonder: From the World in a Box to Images on a Screen* (catalogue essays by Barbara Stafford and Frances Terpak) featured "eye devices" that have been designed through the ages to augment perception.[3]

A fascination with almost-forgotten media has become part of present culture - and it is often accompanied by a sense of play.

This thesis accompanies my studio/creative research, which has been significantly influenced by the mechanisms and metaphors (what Paul DeMarinis has termed "mecanaphors") of media history. In the preface to his *L'oeil vivant, essays* (*The Living Eye, Essays*), Jean Starobinski addresses the difficulty of attaining a balanced perspective on a work. Here he commends the value of *"le regard surplombant"* ("the look from above"):

> Despite our desire to lose ourselves in the living depths of a work, we are constrained to distance ourselves from it in order to speak of it. Why then not deliberately establish a distance that will reveal to us, in a panoramic perspective, the surroundings with which the work is organically linked? We would try to discern certain significant correspondences that haven't been perceived by the writer, to interpret his mobile unconscious, to read the complex relations that unite a destiny and a work to their historical and social milieu.[4]

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[3] Barbara Maria Stafford and Francis Terpak, exhibition catalogue, *Devices of Wonder: From the World in a Box to Images on a Screen*, Getty Research Institute, Nov. 2001 - Feb 2002.
[4] Jean Starobinski, *L'oeil vivant, essais*, (Paris: Gallimard, 1961) 26.

Starobinski proceeds, however, to also warn of the dangers of this view, specifically the risk of the disappearance of the work itself into its context. He accordingly encourages an approach that vacillates between distance and intimacy.

In line with Starobinski's notion of panoramic perspective, a useful strategy for me has been to discuss artistic practitioners who are also exploring the mechanics and histories of archaic technologies and whose works represent a spirit of thoughtfulness and playfulness that I aspire to. This will allow me to address the practical and theoretical concerns I surround myself with, while avoiding strident personal declarations. This paper accompanies my visual work, but is not an explanation of it.

Paul DeMarinis, Jim Pomeroy, Ellen Zweig and Toshio Iwai may not see their work as being primarily or significantly about media archaeology, but rather about a diverse range of social, psychological and perceptual issues in which archaic tools have been incorporated. For the most part, these artists choose from a range of available technologies where nothing is considered "dead" After all, the jackhammer didn't supersede the chisel. Technologies from various time periods are not only "juxtaposed", but available for use. I risk both oversimplification and stridency by lumping these works together, but there are enough enticing links between these artists' practices to inspire the development of a worthwhile dialogue.

Discussions about media histories have occurred mainly in the areas of pre-cinema vision technologies or in studies of visuality, with less focus on audio or tactile technologies. Our everyday language is also highly permeated by optical terminology, as dramatically illustrated by Martin Jay. To open *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*, he seamlessly integrates twenty-one visual metaphors - in *one* paragraph![5]

[5] Martin Jay, *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*, (Berkeley: University of California Press, 1994) 1.

However, technological developments for extending the range of our hearing (the telephone, microphone, loudspeaker, phonograph) have been some of the most profoundly influential inventions, especially since the 19th century. The history of sound has recently received increased attention, apparent in the sheer quantity and scope of new publications in sound theory.[6] The profile of sound as an art form has also been substantially elevated.

Nevertheless, theories of sound are not the focus of this paper. Rather, in Volume 1, I've chosen to concentrate on the work of four artists who collectively incorporate a sweep of sensory devices. There are many practitioners whose works would happily fit within the context of this thesis, but I've chosen to explore these four more fully as examples of issues or modes of practice representative of archaeological concerns, while occasionally citing additional practitioners.

The illustrations are indicated by figure numbers within the text and are located on the image sheets following the chapters.

In Volume 2, the visual research I have undertaken is represented by image sheet documentation - and a brief description for each project is provided in the Exhibition Notes. In a written addendum to the thesis, two of my projects will be discussed in detail.

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[6] Cultural theorists writing about sound include Adalaide Morris, Alain Corbin, Bruce R. Smith, Jonathan Rée, Steven Connor, Leigh Schmidt, Emily Thompson, Mark M. Smith, Barbara Engh, Hillel Schwartz, Karin Bijsterveld, Martin Harrison and Richard Rath. This list was provided by Douglas Kahn, whose *Noise, Water, Meat: A History of Sound in the Arts*, (Cambridge: MIT, 1999) is a considerable addition to sound theory.

Introduction

The deeper we dig the more it seems that this progress consists only of new and better ways to scratch the same old cosmic itch.

Terry Ramsaye

The field of vision has always seemed to me comparable to the ground of an archaeological excavation.

Paul Virilio

This thesis will explore the work of contemporary artists who enlist technological devices generally associated with bygone eras (particularly pre-cinema), consistent with a mode of practice Finnish writer Erkki Huhtamo has termed "media archaeology" [1]

Ellen Zweig, Jim Pomeroy, Toshio Iwai, and Paul DeMarinis are key artists in this discussion. While skipping across media eras, they simultaneously accost a range of technology-related issues such as memory, gender, power and perception. Through example, their works playfully acknowledge the complexities of our relationship to technology.

This introduction ascribes some general attributes to these contemporary artists' practices; specific examples will be considered in detail within subsequent chapters.

In the work of these artists, processes of history and perception are explored by enlisting the outdated machines/objects of communication technologies (often in combination with contemporary devices) rather than the representations or reproductions these contrivances produce. It could be argued that, in fact, the old media *is* new media, given the altered context. As their artworks affirm,

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[1] Erkki Huhtamo, "Time Traveling in the Gallery: An Archaeological Approach in Media Art", *Immersed in Technology: Art and Virtual Environments*, ed. Anne Moser with Douglas McLeod (Cambridge: MIT, 1996) 233.

technologies do not become obsolete; they can resonate within our culture well past their commercially viable use-by date.

Art and technology are the consequence of the intersection between human interests and beliefs - and scientific method and phenomena. Through example, the works of DeMarinis, Pomeroy, Zweig and Iwai stress the potential for individual and immediate involvement with technology as a vital vehicle for communication, curiosity and poetic fantasy.

Magic, humor, immediacy and play are also invoked by these artists as useful means for addressing the complexity of issues surrounding technological "progress" By encouraging imaginative engagement with the past, they assist us in demystifying the present, enabling us to more clearly determine the possibilities of current media technologies.

In chapter 1, a brief overview of selected events in the history of vision is provided to support the belief that certain continuities and cyclical recurrences connect centuries, despite the propensity in current rhetoric to declare new developments "radically revolutionary" Even Virtual Reality (VR) is shown to be part of this continuum in our ongoing search for ways to see more, to simulate reality and to transcend our physicality.

As Margaret Morse puts it, "...the desire to become disembodied and enter an immaterial world is shown to be historical, in contrast to the never-seen-before-ness that puts technologies like virtual reality outside of socio-historical continuity and thus beyond criticism."[2] Morse's point is a significant one and will be expanded to describe a critical intention of media archaeologists: that of placing contemporary technological discourse within a context of historical awareness and contemplation.

Writers as diverse as Walter Benjamin, Tom Gunning, Carolyn Marvin, Anne Friedberg, Simon Penny, Lev Manovich, Erkki Huhtamo, Barbara Stafford, Margaret Wertheim, Anne Holland and others have articulated compelling arguments to support the comparisons between eras. This paper adds to this body of knowledge

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[2] Margaret Morse, "Metaphors or Meta-Interactions", catalogue, *Phantasmagoria: Pre-cinema to Virtuality*, eds. David Watson and Peter Callas (Sydney: Museum of Contemporary Art, 1996) 24.

by offering concrete examples of how these ideas are embodied in contemporary artwork.

There has been a discernible increase in the attention given to outmoded forms of entertainment technology in the last ten years. Cultural theorists are actively examining specific chronicles and narratives in the history of visuality and technology. This can be partially attributed to the cultural significance of the recent centenary of cinema, the turn of the millennium and the attendant attitudes of retrospection and self-consciousness these events prompt.

The works by these artists extend this discourse by providing lively models for the reflections and reactions to history and technology that are already taking place around us. Just because they incorporate archaic technologies, these artists should not be dismissed as Luddites fleeing from a contemporary world.[3] Instead, they are sophisticated, techno-savvy, tinkerer-inventors who freely choose from the entire range of media devices available. Rather than emphasizing technocratic slickness, in most instances these works indicate an alternative, do-it-yourself approach.

What is meant by archaic? After all, we experience the rapid obsolescence of our technologies almost daily. Last weeks' *Director 6* and *Photoshop 4.5* are joining the recent "irrelevancy" of 8-track cassette tape, Regular 8 film, Beta video, Amigo 500's and the Pacman of our not-so-distant past. As we continually confront new forms of these technologies and render others practically redundant, it is not surprising that we are inquisitive about their lineage. While technologies are being made redundant everyday, the works referred to in this study mainly utilize the detritus of the 19th century.

Furthermore, what is the value of media archaeology? By actively engaging with past traditions of media, artists and their audiences may come to new levels of awareness of their own active and productive natures, which in itself offers an alternative approach to social, artistic and political life.

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[3] "Luddite" is used to label a person opposed to or uncomfortable with new technologies. The term is taken from the name of the group of English protesters who in 1811 rioted against mechanization of the textile industry by destroying laborsaving weaving looms.

The use of historical references in art is not new. Following the last three decades of postmodernism, the appropriation of historical and contemporary cultural artifacts has become a strategy of art-making. But rather than leveling the signposts of history, as was the aim of much postmodern debate in the 1980s, historical events and archives are used by the artists discussed here as specific and potent sources of departure for the production of meaning.

This approach is articulated in the introduction to *Technoculture* (1991) by Andrew Ross and Constance Penley, who describe themselves as:

> .wary, on the one hand, of the disempowering habit of demonizing technology as a satanic mill of domination, and weary, on the other, of postmodernist celebrations of the technological sublime, we selected contributors whose critical knowledge might provide a realistic assessment of the politics- the dangers *and* the possibilities- that are currently at stake in those cultural practices touched by advanced technology.[4]

The artists discussed in this paper fit within Ross and Penley's description of technoliteracy rather than technophobia. Instead of "capitulating to a utopian ideal or collapsing from a sense of technological alienation and disappointment", a refreshing maturity concerning the status of electronic arts is evident in their work.

As Scott McGuire has observed,

> While the introduction of new technology, from steam power to television, has always challenged existing lines of authority, it has also enabled the consolidation of new spheres of power. To ignore this dialectic with regard to the computerization of culture, which is so overwhelmingly administered by giant multinational corporations such as IBM, Microsoft and Netscape, is more than naive. It reveals the return of the worst kind of separation between politics and art.[5]

Artists using archaic media are, in fact, accentuating this dialectic to make a point; while they are comfortable with incorporating technology, they are also emphasizing its paradoxical nature. They are fully aware that technologies have the potential to enhance or stifle power.

Approaches employed by these artists emphasize cyclical recurrence, contrary to the linear progression generally associated with technology. In this regard, history becomes a medium or process tool. Through these works we recognize, as John Berger has written in *G: a novel*,

> All history is contemporary history: not in the ordinary sense of the word where contemporary means the history of the comparatively recent past, but in the strict sense: the consciousness of one's own activity as one actually performs it. History is thus the self-consciousness of the living mind.[6]

How do the manifestations of these artifacts go beyond that which can be presented in a science or technology museum?[7] Since Duchamp, it has been acknowledged that context can be the subject. The content of these works is altered by their gallery location and the framework of historical/contemporary juxtaposition. However, technologies or phenomena are not simply re-presented here. They are enlisted in innovative ways to provoke an awareness of our changing relationship to art and technology. Antiques aren't simply being recycled; they are being put to use to actively mediate and extend our experience.

Simultaneously we should also acknowledge that particular habits and imperatives continue to persist and propel our technological desires. What are the imperatives, which are evidenced throughout the last 300 years of technical development?

Paul Virilio extensively addresses the relationship between military defense technologies and the development of optical technologies throughout history. In *War and Cinema*, Virilio quotes W. J. Perry, a former US Undersecretary of State for

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[6] John Berger, *G : a novel*, (London: Weidenfeld, 1972) 54.

[7] Coincidentally, the four artists considered here have all been artist-in-residence at the Exploratorium, the San Francisco Museum of Science, Art and Perception in a dynamic program started along with the Museum in 1969 by Dr. Frank Oppenheimer to support the creation of artworks that invite experiential learning.

Defence: "I'd put it like this: once you can see the target, you can expect to destroy it".[8] As with many of our contemporary artist's tools (the computer, telecommunications, video), defense and control have been major motivations for their development. This, however, does not explain the continuing fascination with technical devices and their use beyond the military complex. English sculptor Tony Cragg puts this into perspective:

> When I was a student somebody told me of a photograph he had seen of a group of Eskimos standing in a close circle throwing a man high in the air to enable him to see more of their surroundings. I never had the opportunity to verify this fact, but given an arctic terrain and its lack of trees, I accepted it and it impressed me greatly. It has led me to consider the importance of a vantage point and other techniques for seeing more.

In addition to increased viewing distances, vision devices also facilitate a particular psychological impact. Why is it more interesting to look at someone with a telescope when you could sit next to him or her? To look at the world through the mediation of the camera obscura when you could simply walk outside? We are genuinely intrigued and excited by amplifying or altering our perceptions through technical prosthesis.

Our technologies have extended our view, but, as Jonathan Crary asserts, "Most of the historically important functions of the eye are being supplanted by practices in which visual images no longer have any reference to the position of an observer in a 'real, optically perceived world', leading to 'a relentless abstraction of the visual'" [9] Or, as Paul Brown observes when analyzing the effects of VR, "In Plato's Cave there was an assumed relationship between the shadow and objects...now we truly have disembodied shadows with their own existence."[10]

One reaction to increasing abstraction and disembodiment is anxiety. Robyn Stacey describes:

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[8] Quoted in Paul Virilio, *War and Cinema, The Logistics of Perception*, (London: Verso, 1989) 4.
[9] Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century*, (Cambridge: MIT, 1990) 3.
[10] Paul Brown, *New Media Forum*, Artspace, Sydney, Oct. 1994.

> We are living in a state of profound ambiguity. As echoed by Moholy Nagy's observation, 'every period has its own optical focus', if every age has its defining technology, ours is the blur filter on *Photoshop*.[11]

These artist-archaeologists are reacting against this blur filter and anxiety by focusing on "slippage" and the technologies that fell between the cracks. By reinserting superseded technologies and narratives, they are producing a glitch in the perception of relentless progress. Resurrecting former technologies and narratives gives pertinence to seemingly irrelevant past human activities, while at the same time knowledge is gained about our present circumstances. The anxieties and idiosyncrasies of another time frame are deliberately revealed to put our anxieties in perspective.

Chapter 1 will provide a brief overview of the history of vision devices while emphasizing the continuities between eras. I will demonstrate that while the possibilities of VR are exciting, the technology does not represent such a dramatic break with previous vision systems, but rather a tool that emerges from a range of ongoing desires to make visible the invisible (evident in such widely varied human activities as shamanistic practices, 19th century conjuring and military defense).[12] The resemblance between the immersive capability of virtual reality and contraptions such as the diorama and panorama will be articulated; the 19th century will be especially highlighted due to its significant influence on current media practices and the artists detailed here.

Chapter 2 will feature the work of Paul DeMarinis and will explore themes of invention, especially the cast-offs and idiosyncrasies surrounding the development of sound technologies. As Douglas Kahn says of DeMarinis' *The Edison Effect*, "DeMarinis's inventions reinvent invention yet once again."[13] His electro-optical audio devices often involve discarded and recycled media relics and anarchic additions such as jump ropes, hypodermic needles, clay pots, beeswax, toasters and old Edison cylinders humorously incorporated to make pertinent statements

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[11] Robyn Stacey, *Like Life or Life Like*, Art Gallery of New South Wales, Sydney, May, 1996.
[12] Peter Callas, "Rockets to the Eye: George Méliés and the Idea of Independent Cinema", *Phantasmagoria: Pre-Cinema to Virtuality*, catalogue, eds. Peter Callas and David Wilson (Sydney: Museum of Contemporary Art, 1996) 3.
[13] Douglas Kahn, "Surface Noise on the DeMarinis Effect", catalogue essay for *Paul DeMarinis: The Edison Effect. A Listener's Companion*, (Rotterdam: Het Apollohuis, 1995) 4.

about our interactions with technology. Through his works, he advocates a self-conscious approach to technology, accentuating the role certain media have exerted over our memories and aspirations.

The work of Jim Pomeroy will be expanded upon in Chapter 3. Throughout his performances, writing, videos and photography, Pomeroy encourages personal empowerment. Pomeroy communicates a healthy cynicism for the rhetoric of Big Art and Big Business. 3-D practices are aligned with virtual reality, placing both within a broader social and cultural frame of reference.

In Chapter 4, the contemporary relevance of the camera obscura is vividly illustrated by the installations, performances and events of Ellen Zweig. Within her oeuvre, the compelling technology of the camera obscura is not the singular attraction; it is instead woven into a rich and multi-layered quest to expand our apprehension of history, stereotyping, perception and gender.

Historical aspects of the camera obscura and its re-emergence in contemporary art will be further expanded upon in this chapter. After experiencing the camera obscura for the first time in 1622, Constance Huygens wrote enthusiastically, "It is impossible to express its beauty in words. The art of painting is dead, for this is life itself, or something higher, if we could find a word for it."[14] While painting has obviously not died, Huygen's enthusiasm for the camera obscura's power as a direct and empirical form of representation is still understandable today.

Compelling comparisons have been drawn between recent developments in technology and early kaleidoscopes, zoetropes, and stereoscopes. The interconnectedness of these technologies will be discussed in Chapter 5, as eloquently emphasized by Toshio Iwai in his incorporation of pre-cinematic (what I begin to call "proto-virtual") devices. His sculptural works offer possible alternatives to the domination of cinema. They also encourage interaction and play as effective approaches to communicating with technology.

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[14] Quoted in Martin Kemp, *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat*, (New Haven: Yale UP, 1990) 192.

Barbara Stafford, in a chapter entitled "Ingenious Pastimes", describes an 18th century culture in which kinesthetic intelligence was valued, games were considered important and educational, and objects invited mutual participation, not passive consumption.[15] Rather than denigrate interaction with visual devices and imagery, as was a result of the late 18th century elevation of literacy and the corresponding mistrust of imagery and visual iconography (still the lament of many modern-day writers and educators),[16] Stafford (and many contemporary artists) stridently advocates broader education in the power and potential of visual language, as well as its history.

It is significant that the commentaries, both laudatory and critical, on 18th century visual culture and our own are remarkably similar. The devices of both eras can support passivity and ostrich-like ("head in the sand") behavior, as evident in Erkki Huhtamo's observation that "the current revival in the immersive peepshow-like experience in the form of the virtual reality craze has again brought forward the kaleidoscomaniac - this time in the guise of the 'cybernerd' whose passion for the other world makes him a fool in this one."[17] Jonathan Crary also points to undeniable links between the contemporary "observer" absorbed in computer technology and the new kind of "observer" that emerged around 1820 -1830.[18]

Media-archaeology artists endorse a certain cynicism towards the consumption of technology, but, in line with Stafford's examples, they offer fresh opportunities for putting intelligence, enjoyment and communicative power back into thinking with visual and auditory technologies.

"Interactivity" has become a pervasive buzzword. Artworks such as Toshio Iwai's remind us that "interactivity" was not introduced by new technologies. Indeed,

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[15] Barbara Stafford, *Artful Science: Enlightenment, Entertainment and the Eclipse of Visual Education* (Cambridge: MIT, 1994) 23.
[16] Martin Jay provides a list of French intellectuals who have shown "more explicit manifestations of hostility to visual primacy": Georges Bataille, André Breton, Jean-Paul Sartre, Maurice Merleau-Ponty, Emmanuel Levinas, Michel Foucault, Louis Althusser, Guy Debord, Jacques Lacan, Luce Irigaray, Roland Barthes, Christian Merz, Jacques Derrida, Jean-Francois Lyotard. Jay makes the point that other national traditions would have their own examples, *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*, (Berkeley: University of California Press, 1994) 14.
[17] Erkki Huhtamo, *From Kaleidoscomania to Cybernerd: Towards an Archaeology of the Media* (Helsinki: University of Art and Design, 1994) 6.
[18] Crary, *Techniques* 6.

performing visual music on Toshio Iwai's marvelous *Music Insect* computer game and participating in his reworking of the pre-cinematic phenakistiscope in *Time Stratum II*, reinforces Pam Hansford's observation that "all forms of play create some sort of virtual reality."[19]

Watching people engage with these artworks recalls Jacques Lacan's affirmation that "communication makes you laugh" [20] Artist-archaeologists value the significance of interaction and play as powerful strategies for communication. As psychoanalyst D.W. Winnicott notes in *Playing and Reality*,

> .on the basis of playing is built the whole of man's experiential existence. No longer are we either introvert or extrovert. We experience life in the area of transitional phenomena, in the exciting interweave of subjectivity and objective observation and in an area that is intermediate between the inner reality of the world that is external to the individuals.[21]

Far from being dead or buried in nostalgia, archaic media are offered as evidence of a lively continuity and multiplicity of both function and meaning. By making visible our paradoxical relationship to technology, these artists are providing positive clues towards a negotiation of our technological future.

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[19] Pamela Hansford, "AS IF: Playing and Virtual Reality", *Photofile* (Apr, 1995): 12.
[20] Jacques Lacan quoted in Paul Virilio, *The Vision Machine*, trans. Julie Rose, (Bloomington: Indiana University Press) 7.
[21] D. W. Winnicott, *Playing and Reality*, (London: Tavistock, 1971) 64.

Chapter 1

Proto-Virtual: The First 4000 years[1]

Lo, there shall be more stars as telescopes get more and more perfect.	Gustave Flaubert
There *is* no 'There' - There.	Gertrude Stein
.Virtual Reality is as real as a picture of a toothache.	Simon Penny

The term *proto-virtual* is coined here to annex the roots of pre-cinema to that of recent developments in virtual reality (VR), thus acknowledging certain historical continuities and cyclical recurrences that connect centuries - despite current claims to the radical newness of our own technological era.[2]

By example, the creative works described in subsequent chapters show that "new" media are not challenging patterns anchored in "old" media. In this chapter, a backdrop for this claim will be briefly considered. What are these patterns? Are current responses to technological innovations significantly different from those of the past? Before launching into the work of contemporary artists, it will be helpful to explore these questions.

Within Western culture, it could be argued that vestiges of VR can be found as far back as history records. While particular vision devices have been catalysts for significant historical ruptures affecting the philosophical outlooks of their day, often the desires that compel their developments appear remarkably consistent. While technological developments have radically altered our perspective of the world, our eagerness to extend our senses, imitate experience and transcend our physical condition has been continuous.

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[1] The phrase "The First 4000 Years" is borrowed from a subheading in the catalogue for *The Museum of Moving Image*, London, 1994) 4.

[2] "Virtual Reality" is a term used to describe illusionistic digital environments that are created to provide a convincing, simulated experience of "real" life.

VR could be seen as a development consistent with our constant attraction to forms of seeing more, to illusion, to simulated reality and to notions of disembodied travel, which have previously resulted in perspectival illusion, theatrical staging, a preoccupation with a mind/body split and the desire for vision prostheses. Shadow plays (a screen entertainment 2000 years old), dreamtime stories, and shamanistic rituals are very early examples. The design of Baroque church domes also provided deceptively vast spaces where the architecture dissolves into illusionary skies.[3] As will be discussed in this chapter, an amazing range of 19th century synergetic pre-cinematic theatrical devices was designed to provide immersive experiences that deliberately challenged common-sense credibility.

To make declarative statements about the history of visuality is to risk oversimplification. Hal Foster describes the difference between vision and visuality in this way: "the difference between the terms signals a difference within the visual - between the mechanism of sight and its historical techniques, between the datum of vision and its discursive determinations..."[4] Martin Jay somewhat more simply describes "the inevitable entanglement of vision and what has been called 'visuality' - the distinct historical manifestations of visual experience in all its possible modes" [5]

It is tempting to take a deterministic approach to the development of vision devices as proposed by theorists such as C. W. Ceram in his seminal book *The Archeology of Cinema*.[6] He describes a linear progression - indeed a march - from the camera obscura to photography to cinema, a march based almost exclusively upon advancing technological knowledge and the development of requisite materials. However, this view is restrictive and ignores the persistent ongoing and simultaneous availability of these devices (which a range of artists are currently emphasizing), the influence of a variety of factors (including economic and social circumstances) and the richness and complexity of these

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[3] Philip Fisher, *Wonder, the Rainbow, and the Aesthetics of Rare Experiences*, (Cambridge: Harvard UP, 1998) 53.
[4] Hal Foster, Preface, *Vision and Visuality*, ed., Bay Press: Seattle, 1988, xi,
[5] Jay 9.
[6] C. W. Ceram, *Archaeology of the Cinema*, trans. Richard Winston, (London: Thames and Hudson, 1965).

devices in their own right (not solely as precursors to a more "advanced" media technology).[7] It also ignores the conceptual context that preceded or coexisted with these developments.

These ideas will be elaborated upon more fully in this paper, but in order to provide a context for my ensuing arguments, I will briefly describe a few early theories of vision, then move to developments in vision technologies and their impact on coeval thought as observed by contemporary theorists. As the artists discussed in this paper are especially influenced by 19th century developments, this era will feature prominently in this overview, leading into the works of Paul DeMarinis, an artist whose optico-kinetic sculptures directly reference inventions of the late 19th century.

An awareness of how our consciousness of vision has changed provides us with a clearer perspective on the transformations we are currently witnessing. Plus, they are fascinating narratives in their own right.

Our view of the world and ourselves is continually evolving - and vision devices have profoundly accelerated this process. From the proliferation of mirrors and burning lenses over three and a half thousands years ago, to the revolution of photography, to the recent use of edible endoscopes (which peacefully image their passage through the colon), their effects on our consciousness are almost incomprehensible.

It was once believed that light emitting from our eyes illuminated what we saw.[8] Aristotle (ca. 330 B.C.) rejected this notion of intraocular fire:

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[7] Barrett Hodsdon made this point clearly in his lecture "Vision, Cinema and its Historical Placement Rethinking the Experience of 100 years of Cinema in the New Millennium", Sydney College of the Arts, University of Sydney, May 30, 2001. He analyzed the silent movie era and the wide screen phenomenon, not as simply developments in the chronology leading to today's devices, but as sophisticated art forms carrying their own sets of conditions, viewing relationships and accomplishments.

[8] "The image of the eye as a lantern was a cultural and scientific commonplace when Mathew was composing his gospel...[H]e wrote 'the eye is the light of the body'." Arthur Zajonc, *Catching the Light: The Entwined History of Light and Mind,* (New York: Oxford UP, 1995) 20. David Lindberg in *Theories of Vision from Al-Kindi to Kepler,* (Chicago: Chicago UP, 1976) 3 writes, "The ancestry of Plato's theory of light according to which a stream of light or fire issues from the observer's eye and coalesces with sunlight, is not easily determined. The theory of a visual current coming from the eye has commonly been associated with the Pythagorean School, and in particular with Alcmaeon of Croton

> If the visual organ proper really were fire, which is the doctrine of Empedocles, a doctrine taught also in the *Timaeus* (of Plato), and if vision were the result of light issuing from the eye as from a lantern, why should the eye not have had the power of seeing even in the dark? It is totally idle to say, as the *Timaeus* does, that the visual ray coming forth in the darkness is quenched. What is the meaning of this quenching of light? That which, like a fire of coals or an ordinary flame, is hot and dry is indeed, quenched by the moist or cold; but heat and dryness are evidently not attributes of light...[9]

Among the first philosophers to articulate a systematic approach to light and vision were the atomists of 2nd century AD Greece. Although varying in detail, they generally believed that sensations were created by direct contact with the sense organ; with sight, a material effluence actually connected the eye with the perceived object. Aetius (2nd century AD) reported that,

> Leucipppus, Democritus and Epicurus say that perception and thought arise when images (*eidola*) enter from the outside; Alexander of Aphrodisias, writing in the first half of the third century, adds that Leucippus and Democritus attributed sight to certain images, of the same shape as the object, which were continually streaming off from the objects of sight and impinging on the eye.[10]

Epicurus describes the effluence in detail in a letter to Herodotus: "For particles are continually streaming off from the surface of bodies, though no diminution of the bodies is observed, because other particles take their place.... We must also consider that it is by the entrance of something coming from external objects that we see their shapes and think of them."[11]

(early fifth century BC)". Nicholas Wade observes that "Visual experiences in darkness (as a consequence of a blow applied to the eyeball) were not only remarked on around 500 B.C., but they could have provided the phenomenal source for emission theories of vision - that light issues from the eye itself. Such theories might seem fanciful to us now, but the phenomenon upon which they are based are as readily experienced today as they were two and a half thousand years ago, and descriptions of them have been repeatedly refined throughout that period". *A Natural History of Vision*, (Cambridge: MIT Press, 1998) xiv.

[9] Quoted in Wade, *Natural History* 1.

[10] Lindberg 2.

[11] Lindberg 2.

The Stoics believed excitable air aided vision. "An optical pneuma, it was supposed, flows from the seat of consciousness (*the hegemonikon*) to the eye and excites the air adjacent to the eye, putting it in a state of tension or stress. Through this stressed air, when it is illuminated by the sun, contact is made with the visible object."[12]

While not as outlandish to our view as these early conjectures of stressed air and effluent images, many subsequent theories of vision have been espoused and discarded. Leaping a few centuries to the not-so-distant 19th century, it was thought that after death the final image remained on the retina, as indicated in this Russian title, dated 1892: *Is it Possible to Obtain in the Eye of a Person Killed a Photograph of the Murderer?*[13]

With the development of optical devices, concepts of human vision were significantly advanced in the 15th and 16th centuries; Da Vinci, della Porta, Descartes and Kepler used the camera obscura as a model to explain the wondrous workings of the eye and its lens.

Copernicus (1473-1543), with the aid of optical devices, jerked the earth (and man) from the center of the universe and in the process irreversibly altered the relationship between man, God and science. Subsequently, Galileo, Newton, Descartes and Kepler worked within a period of great discovery brought about by the invention of lenses, which made visible both the minute and the infinite. In 1667, the English scientist Robert Hooke marveled at the range these lenses provided:

> The next care to be taken, in respect to the Senses, is a supplying of their infirmities with Instruments, as it were, the adding of artificial Organs to the natural; this in one of them has been of late accomplished with prodigious benefit to all sorts of useful knowledge, by the invention of Optical glasses. By the means of the Telescope, there is nothing so far distant but may be represented to our view; and by the help

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[12] S. Sambursky, *Physics of the Stoics*, in Lindberg 2.

[13] The original Russian title is listed in the library reference catalogue of the Royal Photographic Society in Bath, England.

> of Microscopes, there is nothing so small, as to escape our inquiry; hence there is a new visible World discovered to the understanding.[14]

The celebration of technological prostheses is also evident in Descartes' statement that: "All the management of our lives depends on the senses, and since that of sight is the most comprehensive and the noblest of these, there is no doubt that the inventions which serve to augment its power are among the most useful that there can be."[15]

The heavens may have opened dramatically to our perceptions, but an understanding of what lies under our skin was also irrevocably retailored. Leonardo da Vinci and his Enlightenment successors needed to dissect cadavers to look at what was concealed by human skin. In 1895 Wilhelm Roentgen found a way to image the body as if it were transparent.[16] Currently, a range of sophisticated electronic imaging systems are available, including magnetic resonance imaging (MRI), which provides detailed, three-dimensional digital models of the human body, including the brain, from various viewpoints. In 1993, medical scientists with the Visible Human Project imaged the body of Joseph Paul Jernigan (a state-executed man from Waco, Texas) slice by slice in 1mm cross-sections. It is now available on-line for downloading - allowing an intimate view of the internal landscape of his human body.[17]

The changes provoked by evolving technologies haven't been confined to objective fact or physical convenience; our memories and imaginings have also been significantly and irreversibly altered. Paul Virilio writes:

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[14] Robert Hooke, *Micrographia: or some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses* (London: 1667), preface in William D. Hackman, "Attitudes to Natural Philosophy Instruments at the Time of Halley and Newton", *Polhem* 6 (1988): 149.

[15] Quoted in Jay 21.

[16] William J. T. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-Photographic Era*, (Cambridge: MIT, 1992) 12.

[17] For a discussion of the enormous publicity surrounding the launch of "The Visible Human Project" and the imaging of the death row man see Catherine Waldby, *The Visible Human Project: Informatic Bodies and Posthuman Medicine*, (London: Routledge, 2000) 1. She writes "The choice of Jernigan's body by the project team provided media coverage with a set of stock narratives and an appealing moral economy of criminal transgression, punishment, sacrifice and redemption which produced headlines like, 'Executed man helps science as internet cadaver', 'Executed killer reborn as visible man on internet' and 'a convict's contribution' "

> Just when we were apparently procuring the means to see further and better the unseen of the universe, we were about to lose what little power of imagining it. The telescope, that epitome of the visual prosthesis, projected an image of a world beyond our reach and thus another way of moving about in the world, the logistics of perception inaugurating an unknown conveyance of sight that produced a telescoping of near and far, a phenomenon of acceleration obliterating our experience of distances and dimensions.[18]

Henri Bergson, Frederick Jameson, Guy Debord, Paul Virilio, Scott McQuire, Susan Sontag, Jacques Derrida, Anne Friedberg, Frances Yates, Roland Barthes and others have written provocatively of the power of photography, cinema and television to obliterate, distort or provide surrogate memories - definitively altering our sense of time and space and identity, both individual and cultural.

Our ancestors cultivated powerful methods for memorizing and retaining information. In *The Art of Memory*, Frances Yates describes various elaborate methods of "artificial memory" used by the Ancient Greeks. A common mnemonic aide devised by classical orators enlisted architectural spaces; images and ideas were assigned to rooms and their furnishings to trigger fact retrieval in the order in which they were to be recalled.[19] This is the source of the rhetorical phrase, "in the first place" Many parallels could be drawn to computer memory and its symbolic organization by icon - and as Darren Tofts points out, the physical act of walking to trigger these imaginary architectural spaces and memories could be seen as analogous to the mobility and triggering associated with negotiating certain types of virtual-reality environments. In common with the ancients, contemporary cyberspace environments have also drawn on architectural metaphors.[20]

We now rely on technologies such as the camera and the computer to store our details. We catalogue the vast flood of experiences and data - then depend on these prosthetic devices for recall. Thus the quality and type of memory are

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[18] Virilio, *The Vision Machine* 4.

[19] Frances Yates, *The Art of Memory*, (London: Pimlico, 1996) 11, 16-18. *The Neighbor's House*, an interactive CD Rom by Australian Bronwyn Coupe recalls the artificial memory described by Yates. Coupe encourages the viewer to navigate the space of the virtual childhood home of composer Mary Anne Slavich. Slavich's repository of memories is triggered by the participant's movement through each "room".

[20] Darren Tofts, *Memory Trade: A Prehistory of Cyberculture*, (Singapore: Stamford Press: 1997) 69.

prescribed by these logged experiences. Fredric Jameson has suggested: "One is tempted to say that the very function of the news media is to relegate... recent historical experience as rapidly as possible into the past. The informational function of the media would thus be able to help us forget, to serve as the very agents and mechanisms of our historical amnesia" [21]

Media technologies such as photography and cinema have radically altered our memories and have, in fact, profoundly affected prevailing belief systems (Walter Benjamin, Jonathan Crary, Paul Virilio, Henri Bergson, Geoffrey Batchen, Anne Friedberg, and Scott McQuire). Rosalind Krauss has emphasized the correlation between technologies and the philosophies of their time; for example, she asserts that the camera obscura was a fitting metaphor for the seventeenth century:

> The eye that surveys the inner space of experience, analyzing it into its rationally differentiated parts, is an eye born of seventeenth-century epistemology and the particular apparatus that was frequently used as its model: the camera obscura. Beaming light through a pinhole in to a darkened room and focusing that light on the wall opposite, the camera obscura allowed the observer - whether it was Newton for his *Optics* or Descartes for his *Dioptrique* - to view that plane as something independent of his own powers of synthesis, something that he, as a detached subject, could therefore observe. It was due to this structural disconnection between plane of focus and observing subject that the camera obscura came to function as a model for the 'classical subject of knowledge' [22]

Jonathan Crary, in *Techniques of the Observer*, further describes the profound transformations from the conceptual standpoint of the "observer" that have occurred in tandem with emerging vision technologies. Rather than overemphasize a commonly repeated trajectory that describes the camera obscura as a device enroute to the pinnacle of verisimilitude represented by photography (and then cinema), Crary posits the camera obscura and photography as "radically dissimilar historical objects." Instead, he highlights the very different shifts in perceptual and conceptual understanding catalyzed by these devices. For example, a momentous conceptual shift occurred when the viewer moved outside the womb-like space of

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[21] Fredric Jameson, "Postmodernism and Consumer Society", *Postmodern Culture*, ed. Hal Foster, (London: Pluto Press, 1985) 111.
[22] Rosalind Krauss, *The Optical Unconscious*,, (Cambridge: MIT, 1993) 128.

the camera obscura, with its "objective" one-to-one relationship between viewer and world (also reflected in the rationalist tenets of the day) - to use the telescope. For the first time, the eye became extended beyond and therefore separated from the body. The telescope, however, still maintained the detached plane of objective focus, exterior to and independent of bodily subjectivity.

This position of objective observer (represented by the model of the camera obscura) that had been in place for 200 years began to erode in the early 19th century. At this time, Johann Wolfgang Goethe published his findings on afterimages and color theory - observations that radically revealed how profoundly our perceptions are influenced by bodily experience. Both Jonathan Crary and Rosalind Kraus point to Goethe's *Color Theory* (*Farbenlehre*) of 1810 as a monumental document in its rejection of the camera obscura's ordering principles; instead of pausing to appreciate the inverted image, Goethe seals the aperture to observe the aftereffect and "abruptly and stunningly abandons the order of the camera obscura" [23]

> With the close of the eighteenth century, however, the camera obscura ceased to function as a pertinent model of vision. For if in his *Farbenlehre* (1810) Goethe reassembles the elements of the darkened room, the ray of light, and the plane of focus, it is only to direct the subject immediately to close off the opening so that the phenomenon of the afterimage might appear. With this severing of the dark room's relation to the perceptual field, Goethe initiates the study of physiology- and no longer an optics - of vision, a physiology that now understands the body of the viewer as the active producer of optical experience.[24]

Along with Goethe's observations were those of medical student Jan Punkinje. Without access to more sophisticated medical and scientific equipment, he studied the phenomena behind his own eyes and methodically catalogued an astonishing range of afterimage activity stimulated by various sources of light. "Generally there are sensations which do not correspond to anything outside the body. In so far as they imitate the qualities and forms of external things, they thereby often give rise to illusions, phantoms, or appearances with no corresponding reality. These can be

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[23] Crary, *Techniques* 3-4.
[24] Kraus, *Optical Unconscious* 133.

referred to as subjective sensory phenomena."[25] Intensive studies on afterimages were later undertaken by Joseph Antoine Plauteau and Gustav Théodor Fechner.[26]

Even more significant than the celebration of afterimages, Crary emphasizes, was the change of thinking brought about by a generation of persistence of vision devices such as the thaumotrope, phenakistiscope and zoetrope (considered progenitors to cinema) and the stereograph.[27] These devices decisively exposed the subjective nature of vision and bodily centered experience.

> Very suddenly, in the 1820s and 1830s, notions of subjective vision become dominant, that is, vision which is dependent on and conditioned by the body, by the physiological make-up of the observer. What is crucial here of course is that subjective vision displaces what we could call a classical or Cartesian model of vision.

Crary continues to make clear that the "uncertainties of human vision" were no longer considered aberrant, but integral to normal visual perception:

> The consequences of this shift were enormous, and were bound up in the realization that vision was contingent, unreliable and even arbitrary in terms of its relation to an external world. Thus vision became the site of procedures of normalization, of quantification, of modification.[28]

In his massive summary of physiological discourse, Johannes Müller's 1833 *Handbuch der Physiologie des Menschen*, included an extensive laboratory study on sight. He found that our experience of light can occur independently of any actual light and that a variety of different causes will produce the same sensation in a given sensory nerve. In summarizing Müller's findings, Crary concludes "our physiological apparatus is again and again shown to be defective, inconsistent, prey to illusion, and, in a crucial manner, susceptible to external procedures of manipulation and simulation that have the essential capacity *to produce experience*

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[25] Quoted in Wade, *Natural History* 157.
[26] Wade, *Natural History* 163.
[27] 3-D techniques will be discussed more fully in Chapter 3.
[28] Jonathan Crary, "Visual Technologies and the Dispersal of Perception" catalogue, *Jurassic Technologies*, (Sydney: Biennale of Sydney Publication, 1996) 18.

for the subject."[29] This capacity could be directly connected to stereography, in which the viewer creates one image from two - and to VR, where external sensory information can potentially create the illusion of alternative spaces.

With the development of the social sciences, new techniques were employed not only to extend the field of sensory data, but also to control and manipulate it. The individual became an object of focus and analysis, subject to categorization and surveillance. Closely linked to these new techniques of surveillance were developing attitudes towards incarceration and self-censorship (classically represented in the panopticon prison architecture of Jeremy Bentham), which replaced the deterrents of public spectacle and punishment.[30]

Consistent with the notions of subjectivity were the celebrations of simultaneity and fragmentation that began to appear in the art of the time: in the writings of James Joyce[31] and Virginia Woolf and (as Crary discusses) in the depiction of light and perspective in the paintings of J.M.W. Turner and Cezanne. With developing psychologies, the internal landscape of the subconscious, dreaming and subjective memory were acknowledged and represented.

As consequential as the conceptual shifts of the 18 and 19th centuries were, in Crary's view, we are now (with global technological culture) encountering:

> .a transformation in the nature of visual perception perhaps more revolutionary than the historical shift from a medieval worldview to the Renaissance rationalization of perceptual experience. ... The deployment of computer-generated graphics and imagery and more recently of various forms of virtual reality signals the increasing present of fabricated visual 'spaces' that are radically dissimilar from the mimetic capacities of film, photography and television. ... Computer-aided

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[28] Crary, *Techniques* 92.

[30] See Michel Foucault, *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan (New York: Pantheon, 1979), which describes the transition from spectacle as a deterrent in the 17th/18th centuries (public torture and the public display of the power of the King) to one of incarceration and surveillance and the accompanying condition of self-censorship and regulation (7-31).

[31] Darren Tofts discusses in depth the significance of Joyce's *Finnegan's Wake* to cyberculture history in *Memory Trade: A Prehistory of Cyberculture*, (Singapore: Stamford Press, 1997). He also refers to Gilles Deleuze and Félix Guattari's inclusion of Joyce in *Anti-Oedipus: Capitalism and Schizophrenia*, trans. Robert Hurley, Mark Seem and Helen R. Lane (Minneapolis: University of Minneapolis Press, 1983) 43, 186.

> design, synthetic holography, flight simulators, computer animation, robotic image recognition, ray tracing, texture mapping, motion control, head mounted displays, CD-ROMS, magnetic resonance imaging, and multi-spectral sensors are only a few of the techniques that are relocating vision to a plane severed from a human observer.[32]

Crary's writings offer important and helpful insights into the history of visuality and a significant opportunity for us to reflect on the impact of vision technologies. But are we really participating in such a profound transformation of vision?

Certainly, while viewing the work of the artists discussed in this paper, it does not appear so; this is a view maintained by a range of writers including Timothy Druckrey, David Nye, Margaret Morse, Arthur Cantrill, Simon Penny, Margaret Wertheim, Geoffrey Batchen, Darren Tofts, Erkki Huhtamo and Barbara Stafford, to name just a few. It is important to dispel the myth that one's own time is the most radical or progressive in history.

Disregarding the rhetoric and the extraordinary range of media coverage, the current state of virtual reality still resembles a cartoon (or as Rebecca Shanahan describes it, legal blindness); hardly an opportunity to erase the consciousness of self and the world. We do need to put things in perspective. As Helen Grace remarked, "cyberspace is clearly not sublime or inconceivably immense - pull the plug!"[33]

The biggest difference between virtual reality and previous visual systems is that the images that fill our periphery are synthesized from artificial spaces. Or is it?

Virtual reality could also be viewed as a return to mimetic experience, rather than a radical severing from the past as has been claimed. Remko Scha makes the point that virtual reality could be considered to occupy a peculiarly anachronistic place in the hall of representation, rather closer to Western perspective painting:

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[32] Crary, "Visual Technologies" 17.
[33] Helen Grace, *Like Life or Life Like*, Art Gallery of New South Wales, Sydney, May, 1996.

> The new digital technologies which are now being developed are often imitative technologies. Future generations may end up viewing the nineteenth century as the century of abstraction, and the now imminent turn of the century as the moment of a return to a mimetic aesthetics. The imitation of nature is once again a widely pursued artistic ideal.[34]

After all, paintings can represent a synthesis from "unreal space" and earlier examples abound of synthesized images, including the projected paintings of the magic lantern period and in Emile Reynaud's projecting machine (1882).[35] Perspectival illusion (a representational form some 500 years old) and imitation are major aspects of present-day approaches to representation and simulated reality, especially evidenced in constructed virtual spaces such as the CAVE, a virtual reality room at the University of Illinois, Chicago.[36] The synthesized spaces of the CAVE resemble little more than perspective painting, recalling Lev Manovich's point:

> The Renaissance adaptation of perspective represented the first step in the automation of sight. While other cultures used sophisticated methods of space mapping, the importance of perspective is not in its representational superiority but in its algorithmic character. This algorithmic character enabled the gradual development of visual languages of perspective and descriptive geometry and, in parallel, of perspectival machines and technologies, from a simple net described by Dürer to photography and radar. And when digital computers made possible mass automation in general, automation of perspectival vision and imaging followed soon.[37]

While we recognize perspective as a convincing translation of perception to a two-dimensional surface, it is an idealized, false representation of space, position and vision - a translation that ignores our binocular capabilities, eye movement and the

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[34] Remko Scha, "Virtual Voices", *Mediamatic*, [Amsterdam] 7.1: 27.

[35] Frenchman Emile Reynaud, in his Théâtre Optique, organized shows "of living pictures", continuous narratives of up to 15 minutes in length which 500,000 visitors attended in a total of 12,800 performances at the Musée Grévin. Ceram 194.

[36] I visited the CAVE in 1997 and 2001; perhaps because I have practical sight in only one eye, the illusion of immersive 3-D reality escaped me. The traditional illusions of perspective, however, were quite recognizable and intact.

[37] Lev Manovich, "The Automation of Sight: From Photography to Computer Vision", *Electronic Culture: Technology and Representation*, ed. Timothy Druckery, (New York: Aperture, 1996) 239.

curvilinear nature of vision.[38] The enduring quality of the perspective system is noteworthy. Here again, we see an obvious extension with previous visual systems rather than a radical break.

This paper wasn't conceived to bash developments in virtual reality. I am excited about the possibilities of VR, but I also appreciate how important it is to acknowledge its connections to previous eras. The following chapters celebrate the work of a group of artists who are, among other things, ironically commenting or mocking the "radical-ness" and "new-ness" of these recent technologies by referring to "immersive" experiences or systems that have been around for a long time.

Pertinent to this discussion is Crary's observation, "In the wake of this on-going mutation in the nature of visuality, we can ask not only what visual modes are being left behind but equally important, what survives and persists that links this present moment with older organizations of the visual?"[39] These artists' incorporation of persistently relevant "archaic" technologies throws the argument of linear technological progression into question and contributes to our appreciation of the connections between technological time frames.

Ultimately, the question of tracing a VR lineage is as slippery as identifying the beginning of cinema. When I gaze into the mesmerizing, moving single light source of a campfire, I imagine this is the beginning of cinema. The story of Plato's cave is often evoked as the birth of cinema, where immobilized prisoners watched disembodied shadows cast by the fire they couldn't turn to see.[40] Helmut Gernsheim in *The History of Photography* locates cinema's origins in the camera obscura theatre of Giovanni della Porta in the 16th century:

> He arranged elaborate theatrical productions on a sunlit stage just outside the dark room, with scenery, actors in costume, models of wild animals moved by children inside them, music, & c. The audience in the darkened room, unaware of this arrangement, was so thoroughly taken in by the spectacle they saw projected on a white sheet that some could not believe Porta's explanations afterwards, and he

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[38] Steve Neale, *Cinema and Technology: Image, Sound, Colour*, (Bloomington: Indiana UP, 1985) 18.
[39] Crary, "Visual Technologies" 17.

> was accused of sorcery. This kind of entertainment can, psychologically at least, count as the earliest forerunner of the cinema.[41]

For the cinema, could we substitute the term "virtual reality"? This suggestion is in almost direct contrast to C. W. Ceram's assertion in *Archeology of Cinema:*

> Knowledge of automotons, or of clockwork toys, played no part in the story of cinematography, nor is there any link between it and the production of animated 'scenes'. We can therefore omit plays, the baroque automatons, and the marionette theatre. Even the 'deviltries' of Porta, produced with the camera obscura, the phantasmagorias of Robertson, the 'dissolving views' of Child, are not to the point. All these discoveries did not lead to the first genuine moving picture sequence.[42]

His observations are clearly refutable. As I have shown, there are direct relationships between the events and techniques mentioned by Ceram and the development of cinema - and VR.

The desire for VR is arguably evident in various aspects our philosophical history. Margaret Wertheim describes a persistent dualism in Western thought over the last 3000 years founded on the conviction that while we are living in this world, there is a better one elsewhere. Even in ancient Greece, Pythagoras believed the purity of mathematics held the clue to an otherworldly realm of eternity, and Plato held that transitory appearances in this world are illusory. With Christianity, this dualistic notion was enshrined in the Kingdom of Heaven; as a goal of salvation (as opposed to damnation in Hell) it encouraged a denial of this life and its inherent change and suffering in pursuit of a loftier ideal.[43]

Christianity promoted a mind/body split - where the body became something to distrust that bound the mind in an impure state. Most traditions, including pagan or

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[40] Many writers, including Anne Friedberg, Jean Louis Baudry, Charles Musser, Steven Neale and Anne Holland refer to the immobility of the viewer as a pre-condition of viewing in cinema - an observation that can and has been extended to a range of pre-cinematic screen entertainments.
[41] Alison Gernsheim, Helmut Gernsheim, *History of Photography: From the Earliest Use of the Camera Obscura in the Eleventh Century to 1914*, (London: Oxford University Press, 1955) 7.
[42] Ceram 17.
[43] Margaret Wertheim, *The Pearly Gates of Cyberspace: A History of Space from Dante to the Internet*, (Sydney: Doubleday, 1999).

ecstatic cultures did promote the concept of "leaving" their bodies, but they had little desire in permanently evacuating - nor did they consider their bodies repulsive.[44] This desire for a heightened immaterial plane unencumbered by the inelegance of the abject body is a legacy for the appeal of virtual reality. Cyber-utopians, in Wertheim's view, have a similar approach to the Platonists and Christians: the denial of this life in deference to another. And, like the promise of heaven, cyberspace can represent an apolitical space where you can avoid real conflict or untidy emotions.

This desire to transcend or discard the body through current technology, or the fiction surrounding it, is one espoused by cyber-fiction writers, techno-pagans and cyber-utopians. While lauded as exponents of radically new visions of flesh transcendence, they are unaware or ignore the fact that this notion has persevered in Western culture for millennia.[45] In the book *Mind Children*, roboticist Hans Moravec, Carnegie Mellon University, articulates the cyber-utopian dream. Wertheim comments,

> Moravec writes ecstatically about the possibility of one day downloading our minds into computers so that we might transcend the flesh and live forever in the digital domain. He even envisages the possibility of resurrection. Here he imagines a vast computer simulation of our planet that would recreate in cyberspace the entire history of humanity. With such a simulation, he tells us, it should be possible to 'resurrect all the past inhabitants of the earth...enabling everyone who ever lived to achieve immortality in cyberspace' [46]

Again, these projections are not new, although decidedly more ambitious! (The participants in Madame Blavatsky's 19th century séances selected a few luminaries to engage with, not the entire history of humanity.) Shamans, mystics and mediums have reputedly communicated with the dead throughout history and inventors have hoped to communicate with or "resurrect" the dead since the dawn

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[44] Margaret Wertheim, lecture at University of Western Sydney, Sydney, Nov. 1999.
[45] Simon Penny, "The Virtualisation of Art Practice: Body Knowledge and the Engineering World View", *CAA Art Journal*, Fall (1997): 4.
[46] Quoted in Wertheim, *Pearly Gates* 20-21.

of the electric era.[47] This was a motivating factor behind several 19th century inventions, including Thomas Edison's phonograph. Guglielmo Marconi and Nikola Tesla also perceived the radio as a wireless telephone to the dead, and a lively trade in "spirit" or "ghost" photography provided visual "evidence" of the presence of ancestors.

Mark Dery also cites another kind of technological zeal combined with religious rhetoric as an example of a new secular theology, one that blends New Age Mysticism with Cyberspace.[48] Philip Hayward notes the irony of this convergence: "Instead of making individuals more in touch with their 'inner harmonies' and the 'resonance' of the universe, cyberspace users are instead inserted into a cybernetic virtual reality within which our bodies have only a virtual existence." [49] Jason Lanier has emerged as the "guru" of the Cyber New Ageists; his persona consciously draws on Christianity and religious fervor, evident in his statement, "Are you ready to make a world? I call this course God 101 "[50]

Religious beliefs have highly influenced attitudes towards science and new technology, as contended by Wertheim in *Pythagoras' Trousers: God, Physics and the Gender Wars*. She emphasizes the inherent role religion (Christianity) has played since the beginning of science and points out the inextricable aspects of religious beliefs and ideals still recognizable in current physics and its accompanying rhetoric.[51]

Even among more traditional Christian groups, quests for progress, scientific advances and technological development have become firmly entwined with religious and cultural imperatives. David Nye traces the transference of worship from God's representation in the power of the sublime in nature (evidenced by the

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[47] Jeffrey Sconce articulates the connections between the development of electronic communications and the paranormal in *Haunted Media: Electronic Presence from Telegraphy to Television*, (Durham: Duke UP, 2000).

[48] Mark Dery, *Escape Velocity: Cyberculture at the End of the Century*, (New York: Grove Press, 1996) 9.

[49] Phillip Hayward, "Situating Cyberspace," *Future Visions*, ed. Phillip Hayward and Tana Wollen, (London: British Film Institute, 1993) 197.

[50] Quoted in Hayward 197. Lanier's remarks originally appeared in Stephen Levy, "Brave New World" *Rolling Stone*, Australian ed., (Oct. 1990): 92.

[51] Margaret Wertheim, *Pythagoras' Trousers: God, Physics and the Gender Wars*, (New York: Random House, 1995).

popular adulation of places like Niagara Falls) to the power offered in the sublime of technological progress in modern North America since the 19th century.[52] Views on progress became messily intermingled with notions of spirituality and morality, which have also become linked with intense patriotism.

This notion of progress and change as morally right and good was a new development of the modern era that coincided with the rise of materialism and consumerism in the 19th century.

> The political consolidation of capitalism has depended enormously on this re-valuation of the value of change. Innovation - the newest, the latest, the most modern - has metamorphosed from carrying the stigma of the unproven to be accorded an absolute worth in itself. Such a transformation breaks with tradition on every front, not only reshaping the apparatus of production, but the logic of consumption, including the dominant forms of culture and knowledge.[53]

From the beginning of modernity, a dominant narrative within our culture has been that of continual "progress" - from which has emerged the need to perceive one's own time as the most progressive and radical in history. This view conveniently corresponds with a capitalist imperative - to sell things. In 1848, Karl Marx and Friedrich Engels in *The Communist Manifesto* directly linked capitalism with its reliance on change, describing, "All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away, all new formed ones become antiquated before they can ossify. All that is solid melts in to air, all that is holy is profane...."[54]

Charles Darwin's *The Origin of Species* of 1859 introduced the theories of evolution and natural selection. No doubt, the popularity of these theories provided a fundamental reinforcement for this developing attitude towards change over constancy. *The Origin of Species* also coincided with a time of mass industrialization and offered timely ideological support for the laws of capitalism.

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[52] David Nye, *The American Technological Sublime*, (Cambridge: The MIT Press, 1994).
[53] Walter Benjamin quoted in Brook Thomas, "The new historicism and other old-fashioned topics" *The New Historicism*, ed. H.A. Vesser, (New York: Routledge, 1989) 187.
[54] Karl Marx and Friedrich Engels, *Manifesto of the Communist Party*, trans. S. Moore, (Moscow, Progress, 1977) 45-6.

Two works of fiction, *The Time Machine* by H. G. Wells and Jules Verne's *20,000 Leagues Under the Sea,* also greatly sparked the public's imagination and are considered the earliest classics of science fiction. Wells described a horseless carriage that could visit the past and the future:

> Now I want you clearly to understand that this lever, being pressed over, sends the machine gliding into the future, and this other reverses the motion. This saddle represents the seat of a time traveler. ... Upon that machine, said the Time Traveler, holding the lamp aloft, 'I intend to explore time... [55]

The publication of *The Time Machine* in 1895 prompted British inventor R. W. Paul to apply for a patent to actually build the machine in that same year. This action coincided with the first public showing of another form of time travel: the Lumiere brothers publicly debuted their cinematograph in December 1895. The concept and technical details of Paul's patent could also be directly compared to modern-day VR in its goal of creating the illusion of disembodied traveling.[56] Film historian Terry Ramsaye, in 1926, enthused over the Wells-Paul idea: "It sought to liberate the spectator from the instant of Now... It was a plan to give the spectator possession, on equal terms, of Was and To Be along with Is."[57]

Examples like Paul's time machine are relevant to our current deliberations; they help to refute declarations that contemporary technologies and the motivations behind them are significantly new, confirming instead, "There is no 'view from nowhere' for even the most scrupulously 'detached' observer, nor can there be."[58]

Likewise, it is valuable to understand the roots and causes for this attitude towards change we have inherited from the 19th century; to be aware, in other words, that it wasn't always the mantra by which Western traditions were guided. The 19th century is a particularly relevant era to discuss in relation to media archaeologies

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[55] H. G.Wells, *The Time Machine*, (Berkeley: Berkeley, 1987) 9.
[56] Anne Friedberg, *Window Shopping: Cinema and the Postmodern*, (Berkeley: University of California Press, 1993) 94.
[57] Terry Ramsaye, *Million and One Nights*, (New York: Simon and Schuster, 1926) 151.
[58] Jay 18.

as much of our current media and cultural attitudes emerged in the last quarter of that century.

It is difficult to fathom how vitally the urban landscape was affected by the introduction of electricity and artificial electric light.[59] The X-ray, the skyscraper, metal bridges and the machine-gun (the first assembly line in the U.S. produced Winchester rifles) were also significant developments with far-reaching effects on life of the time. Social structures were altered dramatically as a result of the industrial revolution, the French revolution, American independence, and the rise of a middle class.

Former concepts of time and place were also shattered by initiatives in transportation (the bicycle, the locomotive and the steamship) and in communications devices (the telegraph, the telephone, photography and cinema). As the first standardized device for transmitting messages over great distances, the telegraph fundamentally changed thinking about speed, immediacy and geography. As Scott McQuire observes:

> The advent of the telegraph in 1794 inaugurated the ability for messages to outpace messengers. By the nineteenth century, the expansion of telegraph services and the successive invention of the camera (1839), the telephone (1876), the phonograph (1877), the wireless radio (1894), and the cinematograph (1895) completely redefined the practice of 'communication' and the notion of 'proximity' The dichotomy between being present in one place and therefore necessarily absent elsewhere began to waver, as physically separated sites of action were bridged and juxtaposed in new ways.[60]

Analogies have been drawn between the telegraph and current communication devices; in fact, Tom Standage has recently written a book entitled *The Victorian Internet*.[61]

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[59] For compelling narratives describing the profound changes wrought by the flourishing of electrical light, see Nye and Carolyn Marvin, *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century*, (New York: Oxford UP, 1988).
[60] Scott McQuire, *Visions of Modernity: Representation, Memory, Time and Space in the Age of the Camera*, (London: SAGE, 1998) 185.
[61] Tom Standage, *The Victorian Internet: the Remarkable Story of the Telegraph and the Nineteenth Century's On-line Pioneers*, (New York: Walker, 1998).

Consciousness of time was again affected by its standardization (initially in the US and then abroad). This was an enormous achievement, as Stephen Kern observes: "Around 1870, if a traveler from Washington to San Francisco set his watch in every town he passed through, he would set it over two hundred times."[62] Initially attempted through scientific and military argument, standardization was finally successfully instituted by the railroad companies in the US. This uniformity significantly influenced both the logistical and conceptual understanding of the 19th century citizen.

It is no wonder that the 19th century is described as "The Century of History" [63]

In the 18th and 19th centuries a rich variety of screen entertainment also evolved; the notion that audio-visual mass media is a product of the 20th century ignores the amazingly complex synergy of sound and visual devices available in the entertainment of previous centuries.

The first of these to achieve widespread popularity, the magic lantern, is often considered a precursor to cinema.[64] The magic lantern (first invented around 1659,

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[62] Stephen Kern, *The Culture of Time and Space: 1880-1918,* (Cambridge: Harvard UP, 1983) 12.
[63] "Whether we consider geology, zoology, political philosophy or the study of ancient civilizations, the nineteenth century was in every case the Century of History - a period marked by the growth of a new, dynamic world-picture." Stephen Toulmin and June Goodfield, *The Discovery of Time,* (New York: Hutchinson, 1965) 232. In *Political Philosophy and Time* John Gunnell concluded that the nineteenth century accomplished "the complete historicization of existence", quoted in Kern 60-61.
[64] Charles Musser traces the roots of cinema to late 18th century "screen practice". "...a history of screen practice considers projected moving pictures as both a continuation and transformation of magic-lantern tradition in which showmen displayed images on a canvas and accompanied them with voice, music, and sound effects." It is worth noting that this notion of historical continuity was commonplace during the first ten years of cinema. As Henry V. Hopwood remarked in 1899, "A film for projecting a Living Picture is nothing more, after all, than a multiple lantern slide." quoted in Charles Musser, *Before the Nickelodeon: Edwin S. Porter and the Edison Manufacturing Company,* (Berkeley: University of California Press, 1991) 8-9. Arthur Cantrill says the magic lantern is the closest early entertainment to cinema. Lecture at Sydney College of the Arts, University of Sydney, May 5, 1999. The magic lantern's "role has changed from its first appearance around 1659 as an instrument of magic to its present manifestation as the slide projector, the overhead projector and (with a significant amount of added technology) the movie projector and the cathode-ray tube or television screen. ...In the seventeenth century, however, the projected image could be seen only in the instruments of natural magic such as the camera obscura, mirror writing, and the magic lantern. What the magic lantern 'showed' or demonstrated were devils, ghosts and illustrations from fairy

but widely popular from about 1770-1900, longer then the reign of cinema to date!) allowed dissolves to imitate movement from still image to still image. Early examples were painted on glass; later versions incorporated lithographs. The themes featured Greek mythologies, famous explorer's scenes from various European cities (prefiguring stereography and early travel films) and morality tales.

Subsequent theatrically immersive experiences were quite elaborate; each combined techniques of perspective, color and scale with variations in lighting. They often included sound and movement for their transformative effects. Anne Holland's list gives an indication of the range:

> At random, then, they include the following: the Phantasmagoria, the Lampascope, the Diorama, the Panorama, the Betaniorama, the Europerama, the Cyclorama, the Cosmorama, the Giorama, the Pleorama, the kalorama, the Kineorama, the Poccilorama, the Neorama, the Eidophusikon, the Nausorama, the Physiorma, the Typorama, the Udorama, the Uranorama, the Octorama, and the Diapharnorama. The features that united these instruments, arts and machines, included on the one hand an 'astonishing' capacity for realism, for painstakingly detailed representation, and on the other a specific dependence on lighting effects; an extraordinary representational density coupled with a particular - usually mobile - regime of luminosity such, precisely, as to lure, reflect, and process the spectator's gaze.[65]

The Eidophusikon (or Various Imitations of Natural Phenomena represented by Moving Pictures) was invented by the French-born painter Philip Jacob de Loutherbourg and opened in 1781. As with many of the experiences listed above, it relied on the audience's stationary position in a darkened room facing a viewing screen (in this case, translucent and back-lit). Imitations of fog, sunsets, and dawn were achieved through ingenious lighting. Sound effects, including the harpsichord, added to this sophisticated interaction of audio and visual. This mechanical optical theatre featured mechanical figures, natural disasters, shipwrecks, storm effects, fires, lightning and thunder in startlingly realistic representation.[66]

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tales." Thomas L. Hankins and Robert J. Silverman, *Instruments and Imagination*, (Princeton: Princeton UP, 1995) 43.

[65] Anne Holland, *Moving Pictures*, (New York: Knopf, 1989) 24.

[66] Information on the Eidophusikon was gathered from Friedberg who references Helmut and Alison Gernsheim, *L.J.M. Daguerre: The History of the Diorama and the Daguerrotype* (New York: Dover, 1968) 43-4; Stephen Oetterman *Das Panorama*, (Munich: Syndicat, 1980) 58-59; Hermann Hecht *Pre-*

Each of these devices provided absorptive experiences that expanded conceptual mobility, but imposed stasis on the body. These devices can be seen as progenitors to VR. In fact, they might eve be seen as closer kin to VR than to cinema, due to their reliance on synthesized, artificial spaces rather then the indexical relationship to "reality" provided by the cinematic camera.[67]

We get an inkling of the scale and intensity of these synergetic encounters from this firsthand account of this Eidophusikon presentation of *A Storm at Sea,* (ca. 1781):

> The clouds positively floated upon the atmosphere, and moved faster or slower, ascended or descended. Waves carved in soft wood and highly varnished undulated and threw up their foam, but as the storm began to rage, grew more and more violent, till at last their commotion appeared truly awful. The vessels, exquisite little models, rose and sank and appeared to move fast or slow according to their bulk and distance from the eye. Rain, hail, thunder and lightning descended in all their varying degrees of intensity and grandeur. Natural-looking light from the sun, the moon, or from artificial sources, was reflected naturally back wherever it fell upon a proper surface. Now the moonlight appeared sleeping on the wave, now a lurid flash lit up the tumultuous sea.[68]

The panorama was another notable screen entertainment, popular for over a century. The audience usually sat in the center of a cylinder surrounded by a wrap-around canvas (sometimes huge - one constructed in Leicester Square in 1794 was two stories tall and 90 meters in diameter, bigger than IMAX). One panorama resembled a ship deck lurching on huge rockers - reports recorded a complete loss of contact with the outside world, an extraordinary illusion of 3-D reality that was so convincing many claimed feelings of dizziness and seasickness.[69]

"The panorama did not physically mobilize the body, but provided virtual spatial and temporal mobility, bringing the country to the town dweller, transporting the past to

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Cinema History: An Encyclopeaedic and Annotated Bibliography of the Moving Image Before 1896, (London: Bowker Saur, 1993) 50 and Neale 25.

[67] Lev Manovich, *The Language of New Media,* (Cambridge: MIT, 2001).<<http://www-apparitions.ucsd.edu/~manovich>>

[68] A contemporary account quoted in Gernsheim and Gernsheim *Daguerre* 43.

[69] Arthur Cantrill, lecture, Sydney College of the Arts, University of Sydney, May 5, 1999.

the present." As Helmut Gernsheim described, "The panoramic spectator lost all judgment of distance and space" and "in the absence of any means of comparison with real objects, a perfect illusion was given."[70]

In 1822, Louis Daguerre unveiled the diorama, a viewing device that further expanded the panorama's ability to transport the viewer. Sophisticated manipulations of artificial light intensity and color were trained on and behind transparent painted canvases to suggest various times of day (including night and spectacular sunrises and sunsets) and weather conditions - and to provide the illusion of movement (while again, the spectator remained immobile in the center of the building).

The simultaneous development of department stores, shopping, proto-cinematic entertainment and packaged tourism were transforming the mobilized gaze of the new consumer-spectator and developing what Anne Friedberg refers to as "commodity experience" [71] The diorama and the panorama were accessible to a broad, paying public, thereby democratizing the group's viewing experience (which obviously parallels cinema). These entertainments accommodated huge crowds and remarkably, as Ceram pointed out in 1965, "in London alone there were as many Diorama and Panorama buildings as there are cinemas today" [72]

Here, Friedberg sets the stage for comparing these early immersive experiences to those of virtual reality:

> Both the panorama and its successor, the diorama, offered new forms of virtual mobility to its viewer. But a paradox here must be emphasized; as the 'mobility' of the gaze became more 'virtual' - as techniques were developed to paint (and then to photograph) realistic images, as mobility was implied by changes in lighting (and then cinematography) - the observer became more immobile, passive, ready to receive the constructions of a virtual reality placed in front of his or her unmoving body.[73]

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[70] Gernsheim and Gernsheim, *Daguerre* 6.
[71] Friedberg 7.
[72] Ceram 23.
[73] Friedberg 28.

Even before the onset of virtual reality, we had arrived at a "no place",[74] of the shopping mall, the cinema, games arcades, wax museums and with later developments - airports, Disneyland, bigger shopping malls and especially - the television den.[75] These are a few of the spatially and temporally dislocating contexts with which we have become accustomed; environments that reinforce the impression that "Everyday life is always elsewhere. Among others."[76]

The invention and proliferation of photography has also been staggeringly influential on our concept of identity - and again to notions of temporality and geography, but those impacts will not be detailed here. There are other events that are relevant to this discussion and some, like the stereograph and 19th century sound machines, will be woven into subsequent chapters arising from contemporary artworks.

As has been documented, a range of experiences has led to the development of cinema (and by extension, VR). There are many other marvelous devices and novel inventions, like automatons, peepshows, anomorphs, wax museums, theatres of illusion, the Lorraine Glass and marionette theaters which are beyond the scope of this paper.

This chapter has established that persistent imperatives have connected technological eras. While all histories or discussions involve generalization, if the history of technology is examined closely, examples of continuity and cyclical recurrence can be identified.

It is especially critical to contemporary practitioners that we have an understanding of the dominant themes of the 19th century, as they continue to affect so many aspects of our contemporary life, especially the rhetoric surrounding our concepts

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[74] As labeled by Michel de Certeau, *The Practice of Everyday Life*, trans. Steven Rendall, (Berkeley: University of California Press, 1984) 113.

[75] McQuire suggests that "television has made the biggest impact and most successfully globalised modernity and capitalism. Our attention has been more thoroughly managed and our transportation around the globe more efficiently accomplished than through any other medium. Experience and histories are flattened and collaged and presented in a sameness of time, space and emotion" *Visions* 6

[76] Guy Debord, "Perspectives for Conscious Alterations in Everyday Life (1961)", *Situationist International Anthology*, ed. Ken Knabb (Berkeley: Bureau of Public Secrets, 1981) 69.

of revolution and progress. In this regard, this chapter provides a background for the work of the four practitioners highlighted in the following chapters.

Their work calls for a pause in the homogenization of identity and the unrelenting desire for what Walter Benjamin has called "the eternal return of the new" instituted in the late 19th century.[77] The challenge articulated by Scott McQuire at the end of *Visions of Modernity* is also relevant here: "Given the hysteria of the now which directs so many forces in the contemporary world, one of the most radical changes imaginable would undoubtedly be a collective deceleration in which the pressure of time is released."[78]

In the next chapter, the work of Paul DeMarinis, the status of the inventor in the 19th century (especially as personified by Thomas Edison) and the archeology of sound machines and the telegraph will be considered.

[77] Walter Benjamin quoted in Thomas 187.
[78] McQuire, *Visions* 41.

Chapter 2

Paleo-Electronics

The past can be seized only as an image which flashes up at the instant when it can be recognized and is never seen again. ... For every image of the past that is not recognized by the present as one of its own concerns threatens to disappear irretrievably.

Walter Benjamin

Historians undertake to arrange sequences, - called stories, or histories - assuming in silence a relation of cause and effect. These assumptions, hidden in the depths of dusty libraries, have been astounding, but commonly unconscious and childlike; so much so, that if any captious critic were to drag them to light, historians would probably reply, with one voice, that they had never supposed themselves required to know what they were talking about.

Henry Adams

They were given the choice of becoming kings or kings' messengers. Like children, they all wanted to be messengers. Therefore there are nothing but messengers; they race through the world and, because there are no kings, call out their messages, which have become meaningless in the meantime, to each other. They would gladly quit this miserable existence, but don't dare to because of their oath of office.

Franz Kafka

One can look at seeing / One can't hear hearing. Marcel Duchamp

Paul DeMarinis indiscreetly probes the history of media technologies, especially those of sound reproduction, with his ingenious optico-kinetic inventions - linking an incredible range of technical and conceptual traditions with a passion for the absurd. He playfully but incisively scrutinizes the apparatuses and narratives surrounding media technologies, divulging a range of generally unacknowledged values in a non-didactic, often hilarious way. His exploration of the obscure or overlooked in media history mischievously reveals the connections that our current communications technologies have with natural philosophy, magic, charlatanism, and the everyday.

From the age of four, DeMarinis began to tinker with electronic circuitry and household appliances that have evolved to become what he lightly calls "Paleo-electronics" The focus here will be on his sculptures that have evolved from his engagement with music, computers (DeMarinis was one of the first artist/composers to work with micro-computers in the 1970s), filmmaking and performance and have involved fiber and laser optics, radio, holography and the Internet.

For many years DeMarinis has also created and performed electronic compositions at venues such as the Kitchen in New York, the Festival d'Automne à Paris, Het Apollohuis in Holland, Ars Electronica in Linz, Austria and the Third International Symposium for Electronic Art, Sydney; with Robert Ashley and Robert Behrman and for the Merce Cunningham Dance Company. His digital experimentation with the melodies of speech, often dissecting the strong, rhythmic "singing" banter of salesmen, evangelists and hypnotists, are featured on *Music as a Second Language* and *The Edison Effect. A Listener's Companion.*[1]

An eccentric array of objects such as jump ropes, Day of the Dead skeletons, monkey paws, fireflies, goldfish, Stalin phonographic albums, bathtubs and red peppers have found their way into his oeuvre alongside abandoned media and narratives.

DeMarinis is using the context of sculptural installation to explore his genuine fascination and curiosity about the world.

> The wonderful thing about technology is that it is the place where the hard reality of physics meets human imagination. The dreams, the things that we would want to be like: magic soup pots and automatic brooms and stuff like in the fairy stories; where that actually meets with what's physically possible like the hard little billiard balls of atoms and the 92 elements there are and the forces and physics. It's like this shore, where if we imagine the hardness of the continent and this deep ocean

[1] *Music as a Second Language,* (New York: Lovely Music, 1991) and *The Edison Effect: A Listener's Companion,* (Eindhoven: Het Apollohuis, 1995).

> full of all kinds of mysterious longings and dreams and things get thrown up on the shore sometimes ...and that is technology. And it's not just technology.[2]

He values the importance of direct experience and nonverbal interaction with his works.

> In my twenties, I used to think that ideas came from combinations of words. It took me a long time to catch myself thinking in a totally nonverbal way. I argued about this with a lot of people. You know the Gracie Allen phrase, 'Everything I know I learned by listening to myself when I was talking about things I knew absolutely nothing about' [3]

DeMarinis is not preoccupied with the nostalgic value of technological artifact, but with the underlying values and discourses that propel technologies. By colliding often divergent materials, devices or narratives (like a goldfish bowl with a supermarket laser beam or the Internet with a washbasin) he provides new angles from which to consider our past and future, recalling a basic assumption of media theorist Marshall McLuhan that: "When two seemingly disparate elements are imaginatively put in apposition in new and unique ways, startling discoveries often result" [4]

His eclectic approach is gained from an understanding and expertise in disparate realms of knowledge. As Ron Kuivila writes about DeMarinis' installation, *The Edison Effect*:

> This project is anticipated in 'Primal Sound', written by Rainer Maria Rilke in 1918. In that essay, Rilke defines 'experience' as involving the free interplay of all of the senses. He observes that since the 'instruments of research', (by which he means the telescope or microscope) only expand the capabilities of one sense (the visual), they cannot be said to extend experience. Rilke then imagines a poetic technological that will draw experience from these instruments. In particular, he

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[2] Paul DeMarinis personal interview, October 1997.
[3] DeMarinis, Interview, 1997.
[4] Marshall McLuhan and Quentin Fiore, *The Medium is the Massage*, (New York: Bantam Books, 1967) quoted in A. D.Coleman *The Digital Evolution: Visual Communication in the Electronic Age: Essays, Lectures and Interviews 1967-1998*, (Tucson: Nazraeli, 1998) 24.

> proposes to transduce the irregular groove at the top of the skull with a phonograph needle.
>
> The creative misuse he proposes involves an awareness of both the mechanical logic of a phonograph and the internal structure of a skull. It sutures together unconnected spheres of knowledge and for that reason, generates experience. This conceptual suture has been at the heart of DeMarinas' creative project since his very earliest work.[5]

Kuivila's comparison to Rilke's "poetic technological" and the suturing of multiple logics is a beautiful and befitting analogy for DeMarinis's activity. Audiences are forced to make meaning "in-between" or, as the loudspeaker encourages commuters when stepping between platform and train in the London Underground...to "mind the gap" Discontinuities are embraced while links are simultaneously made between technologies and motivations of various eras.

Overlooked and superseded technologies like Edison cylinder disks or Leydon jars (and the tales which accompany them) say as much about our culture as those that endure. Examining those outmoded devices can be a significant approach to understanding the ways in which dominant theories and histories are perpetuated. In DeMarinis' *The Musical Bathtub* (figure 1, 2), the rheotome invention of Elisha Gray (the man who missed patenting the telephone by only 5 hours) is humorously reconfigured; the social biases inherent or assumed by the technology are accentuated.

DeMarinis, using the source of Gray's discovery (a metal bathtub) as the "medium", allows us to experience the lack of rupture between seeing, feeling and hearing. In *The Musical Bathtub*, a large violin is suspended above a Victorian metal tub. (Violin strings connect the instrument to the bathtub and a CD player is hidden beneath the tub). By running our hands along the extended violin strings we elicit the ascending and descending scales of a violin solo; the friction of our skin pulling and sticking educes sound at the frequency of the electrical field created by the CD violin piece, allowing us to "play" the violin. "As we stroke the wires, we both feel as

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[5] Ron Kuivila, "Paul DeMarinis", *The Edison Effect*, (San Francisco: San Francisco Art Institute, 1993) 2.

texture and hear as sound the faint electrical stirrings within the wire - melodies, scales, creakings and glissandi inhabit a world in which touch and hearing are for a moment unified."[6] Along with providing this unusually integrated perceptual experience, DeMarinis succeeds in conveying a strong sense of the human passion embodied in the cast-offs and absurdities that exist alongside the established rationality of technology. His sculptural musings also point to the latent potential embodied in these communications.

> By some obscure and little studied phenomenon, a vibrating electrical field seems to modulate the coefficient of friction of our skin, so that when we bow across an electrified surface with our fingers, we excite mechanical vibrations. These mechanical vibrations, suitably coupled, give rise to audible sounds. I discovered this phenomenon, as Gray did, quite accidentally in 1976, and I'm sure other people run across it every day.... This phenomenon may someday find a fit to the structure of our relations - perhaps as electrically definable surface textures, audio communication in a vacuum or other applications. But for now it languishes in the backwater of the culturally inappropriate, insignificant and obscure.[7]

Another "cleanly" piece, *The Washbasin Receiver* (figure 3), is just that. Enamel basins are mounted upright on stands facing each other. The washbasin is a forerunner to the loudspeaker and was also part of Gray's original telephone invention:

> Based on a more familiar electromagnetic design, it is a direct forerunner of the familiar loudspeaker and became part of Gray's telephonic apparatus of 1875. Of interest to me is that it retains the connection to bathing apparatus in the form of a washbasin. Wisdom aside, one wonders, had Gray beat Bell to the patent office, if our telephones might not 'ring', and if we might not enter the wash closet to speak afar, stroking small tin tubs as we listen.[8]

Given this bemused speculation, we might consider the ways in which our current technologies may have evolved quite differently. Our exposure to the particulars of

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[6] Paul DeMarinis, catalogue essay, "The Musical Bathtub", (San Francisco: Yerba Buena Center for the Arts, 1995) 3.
[7] DeMarinis, "The Musical Bathtub", 3.
[8] DeMarinas, "The Musical Bathtub", 4.

this obscure and absurd story piques our curiosity in regards to other eccentric histories that are waiting to be revealed.[9]

Among these histories, wonderful anecdotes abound which illustrate just how tenuous the grounds upon which certain inventions and inventors "made it" were.

Alexander Graham Bell and his assistant made their breakthrough in telephone communication on 10 March 1876. However, after demonstrating their invention to executives of Western Union, their excitement was met with a memo, "after careful consideration of your invention, while it is a very interesting novelty, we have come to the conclusion that it has no commercial possibilities", adding that they saw no future for "an electrical toy" [10]

Still Life with Guitar (figure 5) paints another version of Gray's tactile electrical sound maker while referring to the history of painting. Featured is a guitar mounted on the wall with a bowl of fruit and vegetables alongside. Absurdly, participants are invited to pick up a lemon or red pepper - or just use their hands to rub the wires to elicit a Joe Satriani guitar solo from the magnetic field (the red pepper produces a more raucous sound than the lemon!). In the catalogue to *Corporeal Sky*, a group show at Artspace in Sydney, Australia, Ed Osborn says about *Still Life with Guitar*, "In applying a touch to draw forth sounds from the otherwise inanimate object, the viewer at once throws Dr. Frankenstein's switch and serves as a hopeful receptor for the electrical unknown, thus allowing themselves to channel a bit of voltage, to hear the song of the charged sky."[11] With this "charged" experience, DeMarinis allows us to trigger, experience and struggle to understand and incorporate both the social and narrative context for the device and the uncanny experience of this little known phenomena.

The "tribute" title for another group of sound sculpture, *The Edison Effect*, is multi-referential as are many of DeMarinis' titles. As the inventor of the phonograph,

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[9] For an engaging account of the mechanization of bathing, indeed many household activities of the 19th century, see "The Mechanization of the Bath" in Siegfried Giedion *Mechanization Takes Command: a contribution to anonymous history*, (New York: Norton, 1948) 628.
[10] *American Heritage*, (Sept/Oct 1990): 58.
[11] Ed Osborn, "Electricity Arcs Both Ways From Heaven", *Corporeal Sky*, catalogue, (Sydney: Artspace, 1999) 5.

Thomas Edison indelibly changed our impressions of music, memory and sense of place. Edison also illicitly claimed invention of the light bulb (which became a symbol for great ideas) and a number of other inventions.[12] Even so, Edison has become a symbol of technological genius and inventiveness, so it is curious that of all the inventions he was credited with, the only one named after him was considered a defect.[13]

The Edison effect is a phenomenon in which atoms from a glowing filament are deposited on the inner surface of a light bulb, causing it to darken. "*The Edison Effect* is thus a metaphor for all the unseen ways in which technology may backfire." Yet, this frustrating technological defect, considered a stain on Edison's reputation, turned out to be the basis for the development of the vacuum tube that led to sound amplification, radio, television and the earliest digital computers.[14]

A typically absurd collusion of facts occurs in the opening quote of Paul DeMarinis' essay accompanying the 8 sculptures in *The Edison Effect*: "It's important to notice that the two most formative influences on Western musical aesthetics were deaf: Beethoven and Edison."[15] Given this factor, we marvel further at their stupendous achievements, but we also consider how ridiculous it is that two men who could not hear have been so influential on our current experiences of sound and music.

In *The Edison Effect*, the notion of the inventor/genius is celebrated, but simultaneously deflated. The works are almost anti-heroic in scale and eccentricity, but are nonetheless quite assured in their message and innovativeness.

Overlooking the "homage" suite of optico-kinetic sculptures is a huge portrait of Thomas Edison (the one stamped on many of his inventions and easily visible on every Edison cylinder disc). Two slides, one projecting the famous image in positive, one in negative, are aligned on a wall painted with glass beads (figure 6). Due to the reflective, 3-D nature of the glass beads, viewers oscillate between the

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[12] Athanasius Kircher also claimed authorship of inventions that came his way and erroneously received credit for inventing the magic lantern. Hankins and Silverman 43.

[13] Paul DeMarinis reminds us that the word *phony* comes from the phonograph and its ability to produce surrogate experiences, "Essay in Lieu of a Sonata", *The Edison Effect*, catalogue, (San Francisco: San Francisco Art Institute, 1993) 1.

[14] DeMarinis, "Essay in Lieu of a Sonata" cat., 1.

[15] DeMarinis, "Essay", cat., 1.

positive and negative image of Edison simply by moving left and right. This vacillation between positive and negative is an apt visual metaphor for the status Edison holds in the annals of invention.

DeMarinis uses projection and glass beads to simulate the look of a mega-daguerreotype. Geoffrey Batchen has said, "There is a tension writ large in the daguerreotype, which is of course simultaneously a negative and a positive."[16] This tension is writ *very* large in the case of this pseudo-daguerreotype. Batchen has also discussed the daguerreotype's ability to collapse sight and touch, due to its handheld nature, which requires the viewer to hold it at just the right angle.[17] In this portrait of Edison, DeMarinis requires viewers to move their bodies to perceive the image.

The portrait provokes intriguing associations between sight and sound, also emphasized in DeMarinis' sound sculptures, such as *Al and Mary Do the Waltz* (figure 7) and *In Ich Auch Berlin(er)* (figure 8); both utilize the optical reading of sound to produce sound.

DeMarinis' works reminds us that the fields of sound and image technology constantly overlapped in 19th century culture; this is evident in Edison's expressed wish: "I want to create a machine that does for the eye, what phonography does for the ear" [18] One of the most famous French photographers of the era, Nadár, presented in 1856 his idea of an "acoustic daguerreotype" which would "capture faithfully all the sounds transmitted in its objective" [19] In 1839 (the year photography was first presented to the public) the American Tom Hood wrote in his *Comic Annual*:" In this century of inventions, when a self-acting drawing paper has been discovered for copying visible objects, who knows but that some future Niepce, or Daguerre, or Herschel, or Fox Talbot may find out some sort of Boswellian writing paper to repeat whatever it hears."[20]

[16] Geoffrey Batchen, "Vernacular Photographies", Ian Burn Memorial Lecture, Art Gallery of New South Wales,18 June 1999.
[17] Geoffrey Batchen, *Each Wild Idea: Writing, Photography, History* (Cambridge: MIT Press, 2001) 61.
[18] Jon Casimir, "Mary Had a Little Gramophone", *Milennium #37, Good Weekend, Sydney Morning Herald*, Dec. 7, 1877.
[19] Ronald W. Clark, *Edison, the man who made the future*, (London: MacDonald and Jones, 1977) 73. Quoted in Erkki Huhtamo, "Excavating Sounds: On the Art of Paul DeMarinis", *The Media Art of Paul DeMarinis*, catalogue. (Helsinki: Galleria OTSO, 2000) 14.
[20] Ronald W. Clark, *Edison: The Man Who Made the Future*, (London: Macdonald, 1977) 73-74.

DeMarinis' sculptures poetically link the developments in sound and audio: "*The Edison Effect* players demonstrate the photographic nature of acoustic recordings. These pinhole (or needlepoint?) pictures of sounds long vanished project the shadows of sounds."[21]

In *Al and Mary Do The Waltz* (1989), a cheap supermarket laser beam is directed across a room, through a goldfish bowl, to strike a turn-of-the-century Edison wax-cylinder recording of Strauss' *Blue Danube Waltz* rotating on a paint roller. The red laser beam is focused on the grooves of the cylinder and its reflections are unfaithfully translated into sound. The *Blue Danube* is a waltz written to romanticize a river, but as it plays currently, the river is polluted, like the soundtrack written in its name. As the two fish, Al and Mary, swim about, they unpredictably interrupt the beam and, consequently, "stop the musical composition they can't hear."[22] Here, comparatively inexpensive materials are mobilized to make irreverent statements about reproductive technologies.

In many of the works in *The Edison Effect*, instead of erasing the trace by-products of audio recording (in this case the hissing, skipping and scratching noises of the cylinder), which is a goal of the recording industry, DeMarinis exaggerates these "artifacts" to emphasize the illusion of virtuality generally assumed by sound recording.

By participating in this work, we embrace other possibilities besides the progressive seam-less-ness of reproduction technologies. We also become mindful of the fundamental changes to our concept of memory that have been brought about by their development. Douglas Kahn writes, "Prior to the invention of mechanical recording, references to the now commonplace phenomenon of a tune-running-thru-the-head appear absent from literature" [23] With the phonograph, the voice was "wrenched from the throat and put in to inscription", which "enabled a person to

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[21] DeMarinis, "Essay", cat., 9.

[22] Paul DeMarinis, lecture, Artspace, Sydney, Oct. 31, 1996. For a description of individual works, see DeMarinis, *The Edison Effect*.

[23] Quoted in DeMarinis, "Essay in Lieu of a Sonata", cat. in which DeMarinis also speculates, "We do not know if Emily Dickinson's image of the 'mind running in its groove' refers to sonic material, nor if Edison drew on her imagery for his inspiration." cat., 1.

hear his or her own voice for the first time without the bones" Thus "deboned", people could hear their own voices as others heard them.[24]

With his sound sculptures, DeMarinis attempts to elucidate the kinds of rupture that exist between the memories we recreate and the pneumatic device that helps trigger that memory.

> If I can decouple those two things... keeping the connection between them as tenuous as possible, still working but only enough to point out that what we are really experiencing when we are listening to music is this memory, this set of expectations, this set of habits we have recorded in our head and what it is simulating is this very faulty thing: a CD, DAT tape, funky phonograph record played the wrong way (although often given credit and relied upon for recording more faithfully and accurately than our own memory).[25]

By presenting this decoupled experience, DeMarinis reminds us that with sound recording we are experiencing a distant reproduction of a representation, a document composed of electrical impulses caused by sound waves that now function as a trigger for our memory and understanding. Each experience of a recording requires a representer, a representation technology and a perceiver. With *The Edison Effect*, DeMarinis also directs our attention to the fact that when playing an audio reproduction (like viewing a photograph) chronological time is unavoidably disrupted.

Also in DeMarinis' ensemble is *Loving/dying: the unrequited quark* (1989), an optico-kinetic sculpture in which a laser beam plays a 78-rpm record of the *Liebestod* from Wagner's *Tristan and Isolde*. A Geiger counter controls the speed of the laser scan; in an ironic gesture towards a notion of passion, radioactive ore provides the "attraction" for the Geiger counter to control the stepping motor to advance the beam along the groove. Initially, the pulse of the Geiger counter is run by background radiation, emitting slow, prolonged and over-blown Wagnerian chords. As the ore (bright orange Fiesta-ware) is gradually uncovered, the tempo (along with the passion!) builds, revealing an identifiable rendition of the *Liebestod*.

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[24] Kahn, "Track Organology", *October* 55, (1990): 209.
[25] DeMarinis, interview, 1997.

"*Liebostod* is dying, frozen in time, released by the radioactive decay of uranium - the myth of eternal, ever modulating Wagnerian love fantasy parceled out atom by atom by the death of the uranium sample" [26] The melodrama intrinsic to the tune is ridiculously stretched and milked while the apparatus controls the "attraction" The grandiose charge of Wagner is deflated.

In Ich auch Berlin(er) (1990), DeMarinis ingeniously replaces the round 78-rpm LP of the "Beer Barrel Polka" with a square, glass holographic image of the phonographic album and then plays it with a green laser beam. In a literal and brilliant translation of modern CD audio technology, DeMarinis' contrivance plays *the image of sound with light.* The hologram with its light-embedded image of the LP is truly a beautiful object. The holographic image adds a swish when played, disrupting the exact repetition. The image and sound of analog and digital are thus merged and confused.

In *Rondo in Blew a la Cold Turkey* (also within *The Edison* suite), it helps to know the biographical details of Oscar Levante (a famous morphine addict, pianist and talk-show regular featured in the Hollywood movie, *An American in Paris*) to fully recognize the emphasis in this piece on the phonograph's use as a cultural mediator. A 78 record of *Rhapsody in Blue* is "played" inconsistently via a laser beam emitting from a hypodermic needle. As the catalogue entry describes, "We may contemplate the addictive act of record listening as Oscar Levant plays himself playing Gershwin in another tired remake of *An American Junkie in Paris*" [27] Hence the needle in the groove becomes the "mecanaphor" for the needle in the vein. As in many of DeMarinis' works, this piece functions on a number of levels to interrogate social conventions of sound use and memory.

The irony in these works can be missed, as in this review by Barbara Fisher: "*The Edison Effect* ... allows us to pause and reflect on the wonder, beauty and effects of the science of sound on contemporary life. DeMarinis mixes equal parts mystery and revelation in an effort to open the world of modern sound recording to our ears,

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[26] Jim Pomeroy, "Black Box S-Thetix: Labor, Research and Survival in the He(Art) of the Beast" in Constance Penley and Andrew Ross eds, *Technoculture, Cultural Politics.* Vol. 3, (Minneapolis: University of Minnesota Press, 1991) 285.

[27] DeMarinis, "Essay in Lieu of a Sonata", cat., 4.

eyes and hearts."[28] Or by Kenneth Baker: "Most of his contraptions are phonographic and their theme is the dream of repeating experience - of reliving past time embedded in all sound recording."[29] In fact, DeMarinis' works aren't marveling in mimetic experience with a sentimental nostalgia, but pointing out the fallacy of seam-less-ness and cleanliness assumed by this technology. These gushy responses miss the point that this is not yet another mindless celebration of the joys of technological reproduction, but an effort to make us conscious of the mediating function of the machine and of the way in which that machine has effected our experience of sound and memory.

In his famous essay, "A Work of Art in the Age of Mechanical Reproduction", Walter Benjamin asserts that, "Even the most perfect reproduction of a work of art, is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be."[30]

DeMarinis continually reminds us of our severance from these moments of presence in his 1992 CD produced in conjunction with his sound sculptures entitled *The Edison Effect: A Listener's Companion.*[31] Experimenting with a continuum of recording "events", he mischievously re-scrambles them - allowing us to self-consciously experience the artifacts and aspirations of various eras and genres. (Ironically, with new digital technologies, the absence of artifacts has produced an eerie lack of background or sense of place. These sounds are now being artificially re-introduced in contemporary recording studios.)

In a world where reproduced and simulated experiences of music and the image have become increasingly divorced from their "source", is it nostalgic to be using archaic devices or is it more important than ever? While an element of nostalgia exists in DeMarinis' work, it functions almost as a parody of nostalgia. As Ron Kuivila says, "Unsentimental acknowledgment of sentiment is both a striking and subtle characteristic of DeMarinis' work."[32]

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[28] Barbara Fisher, "Wired for Sound. Paul DeMarinis: The Edison Effect at SFAI", *Artweek* (March 18, 1993): 15.
[29] Kenneth Baker, "Edison's Hi-Tech High", *San Francisco Chronicle*, March 15 1993: 4.
[30] Walter Benjamin, "A Work of Art in the Age of Mechanical Reproduction", *Illuminations: Essays and Reflections*, trans. Harry Zohn, ed. Hannah Arendt (New York: Schocken Books, 1969) 220.
[31] DeMarinis, "Essay in Lieu of a Sonata", cat.
[32] Kuivila 3.

In *Fragments from Jericho* (1991), another of *The Edison Effect* vignettes (figure 9), the viewer is confronted with an awkward clay cylinder spinning on a phonographic table. We are invited to grasp a separate, freestanding large black knob that allows us to control a laser beam. As we pass the laser beam across a pattern of grooves inscribed on the spinning clay walls, audible but indecipherable murmurings are elicited. From the title and the exhibition notes, we gather that these are an "authentic recreation" of "the world's most ancient audio recording" allowing us "to eavesdrop on vibrations from another age."[33]

Fragments allows us to travel back in time to summons a ridiculous exchange (a combination of Hindu movie dialogue and Pygmies talking), a conversation apparently disembodied and reassigned due to our lack of immediate experience or recognition. These appropriations ironically comment on the flattening of cultural difference that is often the collateral damage of technological thinking.

This preoccupation with time travel also finds an echo in the 19th century devices for time travel, such as to H. G. Well's *The Time Machine* and R.W. Paul's patent to realize this machine in 1895.

Grind Snaxe Blind Apes - A Study for Pomeroy's Tomb (1997), also reflects DeMarinis' fascination (shared with Edison and a host of 19th century inventors) with the human technological desire to make machines that will communicate with the dead. In this tribute to artist Jim Pomeroy (whose work is discussed in chapter 3), a disembodied monkey paw plays scribe on a rotating cylinder in a steel wire cage inside a crypt built of cardboard packing boxes (figure 10,11). Pomeroy would have enjoyed his modern-day, throw-away tomb, built of modest consumer cargo carriers (figure 12). In the darkened space, repeated passes of the paw (figure 13) (which holds an LED) leave glowing stains pixel by pixel on the pristine phosphorescent coated cylinder. Over 3 to 8 minutes, multiple images (2 to 5) of a grinning Pomeroy begin to congeal and potently hang in the semi-darkness. The first of the set of faces begins to fade as the last is rendered. "Pomeroy's wit, his performance personae and his unique brand of stand-up theory all continue to turn

[33] DeMarinis, "Essay in Lieu of a Sonata", cat., 5.

in his grave, no doubt powered by a rotisserie motor scavenged from Goodwill."[34] A soundtrack of Pomeroy's raucous and infamous snoring (recorded by Pomeroy for his own *Ancestral Rotation* piece) pervades the "tomb" The title also refers to various projects by Pomeroy such as his major character Nake, a parodic performer and maker of instruments (such as the electric "sloboe" - a clarinet-like instrument fashioned from a photographer's monopod).

In *Pomeroy's Tomb*, DeMarinis embraces morbidity to confront mortality - and allows the experience of death to touch us, but not without humor.

Acts of magic and conjuring have greatly influenced DeMarinis' work. Even as a child, magicians and illusions fascinated him. "I did a lot of plays that were combinations of science demonstrations and personal transformations. I really appreciate the fraudulent and I'm quite fond of obvious deceits."[35] DeMarinis cites Maria Fernanda Cordoso's contemporary remake of the 19th century flea circus as an example. Her flea circus performances (featuring live ballerina fleas via large video projections) fit within a popular "new magician" school of 19th century conjuring in which the audience is complicit or at least conscious that they are being duped.[36] DeMarinis' fraudulent "ancient" voices are in the spirit of this obvious charlatanism he is so fond of from the 19th century. This new magician-ship breaks from previous forms of stagecraft with ruse as the goal; instead it values the skill of deception and celebrates blatant artificiality.

This artificiality certainly wasn't always acknowledged - the history of vision devices includes their use as manipulative tools to fool and frighten people. Catholic officials were often accused of such fraudulence in order to keep their flocks in a state of awe. This and their use of images as objects of idolatry were often cited as responsible for the backlash against visual imagery typified by the Counter-Reformation, which hierarchically upheld the integrity of the written word and distrust of the visual.

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[34] DeMarinis, interview, 1997.

[35] *Maria Fernanda Cardoso's Flea Circus* was sold out for its run at the Sydney Opera House Theatre during the 2000 Sydney Festival. Its droll combination of storytelling, 19th- century posing and current technical staging were a hit.

Indeed, Philip Fisher contends that there are so many key works in the methodology of science on either the magnet or the rainbow because of the need to distinguish these phenomena from miracles and magic tricks. "By Descarte's day the Protestant term 'hocus pocus', which comes from the consecration of the Catholic mass, where the priest changes the bread in to the body of Christ with the words 'Hoc est corpus meum', had drawn a line against miracle and magic altogether."[37]

In *Instruments and the Imagination*, Thomas Hankins and Robert Silverman articulate an important point succinctly demonstrated by DeMarinis in his installations. While the instruments of earlier decades bear little resemblance to our modern tools of science and technology, it is important to remember that speaking heads and Aeolioan harps may have been relegated to the basements of the frivolous, "Yet the study of these apparently tangential objects can disclose connections that would otherwise be invisible- such as the links between the development of modern science and the enduring tradition of natural magic, or between the comparative roles of instruments and language" [38] Works like *Fragments of Jericho, The Edison Effect, Grind Snaxe Blind Apes- Study for Pomeroy's Tomb* and *The Messenger* bear out these spurious connections.

Obvious fraudulence continually occurs in contemporary life: clothing labels announcing "100% virgin acrylic", "antiques made to order" and numerous examples of blatant obscuration.

There are direct connections between the history of cinema and 19th century magical theater. Often seen as the father of cinematic theatre, Georges Méliès bought the Theatre Robert-Houdin, a famous venue for theatrical magic (Robert-Houdin is frequently described as the father of modern magic and one of the first to use electricity for magic effects). Méliès clearly extended 19th century fascination with the skills of "trickery" (famous from magic theater) into his early films.

Méliès was one of the first independent filmmakers to fall prey to practices contrived by emerging film companies and their developing monopolies over film

[37] Fisher 47.
[38] Hankins and Silverman 12.

production and distribution.[39] From its inception, photography was likewise riddled with patenting and monopoly impediments from Fox Talbot to Kodak, (Jim Pomeroy described the Eastman doctrine as "One Camera, One Laboratory, One Company, My Business, Under God").[40]

Despite these practices, the late 19th century is known as an era of great energy and inventiveness. "Such was the outpouring of inventions in the late nineteenth century that in 1899 Charles Duell resigned as head of the US Patent Office declaring that 'everything that can be invented has been invented' "[41]

Proposed and advertised inventions included the *Machine for Sensational Emotions* (a windowless bullet-shaped room would drop from the top of the Eiffel Tower into a pond of water to provide the first anti-gravity ride), the swimming machine, and natural flying machines (men buoyed by a fleet of birds or flight achieved by peddling a bicycle equipped with propellers). These Victorian inventions were advertised but for various reasons (some obvious!) were never developed.[42] Parallels could be drawn to contemporary Silicon Valley hardware and software that are announced, but may never materialize (what Mark Dery calls "vaporware").[43]

DeMarinis' works have obvious connections to zany 19th century chimerical inventions, developed from passion and for profit, adopted through fashion, curiosity, boredom and featured in publications such as *The Book of Victorian Inventions* and *Inventions Necessity is not the Mother Of: Patents Ridiculous and Sublime*.[44] Hybrid contraptions include the bicycle shower (the harder you peddle, the stronger the water pressure), the photographic rifle, the hat camera and the cat piano (by striking a key, a spike is activated to hit the tail of one of a number of cats

[39] Méliès faced difficulties with the film cartels as early as 1909. Peter Callas, "Rockets to the Eye: George Méliès and the Idea of Independent Cinema", *Phantasmagoria: Pre-Cinema to Virtuality*, eds Peter Callas and David Watson, (Sydney: Museum of Contemporary Art, 1996) 4.
[40] Jim Pomeroy, "Like a Razor To a Razor Blade Company: Technology, Profit and the Friendly User at the Cutting Edge", *Afterimage*, Volume 11, Number 9, April 1984:11
[41] *New York Times*, Jul. 26, 1992: E5.
[42] Leonardo de Vries, *Victorian Inventions*, (London: Murray, 1971).
[43] Dery 7.
[44] Stuart Jones, *Inventions Necessity is not the Mother of: Patents Ridiculous and Sublime*, (London: Ruskin House, 1975).

which have been arranged according to the pitch of their voices to illicit a choreographed sound reaction - a melody of meows).[45]

While pig, cat and donkey pianos may sound utterly bizarre and foreign to our contemporary sensibilities (apparently the torturing of cats was considered very funny in 17th century Europe - the cat piano was developed by Kircher to cheer up a stressed-out Italian prince), other examples unearthed by DeMarinis from the family tree of the Internet are early electrical "telegraphs" which are literally "shocking"

One of the first long-distance communication devices to enlist electrical impulses conveyed by wire was first described by a mysterious C. M. in *Scot's Magazine* in 1753. A wire for each letter of the alphabet transmitted electricity from a Leyden jar to 26 pith ball electroscopes at the receiving end. A charge of static electricity through a wire caused the pith balls to repel each other. Great attentiveness was required to observe and transpose the sentences compiled from the sequential dance of the balls.[46] It was another 70 years before the American painter Samuel Morse would develop the method and code for electrically transmitting messages. "Morse's critical contribution, the code of dots and dashes, not only allowed the transmission of any written message on a single wire, but provided the prototype of a digital metaphor for communication that has reached its apex in our time."[47]

Tom Standage, in *The Victorian Internet*, describes a line-up of 180 Carthusian monks linked by iron wires. They had been formed by the Abbé Nolle to test the potential and speed of electrical communication before the French King. Apparently, the monks jumped simultaneously from the shock over a distance of 5000 feet.[48]

If this sounds brutal and bizarre, then DeMarinis' *The Messenger* provides an unearthing of an even more startling nature in the form of primitive electrical

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[45] Athanasius Kircher first wrote about his invention, the cat piano, in *Musurgia univeralis* of 1650. The cat piano was not unique. Schott proposed a donkey chorus and Piere Bayle tells us that the abbé de Beigne nunnery built a pig piano at the order of Louis XI. In every case the animal instrument was created to entertain a noble patron. Hankins and Silverman 73, 247n.

[46] DeMarinis, "The Messenger,"catalogue, (Barcelona: Galerie Metronom, 1997) 1.

[47] DeMarinis, "The Messenger", cat., 2.

[48] Tom Standage, *The Victorian Internet: the remarkable story of the telegraph and the nineteenth century's on-line pioneers*, (New York: Walker, 1998) 12.

communication - via devices that prefigure the telegraph and even the Internet. In his version of wired communication, in 1798 Catalan scientist Don Francisco Salvá i Campillo aligned 26 servants holding 26 live wires. Each electrical impulse prompted a yelp of the corresponding letter, which eased the burden of the 27th servant, the transcriber, dramatically![49]

In *The Messenger* (1998), (figure 13) DeMarinis mimics this alarming chorus line of conveyance. An alignment of 26 decorative enamel chamber pot "receivers" mounted upright on wooden stands painstakingly cry out emailed messages sent to DeMarinis, letter by letter, in 26 different voices. The recorded voices of men, women, young and old ring out their corresponding letter (in Spanish) as integral parts of this screaming telegraph when triggered. The audience as transcribers can reconstitute these messages from the ether.

Another of three Internet-driven installations that make up *The Messenger* features an alignment of 26 small, poncho-clad Day of the Dead plastic skeletons (each labeled with a letter of the alphabet) jerking to the tune of the Internet (figure 15,16). Again, email messages sent to DeMarinis are translated via electrical impulse letter by letter.

DeMarinis pulls out another ancestor from Salvá's closet of technological communication devices in his third installation - an imposing series of 26 jars with mysterious electrical components jutting from them (figure 17, 18). Suspended in an electrolyte substance are metal letters A-Z, which perform as electrodes - each bubbling, spurting, struggling and flashing an eerie green light as electricity intermittently pumps through them to spell out more electronic mail for the vigilant viewer.

DeMarinis provides explicit evidence that the fallible rhetoric linking democracy and communication has been nurtured since electricity's inception. Politician Benjamin Franklin's association with electricity is only one formative and myth-building example. Examples abound from early communications (such as the aforementioned screaming telegraph) and make it obvious that they were often

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[49] C. MacKechnie Jarvis, "The Origins and Development of the Electric Telegraph" in *The Electric Telegraph, An Historical Anthology*, ed. G. Shiers (New York: Arno Press, 1977) 26.

designed and utilized for one-way communication by those of privilege and power; a fitting analogy we could readily extend to the Internet:

> .The Internet has been touted as inherently democratic, a tool that unites nations and classes with brotherly shareware, that brings information and tidings of freedom to oppressed peoples yearning to become cheap labor, a force to be feared by dictators...The mechanics and metaphors of *The Messenger* may serve to remind us that there is no inherent bi-directionality in electrical communication, that a body can be a telegraph as well as a recipient of a message, that who is transmitting what to whom is often lost in the speed and coded immateriality of electricity.[50]

While the screaming telegraph, the cat piano, musical bathtubs and swearing tops may seem peripheral to meaningful discourses on technological progress, DeMarinis shows that these developments reflect and embody values that continue to be evident in today's communication technologies.

> Our electronic media may be regarded, in large part, as the outgrowth of nineteenth century laboratory apparatuses designed to isolate and investigate the functioning of human sensory organs. Viewed in this way, they fracture the wholeness of sensation in an effort to preserve, replay or transmit over distance the specters of our sensory experiences. But Victorian science, obsessed as it was with isolation, analysis and reduction, had a goofy side too, a far-reaching interest in the discovery and creation of chimeras - impossible combinations of two distinct beings: griffins, gargoyles et al. - both natural and artificial. In particular, the age of the inventor was also the age of the tinkerer, the combiner, the patenter of hybrid forms. No natural zoology could have engendered derby-hat cameras, bicycle hammocks and swearing tops. Perhaps every attempt to reconstitute the sensory wholeness allegedly lost by recording and transmitting media may be regarded as a chimera, the foremost survivor of which has been the sound-cinema with its uneasy pact between sight and sound serving to perpetuate a myth of synesthesia. But a host of other teratogeny were, and are, being spawned, tried, rejected and occasionally marketed in a ceaseless attempt to achieve multimedia.[51]

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[50] DeMarinis, *The Messenger* 2.
[51] Paul DeMarinis, "Gray Matter", *Paul DeMarinis' Exhibition*, cat., (San Francisco: Center for the Arts, 1995) 2.

Paul DeMarinis' work is inspiring and challenging. His multi-layered projects provide insights, but more importantly, provoke curiosity for exploring our technological past for further clues to understanding our future.

His playful and brilliantly innovative approach to media archaeologies directly links contemporary technologies to previous systems of representation, communication and ways of looking at the world. His works exemplify the fact that obsolete technologies can be used in ways that are profoundly stimulating and relevant to contemporary life.

DeMarinis' work includes further "host[s] of teratogeny" connecting his rich exploration of the technical and social history of radio, which will not be detailed here.

He shares his spirit of invention, curiosity and self-reflexive-ness in relation to technology with Jim Pomeroy, a close friend and former collaborator. In the next chapter, *Ironikironik*, their common celebration of the idiosyncratic and irreverent in media technology will be discussed, followed by an exploration of Jim Pomeroy's oeuvre. The political implications of incorporating media archaeologies in contemporary art will also be considered more directly in this discussion.

Chapter 3

Ikonikironik[1]

A new age does not begin all of a sudden.
My grandfather was already living in the new age
My grandson will probably still be living in the old one.

The new meat is eaten with the old forks.

It was not the first cars
Nor the tanks
It was not the airplanes over our roofs
Nor the bombers.

From new transmitters came the old stupidities.
Wisdom was passed on from mouth to mouth.

Bertolt Brecht

Jim Pomeroy and Paul DeMarinis were friends until Pomeroy's death in 1992 and share many sensibilities, including knowledge, skill and curiosity for a dizzying array of disciplines and mediums, a fascination with audio and optical phenomena, an appreciation for the eccentric and a partiality towards harnessing the old to challenge the notion of "new" [2] Their bibliographies attest to an impressive range of engagement in writing, curating, performing, and exhibiting. They collaborated on the performances *Byte at the Opera* and *R-Byte*, and each has written succinctly about the other's work.

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[1] The title of a performance work by Jim Pomeroy commissioned by the Photographic Resource Center, Boston. Performed at the Brattle Theatre, Cambridge, February 3, 1989.

[2] Jim Pomeroy was a punster until the end. He mentioned on the phone to Paul DeMarinis that he'd had a bad fall; but he had a CAT scan, even though he'd tripped over a DOG. He died as a result of that blow on April 4, 1992.

Pomeroy called himself a "general practitioner", firmly refusing the titles of videographer, writer, lecturer, activist, photographer, performance artist or digital artist.[3] Susan Miller sums up his resistance to classification:

> He is an amalgam of the characters he assimilated and reinvented through his work. Part Bertolt Brecht, Charlie Chaplin, Ben Franklin, Mr. Wizard, Spike Jones, Rube Goldberg, Ernie Kovacs, Mark Twain, Heloise and her helpful household hints, Boy Mechanic, John Heartfield, Inspector Clouseau. Jim was a performer, scientist, writer, instrument maker, artist, social critic, teacher, activist, iconoclast, nutty professor, punster, bachelor, bricoleur, proverbial skeptic, pundit, standup comic, sacred clown, one-man-band, jack-of-all trades, basement inventor, avenger of the avant-garde....[4]

This resistance to labels also extended into his teaching, where he preferred hybrid activities to the ghettoization of mediums he was surrounded by.

His popularity in a range of artistic camps in the U.S. continues to be evidenced by an ongoing commitment to honoring his work by friends and colleagues, represented most recently by a major retrospective, catalogue and website.[5] While he addressed a range of practices and intentions, the works featuring outdated media will be particularly focused upon in this chapter.

Jim Pomeroy consciously used redundant media and modest domestic objects to challenge the gee-whiz factor so rampant in new media art. Possessed of what Giovanni della Porta (16th century) called "wicked Curiosity",[6] he used razor sharp

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[3] Susan Kae Grant, "One Man's Museum", *For A Burning World is Come Dance Inane*, ed. Timothy Druckery and Nadine Lemmon (New York: Critical Press, 1993) vii.

[4] Susan Miller, "Introduction, Jim Pomeroy: Avenger of the Avant-garde" *Jim Pomeroy: A Retrospective*, (San Francisco: New Langdon Arts, 1999) 6.

[5] *Jim Pomeroy: A Retrospective*, ed. Susan Miller, catalogue, (San Francisco: New Langdon Arts) 1999. His work is now housed at the Center for Photography in Tucson, Arizona. Although not catalogued yet, I viewed part of the archive in March, 2000. See website designed by Ed Tannenbaum, <<http://www.jimpomeroy.com>>.

[6] As quoted in Chapter 1, della Porta describes his compilation of mathematical recreations and clever optical devices as "my catalogue of rarities" in the context of natural magic...a category, as he was careful to explain for fear of religious prosecution, which was not "black magic" but "wicked curiosity" Stafford, *Artful Science* 32.

humor to accentuate the ironies and duplicities of the prevailing industrial-military-corporate complex and its continual investment in the notion of progress.

The legacy of the 19th century revolution in time and expectations is evident in our current obsession with the cult of the new and in the ultimately unsustainable push for continual "progress" and economic growth. Artists certainly aren't immune; some are also highly motivated by the prestige of being "first" to use a new technology (this is often legitimized by arts funding bodies as a primary criteria for arts funding). There is a frequently heard criticism that contemporary artists are so involved with the technical negotiation of their new tools that issues of content are ignored - and the source of these tools are conveniently unacknowledged. Pomeroy often parodied these concerns:

> In keeping with the traditions of the avant-garde, observe the first rule: Discard. The second: Appropriate the ethnic. The third: Conceal your tracks. The fourth: Dramatic foreplay. The fifth: Contrive a Discovery. Voila! (or Eureka!). Acclamation, a profound innovative statement of overwhelming social importance and obscure legibility. Time marches on.[7]

As Pomeroy would often remind his audiences, creative technologies, including radio, digital photography and video, are a direct hand-me-down from military research, now used in ways unrecognizable to their original creators (an extreme example is the Survival Research Lab[8]) and even the highest-tech of art lags well behind military counterparts.[9] As Pomeroy observes, "People didn't invent semiconductors because they wanted to make an interesting synthesizer, but

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[7] Jim Pomeroy, "Artist's Statement", Los Angeles Institute of Contemporary Art, 1979 in Miller 4.

[8] Mark Pauline and the Survival Research Laboratory also revel in the use of outmoded, archaic debris cast off from the industry and the military. Pauline and his crew stage enormous, assaultive, loud, toxic, industrial gladiator-type extravaganzas featuring personified robot-machines and cataclysmic explosives. Their purported intention is to mock the benefits of technical progress, but they come too close to fetishizing the machines and violence in their festivals of spectacular mechanical carnage.

[9] Digital photography and still video were derived from imaging technologies initially developed in the mid-1960s for satellite surveillance systems. Radio and television were developed for specific military use and their potential utilization as public communication overlooked for many years. Pomeroy, "Black Box S-Thetix" 272.

because they wanted to drop a pair of warheads on top of a Russian missile silo."[10] His list of motivations is impressive:

> ... aesthetics is hardly the motivating force behind most high-technology research and development. In fact, much of our art is dependent on the spin-off utility generated by solutions to such artful problems as target acquisition (infrared and ultrasonic sensing, thermal imaging, radar, sonar, and microwave, stroboscopic photography, gyrostabilized target designators or steadycams, sound analysis by acoustic signature, signal processing, and image intensification), cover penetration (high-strength fiber laminates, terrain-following mapping, and inertial guidance), secure battlefield communications and management (cellular phones, FM synthesis, voice recognition, heads-up display, expert systems), pinpoint delivery of nuclear payloads (silicon chips, microcomputers, software and tele-communications, new metallurgy and ceramics), smart bombs and surveillance drones (robotics, lasers, high-resolution, low-light video), high-altitude reconnaissance (enhanced photographic emulsions and optics), and combat simulators (3-D modeling, ray-traced animation, visual data bases, and virtual space), to name only a few.[11]

Pomeroy championed artists to become involved sooner in the negotiation of these new tools to bring other sets of values and ways of thinking to emerging technologies. William Burroughs remarked, "We are not setting out to explore static pre-existing data. We are setting out to create new worlds, new beings, new modes of consciousness. As Brian Gysin said, when they get there in their million dollar aqualungs they may find that the artists are already there."[12]

Pomeroy, like DeMarinis, consciously celebrates the everyday and the poetic potential in technology. Their approach is in line with Walter Benjamin, who "took seriously the debris of mass culture as the source of philosophical truth" [13]

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[10] "Art Has Become Mute", Jim Pomeroy interviewed in 1987 by Rene van Peer *Interviews with Sound Artists* (Eindhoven: Apollo Books, 1992) found at <<http://www.jimpomeroy.com/newsite/interview.html>>

[11] Pomeroy, "Black Box S-Thetix" 272.

[12] William Burroughs, *The Adding Machine: Selected Essays*, (New York: Seaver Books, 1986) 102.

[13] Susan Buck-Morss, *The Dialectics of Seeing: Walter Benjamin and the Arcades Project*, (Cambridge: MIT, 1989) ix.

Pomeroy and DeMarinis also use simple and accessible tools and materials to encourage others to re-territorialize aspects of technology that have become financially, conceptually and politically inaccessible in an environment in which the idiosyncratic creativity of the inventor and the amateur has been squelched. Since Thomas Edison's day, the high budget centralized group laboratory he pioneered has become the standard. The Edison Company employed in-house inventors and unscrupulously patented other inventors' discoveries. While famous as a genius and symbol of invention, Norbert Weiner asserts, "Edison's greatest invention was not scientific but economic."[14]

Throughout the 20th century the status of the inventor, indeed the status of workers generally has been vastly diminished. David Nye equates this phenomenon with the historical shift "from man to machine to process" He cites a parade in Boston in 1828 held to celebrate the decision to build a railroad; numerous artisans and craftsman (5,000 individuals) participated. In subsequent years, the number of workers marching in parades began to vastly diminish until the parades celebrating space launches included only a few officials and the astronauts. "While the complexity of technological projects and the number of spectators had increased, the performing cast had shrunk to a small number of celebrities.... The politically active citizen, so valued by republicanism, has been replaced by the mesmerized spectator."[15]

The mesmerized spectator in this trajectory of swelling patriotism and corporate authority is also the passive consumer who has relinquished empowerment for spectacle. Since the 19th century, the most common conduit to the world of high tech innovations is usually through World Fairs, World Expos, the Olympic games, trade shows, and other "spectacular" spectator events.[16]

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[14] Norbert Wiener, *Invention: The Care and Feeding of Ideas*, (Cambridge: MIT, 1993) 58.

[15] Nye 238.

[16] See Nye's fascinating account of the spectacles in 19th century America, which included huge expos and incredible light shows shortly after the invention of electricity and continued with the conscious packaging of a utopian view of technology and corporate power.

Guy Debord described the spectacle as "the paralysis of history and memory" and the imposition of a "false consciousness of time" [17] The mentality of spectatorship and the consumption of surrogates for experience have led to a culture of channel-switching, mall-addiction, and low attention spans.[18] Families now take their vacations to enormous indoor shopping malls, like the popular Mall of America. So much of experience has become prepackaged and predictable that, as Daniel Boorstin once remarked, "We go not to test the image by the reality, but to test reality by the image."[19]

The political usefulness of spectacle is epitomized in national elections, parades, fireworks displays - and the space program. Americans flocked to Cape Canaveral, "As they often say explicitly, they come to renew their belief in the powers of American technology and to reinforce their patriotism. One retired autoworker from Ohio characteristically effused, just after Columbia disappeared into the sky, 'Doggone it! It's about time we showed somebody we could do something' "[20] Symbols of religiosity and the sublime have passed from nature to the technological; the potent ideals of technology represented by bridges, skyscrapers and the railroad have evolved into the space race. "Whereas Kant postulated the realization of reason through the experience of the absolutely great in nature, the pilgrim to Cape Canaveral realizes patriotism through the experience of the absolutely great in technology."[21] Our dependence on technology increases daily, yet our mechanical and conceptual understanding of the tools of daily use has decreased dramatically. The works of Pomeroy and DeMarinis could be viewed as

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[17] Quoted in McQuire *Visions of Modernity* 129.

[18] Surrogate experiences are epitomized by the Venus de Milo Hotel described by Umberto Eco in *Travel in Hyperreality*, trans. William Weaver, (London: Pan, 1987). (She is better than the real thing because her arms have been replaced); the EPCOT center and the Biosphere experiment (a lifestyle community under an artificially supported dome near Tucson, Arizona) was an environment researched by Jim Pomeroy just prior to his death; a mall in Calgary, Canada boasts an indoor surf and more submarines than the Canadian navy, theme hotel rooms (a bed in the back of a pick-up truck for the Southwest room, etc.); the Mall of America in Minneapolis, Minnesota, supposedly the biggest in the world, is reputed to take 31/2 weeks to fully explore.

[19] Daniel J. Boorstin, *The Image: A Guide to Psuedo-Events in America*, (New York: Harper, 1961), 116 quoted in Nye 237.

[20] Nye 240.

[21] Nye 241.

emphatic rebuttals and conscious disengagements from this prevailing trend in dominant culture.

In sharp contrast to much of contemporary art that seeks to overwhelm through a slick, seamless presentation, their works appear off-hand and casual. Their functional, utilitarian, work-in-progress aesthetic, a combination of school science laboratory and backyard shed, gives an initial impression that anyone could have done them. The effect is powerful and generous. As viewers we are encouraged to "do-it-yourself" rather than be confronted by a cold perfection that leaves us on the outside, i.e. as "mesmerized spectators"

Their activity is less about rejecting, and more about renewing - renewing an interest in the defining properties of technology, renewing an awe and delight (rather than perpetuating an aimless criticality), empowering and extending our senses and invoking imagination rather than implosion.

Pomeroy was especially passionate against the devaluing of personal creativity. He actively supported alternative spaces in San Francisco and was a founding member of New Langton Arts (providing its first venue in his warehouse loft). He continually advocated imaginative acts through his writing and curating, often encouraging audiences and his students to empower themselves. His article, "Like a Razor To a Razor Blade Company: Technology, Profit and the Friendly User at the Cutting Edge" featured the Nimslo lenticular camera (figure 21), and is an excellent example of his approach to technologies.[22] The article outlines the history of the device, the context for its patenting, a critique of the Nimslo monopoly, and detailed practical advice encouraging readers to creatively utilize the Nimslo in ways the manufacturers did not plan. Students in his introductory photography classes were required to lock up their expensive cameras and enlist a cheap plastic one for the semester, the lesson being, "Don't fetishize technology, don't use more than you need, don't let technology outstrip your ability to think and create with it."[23]

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[22] Pomeroy, "Like a Razor" 11.

[23] Constance Penley, "Double Edged, Cutting Edge, Over the Edge, Jim Pomeroy's Guide to Staying Sharp", *Jim Pomeroy: A Retrospective*, ed. Susan Miller (San Francisco: New Langdon Arts 1999) 35.

Along with DeMarinis, as a child Pomeroy was greatly influenced by the space race and the accompanying scientific fervor of the Sputnik era in the U.S. They were also greatly inspired by television shows such as *Mr. Wizard*, in which a highly eccentric television presenter who performed experimental science live. More often than not, the experiments wouldn't work, which no doubt encouraged a healthy disregard for the authority and precision of science. Also, as DeMarinis reminisces, books like *The Boy Mechanic* of the 1940s and 1950s:

> ...fed this inquisitiveness with parts lists and plans for projects such as constructing your own movie camera and converting a hair dryer into a chicken incubator. The book encouraged redesign according to the dictates of available materials; ingenious appropriation was held in high esteem.[24]

Pomeroy and DeMarinis, like many of their generation, were indoctrinated by the rhetoric and mechanics of science and technology. Unlike many of their generation, they chose to reveal the fallible aspects of this cultural conditioning and to emphasize the potential for creative communication.

Performance became a potent platform for Pomeroy to confront contemporary politics; he often emphasized and amplified rhetoric simply by repeating it, allowing him to unsettle icons of American accomplishment: the science teacher, the genius inventor, the groover, the huckster. He borrowed and exaggerated characteristics from Mr. Wizard, Thomas Swift, Thomas Edison and Benjamin Franklin: personalities that pointedly epitomized the preoccupations, biases and contradictions inherent in discourses on art and science.

In a recognizable tribute to the science show host, Mr. Wizard appeared often as an archetypal figure in Pomeroy's works - representing an understated, older science teacher. In his performance of *Whillikers in G*, 1980, Pomeroy appeared in Mr. Wizard drag (white shirt, clipped on bow-tie, exaggerated glasses) and proceeded to perform a series of scientific experiment while delivering a set of questions and

conundrums, such as "Is there sound in a vacuum?" Three large metal cans with water in them were placed on a Bunsen burner stove. He then screwed on the caps and turned off the burners. As the steam attempted to return to its previous size and constituency, the cans buckled, causing painful shrieking sounds as they collapsed. The screeches were amplified by microphone. Therefore, there is sound in a vacuum![25]

The character of a bumbling Mr. Wizard succeeds in undermining the sacred image of precise and infallible scientist, performing pranks while muttering, in DeMarinis' words, "the hilariously transparent technocratic mumbo jumbo that surrounds big art, big science, and big politicking" [26]

Pomeroy's musical performance characters were also bigger than life; personalities like B. Linds Nake performed on improvised instruments like the sloboe, the petro-basso flute (from PVC tubing) (figure 22) and a variety of other kitchen and garage-spun implements in the service of entertainment and parody of "serious" and avant-garde music traditions. His rendition of "Mechanical Music" remains a classic (figure 4).[27] Following a routine of preparatory gestures, Pomeroy carefully arranges a set of socket wrenches in the V formed by the bending of his arm at shoulder level from the smallest (8") to the largest (14") - in order to form a crude xylophone. He then opens a bottle of beer with his teeth and begins to blow the tune from Gershwein's "Summertime" over the bottleneck opening. To achieve the lowering of octaves that occurs in the song, he hurriedly swigs the beer between verses, thus accomplishing the appropriate lower octave. The song completed and the beer drunk, he proceeds to render the tune on the socket wrenches until they all crash to the ground.

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[24] Paul DeMarinis, "The Boy Mechanic- Mechanical Personae in the Works of Jim Pomeroy" in Druckery and Lemmon 1.

[25] This description of *Whilikers in G* relies on DeMarinis' account in DeMarinis, "The Boy Mechanic" 3.

[26] DeMarinis, "Mechanic" 3.

[27] I did not see the original, but saw it remade in homage to Pomeroy by renowned percussionist William Winant in San Francisco, 1996.

Patrick Clancy observes that the anti-heroic character making heroic statements has appeared before. He likens Pomeroy's theatricality to that of Charlie Chaplin in *Modern Times* where he self-consciously examines the motion-picture apparatus, the assembly line and his body.[28] Pomeroy, like Chaplin, employs the mechanical to refer to larger social phenomena.

Pomeroy also frequently revived 3-D techniques such as stereography and 3-D anaglyphic projections in works such as *Lightweight Phantoms* (1976), *Ironic Madonna* (1985)(figure 25), *View of Art Park* (1987) and *Listen to the Rhythm of the Reign/Some Excellent Music for Marble Pedestals* (1985), *Reading Lessons - Eye Exercises* (1988) and *Apollo Jest* (1978).[29]

The Greek physician Galen was the first to address the theory of stereovision in the 2nd century AD. In 1833, Sir Charles Wheatstone created a mirror device for viewing two slightly different angles of the same picture that resulted in an impression of three-dimensionality in the rendering of a painting or drawing. Sir David Brewster utilized prismatic lenses to create his new stereoscopic apparatus for viewing photographs in 1844. Stereoscopes were wildly popular in the 1850s and 60s - almost every middle class family featured one in their parlor room.[30]

Not only were stereoscopic devices a common source of entertainment in the home, they greatly intrigued philosophers and scientists and are still the subject of rich speculation in writing such as that by Rosalind Krauss and Jonathan Crary.

Although scattered attempts to resuscitate 3-D have occurred since its widespread popularity in the 19th century (3-D television panning techniques, holography,

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[28] Patrick Clancy, "The Field of His Ironic Play" in Druckery and Lemmon 46.

[29] *Reading Lessons- Eye Exercises* was presented in the exhibition *Seeing Double*, California Museum of Photography, University of California, Riverside, 1985, catalogue available. *Apollo Jest* was originally presented in a stereoscopic slide presentation with two projector dissolves and a 12-minute synched text/music soundtrack and polarized stereo projection as listed in *Jim Pomeroy: A Retrospective*, ed. Susan Miller, (San Francisco: New Langdon Arts, 1999) 8, adapted for the Web by Ed Tannenbaum, «<http://www.jimpomeroy.com>».

[30] R. M. Hayes, *3-D Movies: A History and Filmography of Stereoscopic Cinemas*, (Jefferson [NC]: McFarland, 1989) 1-3.

polarizing glasses as in Captain EO at Disneyland, stereo-optic posters), practical assimilation has not occurred.

Given the relative obscurity that has befallen these techniques, it is surprising to read Crary's statement that, "The most significant form of visual imagery in the nineteenth century, with the exception of photographs, was the stereoscope."[31] And even though the stereo viewer most commonly incorporated photographs, Crary asserts, "its conceptual structure and its invention are thoroughly independent of photography."[32] The first stereoscopes did not use photographs, but drawings rendered to correspond to the parallax experienced between two eyes. And conceptually, the experience of viewing through a stereoscope was more akin to the range of vision devices that optically (and artificially) constructed motion and space such as the thaumotrope, zoetrope and phenakistiscope.

As Wheatstone, the inventor of stereo-viewers, revealed - the viewer has the capacity to synthesize the retinal disparity presented by two images into a single image.[33] "The illusion of relief or depth was thus a subjective event and the observer coupled with the apparatus was the agent of synthesis or fusion."[34] What had been made apparent through the study of after images and devices such as thaumotropes earlier in the 19th century - that vision was subjective - was significantly embodied in the stereo-viewer. In addition, the binocular body was acknowledged.

In some instances, photographers consciously exaggerated the position of the cameras to create a "hyper-reality" of the binocular viewing experience. Sir David Brewster first developed this technique when confronted with the problem of describing depth in large objects at a distance from his camera, providing "a better and more relieved representation of the work of art than if we had viewed the colossal original with our own eye, either under a greater, equal, or a less angle of

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[31] Crary, *Techniques* 116.
[32] Crary, *Techniques* 118.
[33] Crary, *Techniques* 119.
[34] Crary, *Techniques* 129.

apparent magnitude."[35] This technique of separating the lenses of the stereoscopic camera by more than the human interocular distance - a practice that more recent stereographers call "hyperspace" - became standard among landscape photographers. (The camera separation for landscapes was usually on the order of a few feet.) The stereograph purchaser could observe deeper valleys and more dramatic cascades than existed in reality.[36]

This goal of hyper-reality is also consistent with some VR techniques. But while VR is generally acknowledged as an artificially created visual experience, there was a strong belief in the stereographs recording of actual occurrence. "No form of representation in the nineteenth century had so conflated the real with the optical."[37] The premise of VR is an extension of what became evident with the stereograph - that perception occurs in the brain.

Pomeroy's enlisting of 3-D techniques mocks the "groundbreaking" goals of contemporary techno-enthusiasts by providing a comparatively simple, but convincing immersive experience.

Paul DeMarinis describes Pomeroy's installation, *Composition in Deep / Light at the Opera* (1981):

> ... the audience was seated, boxing-match style, around a square formed by the main support-pillars of the gallery. The space within the posts was covered with white paper, concealing the performer and the mechanism of projection. The audience members were fitted with anaglyphic (red/green) 3-D viewing glasses. A quadraphonic sound track, composed of vocal noises transmuted by delay lines and feedback, evoked a mechanization of the vocal apparatus. From this emerged a litany of invective terms declaimed in alphabetical sequence (called *Alphabetical Invectives*, published privately on audiocassette by Zoom Bi-Speel). Moving shadows, in pairs of red and green, appeared on the paper projection screen. The shadows fused in the viewer's brain into images of bicycle wheels, war planes, and

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[35] David Brewster, "Account of a Binocular Camera" (1851), in Nicholas J. Wade, *Brewster and Wheatstone on Vision*, (London: Academic Press, 1983) 220.
[36] Hankins and Silverman 169.
[37] Crary, *Techniques* 124.

> sharks, all seeming to burst from within the apparatus and fly out over the audience. Spectators were observed ducking to avoid the attacking sharks. That so robust an illusion can still be effected in a 20th-century art-sophisticated audience, by a single performer juggling props in front of four pairs of red and green light bulbs, is testimony to the unfamiliar power of orphaned technologies, as well as the unfailing foibles of our human visual system.[38]

Like Georges Méliès and his theatrical brand of movie-making which evolved directly from his experience as a magician, Pomeroy establishes a relationship with his viewers based on the recognition that they are watching trickery. "...the late 19th century magician either laughed with the audience, conditioning thus its laughter, or was laughed off the stage: audiences were no longer subject to traditional 'enchantment' ... were no longer seriously 'charmed' "[39] Nonetheless, while the mechanics are obvious, the ability of Pomeroy's audience to momentarily suspend disbelief and be subsumed into the apparatus, however clumsy and transparent, is significant.

In *Clear Bulbs Cast Sharp Shadows* (Pro Arts, Oakland, CA 1987),

> Large sharks, constructed from heavy wire and steel strapping were suspended, Calder-style, from the high ceiling of the gallery. Several sets of red/green lights cast rotating shadow pairs on the wall. Viewers who entered the space wearing anaglyphic glasses became immersed (submerged?) in a 3-D world, suggestive in its appearance of the computation-bound wire-frame model projections then available for real-time computer graphics. The sound track, composed of computerized snippets from Kurt Weill's "Moritat" from The Threepenny Opera ("Mack the Knife"), invokes Bertolt Brecht and quips at the consanguinity of the artistic, scientific and corporate mafias.[40]

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[38] Performed at 80 Langdon Street in San Francisco, 23 September, 1981. For the description of the 3-D performance I have relied on DeMarinis' "The Boy Mechanic" 10.
[39] Stan Brakhage, "George Melies", (Berkeley: Turtle Island, 1977) 19.
[40] DeMarinis, "The Boy Mechanic" 10.

Viewed in relation to the available techno-gear, Pomeroy's decision to work with relatively low-tech devices flouts the conventions of "progress" while also commenting on it. His machine constructions become a visible and active component of the meaning. While his hard and soft ware might be outdated, Pomeroy utilized incongruous materials in ways that were accessible and meaningful.

In another 3-D performance work, Pomeroy borrows the mock-persona of Benjamin Franklin (which he has dubbed "the Benign Reactionary").[41] Donning a bald Halloween wig with straggly white hair and a set of four-eyed trick glasses, he recites several performance medleys, including *Listen to the Rhythm of the Reign/Some Excellent Music for Marble Pedestals.*[42]

> Great art is timeless, pure, and exhibits universal appeal -
> in the expression of noble truth.
> Content resides within the form which embodies universal -
> truths of personal expression.
> Thus, abstract art, by definition, is humanistic.
> The first word in paint is pain!
> Contemporary formal art, especially large geometric work, is -
> primarily intended for public or corporate acquisition.
> Thus, public/corporate patronage of modern art is not only -
> wise investment, good public relations, but gracious -
> humanism as well.
> Art which is ephemeral, topical, critical or risky cannot -
> hope to gain the pedestal status of "excellence"...
> The secrets of Nature are to be found in the Infinite -
> Remote and Infinitesimal Minute.
> Pure Science is the Noble Pursuit of the Deepest secrets -
> Of Nature
> Nature is Mysterious, Pervasive, and Profound.

> There will always be funds for Pure Art and Pure Science.The Inherent Humanism
> of these Noble Pursuits is their -
> eternal Humanlessness.[43]

Pomeroy's *View at Art Park* (1987) featured seven stereo viewers in the landscape which superimpose gigantic fictitious sculptures on the scenery of Niagara Falls (the stereo composites were also published as a set by Lightwork Gallery, 1988.)[44] The one pictured here is entitled, *Giant Shower Curtain*. These "virtual" sculptures definitely echo BIG art, but don't need the maintenance described by Pomeroy in his parody of Shelley in *Making the World Safe for Geometry*:

> I met a tourist, an urban man,
> Who said, 'Two vast and funkless shafts of tone
> Stand in the city. Near them in the sand,
> Halfsunk, a flatter sausage glides, whose brown
> And purple stripes, and spheres of gold-green bands
> Tell that its sculptor well his commission bid,
> And well thrives, cranking out these lifeless things
> From a plan that mocks-up this art from a grid.
> In the contract, these words appear:
> "My aim is good maintenance ... keep it cleaned.
> Look out for my work, nightly, and repair!'
> Nothing remains long around the base
> Of that colossal object, except for the glare
> As the long and beveled spans stretch out for a ways.[45]

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[41] Christine Tamblyn, "Real Grumblings and Pseudo-Science: A Holo-Grammatological Augmentation", eds. Druckery and Lemmon 17.

[42] Available on video. Compiled during a residency at the Visual Studies Workshop, Rochester, New York in 1985, as listed in Miller, *Jim Pomeroy: A Retrospective* 8.

[43] From Jim Pomeroy, "Some Excellent Music for Marble Pedestals" , *Listen to the Rhythm of the Reign*, (published privately on VHS videocassette), 1985, 25 minutes quoted in DeMarinis, "The Boy Mechanic" 11 and a slight variation published in "The Boy Mechanic: Mechanical Personae in the Works of Jim Pomeroy", *Jim Pomeroy: A Retrospective*, 20.

[44] Jim Pomeroy: *A Retrospective* 49.

[45] Pomeroy in *blind snake blues*, published privately. (Listed as 1973 in *Jim Pomeroy: A Retrospective* 22 and 1979 in "The Boy Mechanic" in Druckery and Lemmon 15. DeMarinis writes that *blind snake blues* is based on the popular figure of Spike Jones.

Like his impersonations and artworks, Pomeroy's writings highlight the complicity rampant in big business, "pure" science and "pure" art (such as strategies purported by Clement Greenborg, which consciously aimed to separate art and politics by cynically supporting and publicizing art which had little social relevance).

Apollo Jest is a tongue-in-cheek pairing of anaglyphic 3-D image and text representing man's moon landing. *"Apollo Jest, An American Mythology (In Depth)"*, declares the preface, "as a project would have been impossible had NASA not spent 60 billion dollars to get America's rocks off the moon ... the Ego has landed."[46]

The Preface sets the tone by drolly qualifying the content we are about to experience:

> A few of these images are sufficiently loaded with negative, anachronistic values to appear offensive to the modern viewer... in other words, racist, classist and imperialist iconography. Their function here is to remind us that ideology, myth and history are plastic ... Caution, use of this project may contribute to violation of the sacred integrity of a spiritual unifier. This is definitely the wrong stuff.

To this day 20% of Americans believe that the moon landing never occurred; the event was staged against a Hollywood background. *Apollo Jest* is an attempt, with 'unauthorized proof' to disprove the rumor that the moon landing never happened.

The main text is delivered in a deadpan, authoritarian manner by the female narrator (Nancy Blanchard, accompanied by very bad marching band music, circus music and a music box recording of *America the Beautiful*), while being undermined by images that are at times visual puns, absurd counterpoints or understated illustration. The juxtaposition of image/text provokes the viewer to laugh while questioning the underlying authority and overblown rhetoric inherent in contemporary technological mythology.

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[46] Jim Pomeroy, Closing text to *Apollo Jest, An American mythology (In Depth)*, c 1978, 1983. Adapted for the Web by Ed Tannenbaum.

"Specially designed hardware" is accompanied by a photograph of a shovel, "the Indian Ocean" illustrated by an appropriately shaped puddle, "the lunar rover" is represented by a supermarket trolley and the "successful splashdown" appears to have occurred in a swimming pool. "Still fatal errors" accompanies an image of a human skeleton, "the rocket stood ready to launch" is represented by the Eiffel Tower and finally, footprints in sand mark "One Small Step for Man, A Circus Act for All Mankind"

Stereo photographs in *Apollo Jest* are utilized to represent the "new frontier"; this is consistent with stereo photography's use in the 19th century era of exploration. Familiar echoes of the neo-colonialism which photography hastened are recalled, this time on the moon.

> Photography became a lynchpin in the trade in foreignness and fuelled the new discourses of the other - from anthropology and ethnography to popular accounts of travel and colonial life - which blossomed in the second half of the nineteenth century. As the most versatile tool for 'worlding' the world (as Spivak puts it), the camera was instrumental in orchestrating a colonial vision, making visible the previously unseen and unknown, shaping its apparent shapelessness and instilling form where it was felt to be lacking.[47]

The vulnerable credibility of photography and its potential for nationalistic propaganda is observed and emphasized.

Erkki Huhtamo also draws strong links between the late 19th century stereo-viewers and the recent "virtual world voyaging" (such as MIT Architectural Machine Group's *Aspen Movie Map*, Michael Neimark's *Gold Gate Moviemap* and Jeffrey Shaw's *Legible City*.) Like VR, a compelling feature of stereography was its immersive quality - it provided an environment in which the viewer forgot bodily presence and "traveled" The hype for systems well over 100 years apart is

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[47] McQuire, *Visions* 93.

remarkably similar. Could we substitute "virtual reality" for this 1859 advertisement for stereo-viewers?[48]

> I stroll through Rhenish vineyards, I sit under Russian arches, I walk the streets of once buried cities, I look into the chasms of Alpine glaciers, and on the rush of wasteful cataracts. I pass, in a moment, from the banks of the Charles to the ford of Jordan, and leave my outward frame in the arm-chair at my table, while in spirit I am looking down upon Jerusalem from the Mount of Olives.[49]

The armchair traveler here is American essayist Oliver Wendell Holmes Jr., writing in 1859.[50] Holmes published several articles promoting stereo photography in the *Atlantic Monthly*, even while he was selling his own improved design of the viewers. Buoyed by cheap standardized viewers, the industry exploded.

> ...armies of photographers - as well as missionaries, soldiers, merchants, functionaries of new European empires, wealthy travelers and explorers, and others - fed hundreds of factories millions of images which were then distributed, mostly door to door, by thousands of traveling salesmen, to fill collections in the parlors of virtually every family in America (with a parlor).[51]

This desire "to leave my outward frame in the armchair at my table" clearly continues to echo in the rhetoric for VR. Closer to our own armchairs, Huhtamo observes, "But, one may ask, isn't this the way we look at television, switching channels and being instantaneously transported form one corner of the world to another?"[52] In this contemporary sense, the notion of armchair traveler culminates in the Gulf War viewing experience through the "slamcam" or missile-born camera - the lounge lizard has the dubious privilege of witnessing targeting and killing in real

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[48] Erkki Huhtamo, "Armchair Columbus on the ford of Jordan", <<http://www.urova.fi/home/ttk/media/ihmiset/huhtamo/ehcolumb.html>>

[49] Huhtamo, "Armchair".

[50] In 1862, Oliver Wendell Holmes Jr. and Joseph Bates developed an inexpensive and popular stereo viewer which is still being manufactured. Hayes 1.

[51] Robert Taft, *Photography and the American Scene, A Social History, 1839-1889*, (New York: Dover Press, 1964, c 1938) 178.

[52] Huhtamo, "Armchair"

time (bombings were supposedly timed to coincide with the evening news in the United States).[53]

The passage by Holmes could also be used to exemplify the Christian dichotomy of mind and body - also related to contemporary desires for this very separation achieved through technology: "...while in spirit I am looking down upon Jerusalem from the Mount of Olives." As typified by Holme's passage and by the work of Jim Pomeroy, stereo photography, long before virtual reality, was also sold as a vehicle for transporting the mind.

Token Dreams (1985) is a Pomeroy work with multiple lives, including an early two slide projector dissolve version and the most recent video version, featuring 3-D polygon renderings of Monopoly tokens. A voice-over recites the rules, "The object of the game is to acquire properties.... " The voice accompanying the cavalry rider muses, "You know, it's weird the way some advertisers persistently mask products of dependency with symbols of freedom. Marlboro just can't seem to kick the horse habit."[54] Familiar readings of these common game tokens are twisted to reveal an underlying rhetoric in our general aspirations. Jim Pomeroy bounces off the politics of government, high art, corporate technology and the military complex; political or social biases are simply highlighted and exposed.

Pomeroy also stubbornly mobilizes the mundane. Within his artworks, Pomeroy pushed the idea of accessibility to an absurd degree, enlisting inexpensive items, children's toys, ladders, goofy masks and glasses, everyday household items.

Humor is a strategy Pomeroy uses effectively to exaggerate the contradictions that exist in the use of technology. The humor is not just entertainment ... it's part of the

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[53] "If the Gulf War was notable for the extent to which television cameras stalked each action and searched restlessly for the decisive event, an even more striking threshold (but destined, one suspects, to become banality itself) was the landing US troops in Somolia in December 1992: by the time the Marines arrived, the camera crews already had a beachhead, and were beaming the action live to domestic audiences over breakfast. The much-prophesied creation of a single terrestrial zone of total visibility suddenly seemed very close: the world as global TV studio." McQuire 187. For an extended discussion of the intersection of war and cinema see Virilio *War and Cinema.*

[54] Jim Pomeroy in Token Dreams, videotape exhibited at San Francisco Cinemateque at Video Free America. Feb. 10 1985. Quoted by DeMarinis in "The Boy Mechanic" 13.

debate. As the protagonist killer monk in Umberto Eco's *The Name of the Rose* was acutely aware, its use can be subtly but strongly undermining.[55] Or it can be, as George Alexander describes, a "reflex between tension and relief" [56]

In Pomeroy's *Newt Ascends Astaire's Face* (ca. 1975)(figure 27, 28), a large free-standing zoetrope features a photographic portrait of a smiling Fred Astaire with a silhouetted animation of a newt scrambling up and over his face. Astaire's composure is such that he remains inanimate except for his mouth and eyes, which swivel to follow the movement of the newt. Initially, we appreciate the beauty of the mechanism and the hilarity of the animated encounter between Astaire and amphibian.

But *Newt* is also indicative of Pomeroy's droll use of titles; not only do they function to make us laugh (or groan), they contribute another layer of meaning as we ponder the puns and associations which oscillate between title and zoetrope. As Anselm Hollo observes, "If we gave this another title, it would read differently."[57]

The title, *Newt Ascends Astaire's Face*, is a punning reference to the seminal Duchamp painting *Nude Descending a Stair Case*. It could also be read as an acknowledgment of the influence American/English photographer Eadward Muybridge and French physiologist E.J. Marey had on Duchamp and other artists (including the Futurists). Here, the Hollywood dancer Fred Astaire and his own brand of human motion are tied into a continuum that began with the 19th century motivation to capture and quantify human movement and has not stopped; in fact it has intensified with the scientific profit-motivated approach to labor and sport. As in much of his performance and installation works, Pomeroy provides us with the context from which to realize historical leaps and links.

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[55] In Umberto Eco's *The Name of the Rose*, a fiercely protective librarian monk is poisoning those who dare read books of satire in the monastic library - vehemently believing that if humor and satire were encouraged, it would be the death of the authority of the church and Christ. The library is burnt to the ground. *The Name of the Rose*, trans. William Weaver, (London: Secker and Warburg, 1983).

[56] George Alexander, Introduction, Joyce Hinterding lecture at the Art Gallery of NSW, Sydney, June 20, 2000.

[57] Anselm Hollo, poetry reading, Naropa Institute, Boulder, Colorado, Nov. 1997.

The mechanism and title serve to connect the varied human motion studies of E.J. Marey, Edweard Muybridge (who both enlisted versions of the zoetrope), Marcel Duchamp and Fred Astaire. Marey was a brilliant French physiologist who created the first mechanical devices for quantifying human movement (including the spyograph, the first mechanism to transcribe the pulse and the photographic rifle).[58] He also developed the chronophotographic camera, which allowed him to expose multiple consecutive movements of a body in motion on one negative (although intended for scientific purposes - the images are striking). Muybridge was a photographer and a contemporary of Marey; he enlisted a less scientific approach for aesthetic ends in the production of his infamous and influential series *Animal Locomotion* (1887).[59] His investigations into sequential movement began when he was commissioned to settle a bet as to whether a horse's hooves were all off the ground at any given moment while galloping. His subsequent human and animal motion studies gave simultaneous views in chronological sequence of activities such as running, jumping, boxing, and removing a dress.

Perhaps Pomeroy is also paying conscious tribute to the enormous influence Marey, Muybridge and other scientific photographers such as Harold Edgerton and Frank and Lillian Gilbraith have had on him and a number of other contemporary artists.[60]

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[58] My installation *To Fall Standing*, 1993, directly referenced Marey's photographic rifle.

[59] Eadweard Muybridge, *Animal Locomotion*, (Philadelphia: University of Pennsylvania, 1887) in James Sheldon "A Man Beyond His Time" *Motion and Document, Sequence and Time, Contemporary American Photography*, catalogue, ed. Jock Reynolds and James Sheldon, (Andover: Addison Gallery of Art, 1992) 12. Paul DeMarinis now has a studio across the road from the original site of Muybridge's experiment on the campus of Stanford University.

[60] For an excellent account of the lineage from Muybridge to present day photographic artists including Jim Pomeroy, Sarah Charlesworth, Hollis Frampton and Sol LeWitt see Reynolds and Sheldon (eds) *Motion and Document*. Also see Mike Mandel's *Making Good Time*, (Riverside: University of California, 1989) in which he calls attention to the work of Frank and Lillian Gilbraith and their brilliant photographic studies conducted in search of "the one best way" to perform human tasks such as stacking boxes, typing, bodywashing, etc. The Gilbraiths' methods were influenced by the philosophy of Frederick Winslow Taylor and his insidious time-motion studies in the American workplace (my father endured the legacy of Taylorism in the time - "incentive" schemes operating in the meat packing plants in Iowa from the 1950's until the plant's closure in 1982). Somewhat naively, the Gilbraiths were motivated by a utopian aim of empowering the worker. Mandel then offers his own eclectic, personal and humorous version of the "one best way" - such as changing the baby and making a sandwich.

Inadvertently, although pre-Gingrich, *Newt Ascends Astaire's Face* has gained new pertinence since the 1980s. Newt Gingrich was speaker of the U.S. House of Representatives and infamous for his Superhighway Hyperbole. He actually proposed in Congress to address the imbalance of access to new technologies by "generously" providing tax cuts on personal computers for the homeless, prompting New York columnist William Saffire to write, "I don't have shoes, but I can boot up!" This is a potent example of the disingenuous nature of political policy that has fuelled Pomeroy's responses.

In *Turbo Pan* (ca 1985)(figure 29), a free-spinning bicycle wheel is mounted horizontally. Attached are a number of mailing tubes at variable heights, closed on the bottom, open at the top. By reversing the airflow in a vacuum cleaner, blowing air both forces the wheel to turn and produces an acoustic tone in each of the spinning tubes. "This Duchampian chimera of zoetrope, barrel organ, and Tibetan prayer wheel suggests an association of technological histories, a path not taken for cultural rather than techno-historical reasons."[61] The reference to Duchamp could refer both to his *Readymades* (common objects such as the bicycle wheel, wine rack and urinal featured as art within the gallery context) and to his fabulous, but lesser known *Rotoreliefs* (which used a turntable to create optical effects with spinning discs).

Pomeroy could have chosen a number of devices to expel air - but he may have chosen the vacuum cleaner precisely for its domestic references.[62] It is also curious to note that *Turbo Pan* is roughly contemporary with Jeff Koons' vacuum cleaner works, such as *New Hoover Deluxe Shampoo Polishers* (1980-86).[63] Koons' presentation of domestic appliances sharply contrasts in both look and intent to Pomeroy's down-home hybrid practical application. Off-hand funkiness contrasts with slick fetishization.

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[61] DeMarinis, "The Boy Mechanic", *For A Burning World* 9.

[62] Later showings of *Turbo Pan* incorporated a lawn blower.

[63] The Hoover became such a success that in England it became the generic term for carpet cleaners. Its distributor, Hoover, knew nothing about carpet cleaners, but recognized a good idea when

Koons' extreme take on Duchampianism (by placing this familiar symbol of domestic efficiency in a display cabinet) demonstrates a nihilistic irony Hegel warned about.

> ...because irony sees the world as fundamentally ambiguous, it tends to condone an attitude of 'irresolution' and 'loss of seriousness' which inevitably leads to escapism and irresponsibility. Furthermore, Hegel contended, the ironic stance is shamelessly elitist, since the ironist believes the world is too complicated to change, he feels justified in withdrawing into a 'god-like geniality'. From this perspective above the fray, the privileged 'artistic fe', the cognoscenti, are inclined to 'look down upon the ordinary man as limited and dull'. ... the result, according to Hegel, is both a contempt for the masses and an inability to become involved in meaningful causes.[64]

Koons' work is known for its banality and lack of content; it is a celebration of the pervasiveness of ennui. His persona is cynical, slick and flippant, cleverly mocking the same audience and market he caters to.

Pomeroy's use of the same machine is more likely to provoke his audience to consider, "hey, what else could I do with this?" While he uses irony, Pomeroy does it with other intent. Pomeroy's work expands experience and suggests a pluralistic, multiple, synergistic reality, whereas Koons merely flattens possibility into fetish. In fact, the off-hand look and humor of Pomeroy's works could be seen as a reaction to the somewhat hermetic art-for-art's-sake lineage and preoccupation with style handed down from post-modernism and exemplified by Koons.

In relation to puns and their political use, Pomeroy's work follows a tradition recorded in 1927 here by Dr. John Ashton Paris, one of the inventors of the thaumotrope. His thaumotropes or "turning wonders" were designed to satirize contemporary politics through both riddles and pictures:

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presented by the inventor (who received no royalties from the deal). Bill Bryson, *Made in America*, (London: Secker, 1994) 28.

[64] G.W.F. Hegel quoted in David Gross "Irony and the Disorders of the Soul", *Telos* , (1977-78): 169.

> 'It is a small machine,' continued Mr. Seymour, 'which is calculated to deluge us with puns.' Mr. Seymour then displayed a pasteboard circle, on the one side of which was figured a rat, and on the other, a cage... No sooner had Mr. Seymour put the card in motion than the vicar, in a tone of the greatest surprise, exclaimed, "Magic! Magic! I declare the rat is in the cage!'
>
> 'And what is the motto?' asked Louisa.
>
> 'Why is the rat like an opposition member in the House of Commons, who joins the ministry?' replied Mr. Seymour.
>
> 'Ha, ha, ha, - excellent,' cried the major, as he read the following answer: 'because by turning round he gains a snug berth, but ceases to be free' [65]

What do we mean by irony? The *Oxford English Dictionary* defines it as a figure of speech in which the intended meaning is the opposite of that expressed. Irony as a concept can be recognized in literature written before it had a name (i.e. *The Odyssey* and *Beowulf* are cited to establish its antiquity) and the term (eironeia) was first recorded in Plato's Republic.[66] In the surge of philosophical and educational activity in mid-18th century Germany, irony became considered a way of life, as opposed to an affectation (in the case of Socrates) or a finite action. Led by Friedrich Schlegel and his brother August Wilhem, Ludwig Tieck and Karl Solger, it was considered the only reasonable stance for the thinking man confronted with the complexity, chaos and contradictions of contemporary life.[67]

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[65] John Ashton Paris, *Philosophy in Sport Made Science in Earnest, Being an Attempt to Illustrate the first principles of Natural Philosophy by the Aid of the Popular Toys and Sports*, vol. 1, (London: Longman, Rees, Orme, Brown and Green, 1827). Reprinted (Putney [VT]: Optical Toys) 6.

[66] For a description of the evolution of its use, see D. C. Muecke, *Irony and the Ironic*, (London: Methuen, 1970). Although a useful text, we could say it is ironic in relation to this text that Muecke contends, "Specifically it excludes any detailed considerations of irony in the non-verbal arts...partly for want of expertise, and partly - this will perhaps confirm the lack of expertise - on the grounds that there seem to be no ways of being ironical that are specific to music, painting, landscape gardening, kinetic art, patisserie and so on". He concludes that this is because of their reliance on the senses - an amazingly uninformed observation considering that the book was published in 1970 and again in 1982 amidst rampant post-modern discourse in the visual arts and elsewhere.

[67] Søren Kierkegaard, *The Concept of Irony, With Constant Reference to Socrates*, trans. Lee M. Capel, (New York: Harper, 1965) 338.

David Gross describes the four essential points of Romantic irony which developed in early 19th century Germany:

> First, the ironic attitude proclaimed an absolute separation between the self and the world, subjectivity and objectivity, *Innerlichkeit* and *Aktualitat*. Second, the ironic style accepted that living with contrasts and paradoxes was something to be taken for granted since these were part and parcel of the experience of life. Third, irony assumed that since the whole of existence was paradoxical it was naturally open to multiple interpretations none of which could be entirely correct. Lastly, irony eschewed direct involvement in reality since one could not get a firm grip on it anyway.[68]

The escalating pervasiveness of the ironic position in Western culture in the 1970's was probably a reaction to both the naiveté of the hippy movement of the 1960's and the obvious duplicity of corporate and patriotic posturing. This fits with D. C. Mueke's notion that:

> As skepticism presupposes credulity, so irony needs *alzony*, which is Greek for braggartism but in works on irony is shorthand for any form of assurance or naiveté. ...This suggests that irony has basically a corrective function. It is like a gyroscope that keeps life on an even keel or straight course, restoring the balance when life is being taken too seriously or, as some tragedies show, not seriously enough, stabilizing the unstable, but also destabilizing the excessively stable.[69]

It is an overgeneralization to argue that irony always leads to glibness, that it is a product of noncommittal attitudes and a negative view of life. As Lee M. Capel says in defense of Kierkegaard's essay *The Concept of Irony, With Constant Reference to Socrates*, "To say that the essay on irony is itself an ironic work, even a satiric parody, need not in any way militate against it also being the vehicle for serious meaning and the repository of philosophic value. Indeed, its essential jest is its existential pathos."[70]

While irony has become a pervasive, and sometimes debilitating attitude in the late 20th century, especially in many postmodern arguments, it does not necessarily lead to impoverished endgames, navel-gazing or elitism. Its use can provoke individual awareness, introduce a healthy subjectivity and understanding, and make false conceptions conspicuous.

Pomeroy's brand of irony uses incongruous juxtapositions and puns. But rather than being arcane, Pomeroy rewards his audience for participating in the puzzle and recognizing the conundrums. While Kierkegaard, like Hegel, was aware of the pitfalls, he also recognized positive aspects, "irony is more desirable than ignorance" and much less boring than many didactic presentations.

> Here it may be seen that the art of indirect discourse, as conceived by Kierkegaard, aspires to nothing so much as to create something out of nothing. To comprehend this much of the ideal significance of irony is to grasp its meaning as contradiction (ambiguity), its structure as dialectical, its medium the language of reflection, its style antithetical, and its aim self-discovery.[71]

The strategies of contradiction as employed by Bertolt Brecht and John Heartfield had a great influence on Jim Pomeroy. As he describes,

> The simultaneous comparison of contrasting evidence, to allow the viewer to 'decide for himself', is a rhetorical device that dates from the earliest applications of photography advertising. Acting out [countervailing] roles in cartooned transparency, a similar device, is a primal element of Bertolt Brecht's Epic Theater.[72]

Heartfield, Brecht and subsequently Pomeroy all effectively use the deadpan juxtaposition of obvious elements to clue their audiences into inherent

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[68] Gross 168.
[69] Muecke 97.
[70] Kierkegaard 36.
[71] Lee M. Capel quoted in Kierkegaard 36.
[72] Jim Pomeroy, "Captured Images/Volatile Memory/ New Montage", *Digital Photography*, catalogue, co-curated by Jim Pomeroy and Marnie Gillett, (San Francisco: San Francisco Camerawork, 1988) 2.

inconsistencies. On this function, Donna Haraway writes, "Irony is about contradictions that do not resolve into larger wholes... about the tension of holding incompatible things together because both or all are necessary and true" [73]

This heightened awareness of complexity counteracts fundamentalist approaches to rhetoric and politics (both personal and institutional) which often attempt to convince that there is a monolithic response to events. Pomeroy writes in response to the images of John Heartfield, constructed in resistance to Nazism during WWII,

> As practiced by radical artists like Heartfield, photomontage became meta-photography, resonating with layers of language, association, reflection, irony, and unambiguous conclusions. Skillfully blended, these satiric constructions (or deconstructions, rather) continue to confront contradictions in the present, didactically exposing the plasticity of manipulable information. Ideally, one is stimulated and wary, informed and empowered.[74]

Pomeroy and DeMarinis are neither straight gear heads celebrating the endless benefits of technology nor do they have a nihilistic, phobic or doomsday approach. Their methods could be posited as an example of the recent maturing of artistic approaches to technology. These works can sit uncomfortably between the fine art academy with their low opinion of techno-nerds and distrust of what they consider to be contentless art and the world of the slick technologists. In their book *Technoculture*, Andrew Ross and Constance Penley include artists such as DeMarinis and Pomeroy as examples of techno-culture activists in company with Star Trek fans, Japanese technoporn producers, teenage hackers, AIDS activists, rap groups, pregnant women, video and media activists, rock stars, and science fiction writers... theorists, activists, artists, and scholars pressing for more, rather then less, technoliteracy, "a crucial requirement not just for purposes of postmodern survival but also for the task of decolonizing, demonopolizing, and democratizing social communication" [75] Pomeroy and DeMarinis are examples of artists bridging

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[73] Donna Haraway quoted in Sherry Turkle, "Who Am We", *Wired*, (1996): 8.
[74] Pomeroy, "Captured Images" 2.
[75] Penley and Ross, *Technoculture* xvi.

the gap in philosophies with a realistic approach; one that doesn't succumb to the image of ineffectual victims acted upon by the corporate body.

While it is obvious that most developments do come from the corporate-industrial-military complex, it is important that artists engage, otherwise it will all be left to technocrats. This is echoed in J. G. Ballard's observation that "Science and technology multiply around us. To an increasing extent they dictate the languages in which we speak and think. Either we use those languages, or we remain mute."[76] As A. D. Coleman says, "McLuhan, the Henry Adams manqué of the 1960s, means what he means as well as what he says. 'The medium is the message', one of his most quoted and most felicitous phrases, has an obvious implication which those who bandy his words about steadfastly refuse to recognize; namely, that any message, in any medium, must be analyzed, interpreted, and evaluated, in order for communication to take place...."[77]

Penley and Ross also contend that the critical left should spend more time developing educated countercultures than lamenting and debating the effects of technology on our own and other cultures. After all, even though it is widely acknowledged that much of the technological tools in circulation were developed for militaristic and capitalistic purposes and practices "precisely aimed at deskilling, information gathering, surveillance, and the social management of large populations" and "seldom in the name of community participation and creative individual autonomy", the fact remains that people want technology. The technological drive is one that is fueled in part by popular needs and desires. Penley and Ross write,

> Technologies are not repressively foisted upon passive populations, any more than the power to realize their repressive potential is in the hands of a conspiring few. They are developed at any one time and place in accord with a complex set of

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[76] Quoted in Drery 24.

[77] A.D.Coleman, *The Digital Evolution, Visual Communication in the Electronic Age: Essays, Lectures and Interviews 1967-1998*, (Tucson: Nazraeli Press, 1998) 34.

> existing rules or rational procedures, institutional histories, technical possibilities, and last, but not least, popular desires.[78]

Likewise, even though we often yearn for simpler times, we seem to choose mania over boredom every time as reflected in Stephen Kern's observation, "The historical record shows that humans have never, ever opted for slower."[79]

C.P. Snow believes distrust of the scientific revolution (substitute "technological development") is a legacy of the Luddites and intellectuals who hated the industrial revolution. "It is all very well for one, as a personal choice, to reject industrialization - do a modern Walden, if you like, and if you go without much food, see most of your children die in infancy, despise the comforts of literacy, accept twenty years off your own life, then I respect you for the strength of your aesthetic revulsion."[80]

In *Two Cultures and the Scientific Revolution*, 1959, Snow laments against what he sees as an unhealthy polarization of two views, represented in his example by the schism between scientists and writers. Scientists are perceived as shallowly optimistic and unaware of man's condition and intellectuals as totally lacking in foresight, anxious to restrict both art and thought and unconcerned with fellow men.[81]

Pomeroy and DeMarinis definitely have what Snow would call an "integrated attitude". However, Pomeroy declares Snow's description of the science/humanity split as alive and well in its "internal ivory tower prejudice" [82] He has experienced the difficulties of functioning between the sectors amidst the contemporary science/humanities rift.

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[78] Penley and Ross, *Technoculture* xvi.
[79] James Gleick, "Faster Than the Naked Eye", *Good Weekend, Sydney Morning Herald*, (1999): 40.
[80] C.P. Snow, *Two Cultures and the Scientific Revolution*, (New York: Cambridge UP, 1959) 59.
[81] Snow 46.
[82] Snow 46.
[82] Pomeroy, "Black Box S-Thetix" 277.

Many examples of this continuing schism could be cited in art schools, art/science museums, government funding and universities. Funding for science, engineering and medical initiatives vastly exceeds humanities budgets. Protective art academies are suspicious of forms of electronic art making as an undisciplined threat to traditional craft.

> ...they felt that traditional art pedagogy was threatened by visual electronics and viewed as a violation of sacred craft and media, and as an intrusion from the alien realm of science and industry. This Luddite paranoia can be seen as the academic reciprocal to the general corporate distrust of bohemian artists, egghead intellectuals, and other aesthetic court jesters. Such mutually exclusive attitudes further attenuate the narrow landscape for artists working with technoculture.[83]

Most fine arts institutions have taken on the challenge of new technologies since Pomeroy's comments, in spite of ongoing territorial issues. However, there is still an ongoing battle to recognize and encourage original thought and conceptual development over the mechanics of the apparatus (which perpetuates the gear head approach to art making that Pomeroy railed against).

In their tribute to Jim Pomeroy, Timothy Druckery and Nadine Lemmon write:

> As the visual world is increasingly virtualized by the spin-off technologies of militarization and by the violence of entertainment, the significance of Pomeroy's work increases. Undaunted by inaccessible state-of-the-art equipment, he made do situating creative criticism in the demystified objects of the kitchen, the garage, and the omnipresent Radio Shacks.[84]

Jim Pomeroy challenged us to become more aware of the rhetoric and duplicity surrounding our technological and political lives. However, he leaves us not with a bitter taste in this realization, but with a sense of hilarity and empowerment from which to launch our own thinking projects.

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[83] Pomeroy, "Black Box S-Thetix" 279.
[84] Lemmon and Druckrey iii

> One man's museum is another man's graveyard
> is another's goldmine is another's dungheap
> is another's pretension is another's encyclopedia
> is another's holy shrine is another's balance sheet ...
> promotional display ... conqueror's trophy case ...
> cultural atrophy index ...social registry ...reliquary ...
> hall of fame ... wall of frames ... hollow games ...[85]

Pomeroy chooses a vocabulary of technological and rhetorical recycling - using redundant or marginalized technologies, such as 3-D techniques to provide an accessible, yet marvelous point of departure for his artistic and political musings.

In the next chapter, Ellen Zweig re-animates the camera obscura effect and phantasmagoric techniques to consider a range of issues pertaining to representation, gender and storytelling.

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[85] Jim Pomeroy, *It's Only a Baby Moon*, 1983, published in "Introduction, Jim Pomeroy: Avenger of the Avant-garde", Susan Miller, *Jim Pomeroy: A Retrospective*, catalogue, (San Francisco: New Langdon Arts, 1999) 5.

Chapter 4

When is a house also a camera?[1]

The prettiest landskip I ever saw was one drawn on the walls of a dark room.
Joseph Addison (1712)

But how can you look at something and set your ego aside? Whose eyes are doing the looking?
Italo Calvino

As discussed in chapter 1, the camera obscura has been a source of wonder, a model for the functioning of the eye, a fundamental inspiration for optical studies and a metaphor for the philosophical outlook on an idealized world perceived by an objective viewer. The camera obscura also stimulated the development of perspective - and photography arrived when the image seen in the camera obscura could be affixed to light-sensitive materials.

In this chapter, further historical details relating to this optical device will be described briefly, its contemporary relevance outlined and artists who have incorporated it emphasized, with particular focus on the installations, performances and events by Ellen Zweig (who is also a composer, writer, and videographer). Within her oeuvre, the technology of the camera obscura does not become the sole message or one-line attraction, but is woven into a rich and multi-layered quest to expand our apprehension of history, gender and perception. Following the discussion of Zweig's use of the camera obscura, her use of phantasmagoria will be also be considered.

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[1] From Misha Berson, "Through a Glass, Brightly: Performance Art at Ocean Beach", *San Francisco Examiner*, June 15, 1986: 38. Also, this title could refer to Fox Talbot's account of making photographic representations of his house: "And this building I believe to be the first that was ever know to have drawn its own picture", quoted in Geoffrey Batchen, *Burning With Desire: The Conception of Photography*, (Cambridge: MIT, 1997) 66. Talbot's mansion, Lacock Abbey, has become somewhat of a pilgrimage site for photographers; we knew so many Sydney photographers who had photographed their version of *Latticed Window* that Sydney artist Simone Douglas has suggested an exhibition featuring them.

The properties of the camera obscura effect were described in China as early as the 5th century BC. Aristotle registers one of the earliest accounts almost 2400 years ago: while under a plane tree during a solar eclipse, he noticed a myriad of tiny dancing half-moon shapes.[2] He realized that the holes created between the overlapping leaves were acting as apertures to invert and project the eclipsed image of the sun.[3]

Among the first to do a sustained investigation of the behavior of light with the camera obscura effect was Arabian philosopher Alhazen and his followers in the 10th century - they concluded that light rays cross without intermingling.[4] Like Alhazen, Leonardo da Vinci was preoccupied by the particulars of light revealed in the camera obscura and, as mentioned previously, used this as a model for the functioning of the eye. Here he declares,

> O marvelous necessity ... O mighty process. Here the figures, here the colours, here all the images of the parts of the universe are reduced to a point... Forms already lost can be regenerated and reconstituted.[5]

Leonardo's description of the mechanism is clear and still relevant:

> When the images of illuminated objects pass through a small round hole in to a very dark room, if you receive them on a piece of white paper placed vertically in the room at some distance from the aperture, you will see on the paper all those objects in their natural shapes and colors. They will be reduced in size, and upside down, owing to the intersection of the rays at the aperture. If these images come from a place which is illuminated by the sun, they will seem as if painted on the paper, which must be very thin and must be viewed from the back. The hole should be made in a piece of very thin sheet iron.[6]

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[2] A carpenter friend realized the camera effect for the first time in much the same way while lunching under a tree during a solar eclipse in Lehigh, Iowa, 1994.

[3] For accounts of the history of the camera obscura, see Hammond, and Gernsheim and Gernsheim.

[4] Kemp 189 and Hammond 5. Remarkably, Hammond mentions that no references to the camera obscura could be found in the 11th and 12th centuries.

[5] C. Ashwin, *Drawing and Education in German Speaking Europe*, (Ann Arbor, University of Michigan Press, 1981) 345.

[6] Quoted in Gernsheim and Gernsheim 4.

Although the camera obscura had been discovered centuries earlier, it wasn't widely known until the 16th century when Giovanni Battista della Porta, often incorrectly credited with its invention, published *Natural Magick* (1558). It was an enormously popular and influential book and was followed by many editions that encouraged a broad audience to consider the magic of science. Even as late as 1887, W. Jerome Harrison cited della Porta as the inventor of the camera obscura. When confronted with proof that della Porta had only perfected the device, he argued that Galileo and James Watt were known as inventors even though they had only 'perfected' the telescope and steam engine. Harrison declared, "Inventing is like making love; no man can feel sure of having been 'the first'" [7]

Various "perfections" in relation to the camera obscura included the addition of a lens in the mid-16th century. While this limited the depth of field (with a simple small aperture the depth of field is infinite) to a reduced area adjacent to the focal plane of the lens, it provided a brighter and more highly focused image. Optical improvements and the addition of reflecting mirrors, a second lens for re-inverting the image and portable versions of the apparatus were subsequently developed.

There is much lively speculation as to whether 17th century Dutch artists, especially Vermeer, enlisted the camera obscura in their realist naturalist paintings, and it was probably used in the work of the Italian painter Canaletto.[8] Its practical uses were many and varied... as an aide to detecting sunspots in 13th and 14th century Europe, to its prolific use as a drawing tool in the 17th and18th centuries.

In reference to the camera obscura, German mathematician Erasmus Reinhold describes in Georg Peuerbach's 1542 *Theoricae novae planetarum*, "the same method of observing eclipses, remarking that by this means one can see things

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[7] W. Jerome Harrison quoted in Hammond 131.

[8] For a discussion of the probability of the camera obscura's use by various artists, see Kemp. See also Svetlana Alpers, *The Art of Describing: Dutch Art in the Seventeenth Century*, (Chicago: University of Chicago Press, 1983). Recently, David Hockney presented his thesis that artists since the 15th century in Northern Europe regularly used optical devices in *Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters*, (New York: Viking Studio, 2001) a book which met with broad publicity - and skepticism from many art historians.

going on in the street as well" [9] Indeed, it was used for police surveillance on the city squares in London in the 19th century. Perhaps this use is what Foucault was referring to when he described the changing relationship to sight and surveillance brought about by the introduction of prison panopticons, "The seeing machine was once a sort of dark room into which individuals spied; it has become a transparent building in which the exercise of power may be exercised by society as a whole."[10] We can laugh in hindsight at this "look into the future" taken from a magazine of the 19th century: a "Camera obscura for offices - much needed by business men" [11] The accompanying drawing depicts a suited man poking his head through an opening (to the left of his desk) into a darkened room - to view his employees idly lazing about on the screen inside. Hammond points to the similarity of this simple method to closed circuit television.

Indeed, in its simplicity, the contemporary camera obscura could be seen to mock other forms of more sophisticated surveillance technology. As the owner of a major Sydney surveillance company exclaimed when ushered into a simple lens-less camera obscura I'd installed in a small room at Sydney College of the Arts, "I don't believe it! I invest in thousands of dollars worth of equipment to provide surveillance and this is done with a hole in the wall!"

The camera obscura reached the peak of its popularity in the19th century. Portable models were popular as an aide for drawing the landscape and camera obscura viewing towers were installed in parks, homes and observatories throughout the Western world. Wonderful 19th century tower obscuras are still in working order on the Isle of Man, in Dumfries, Portslade, Aberystwyth, Edinburgh, Greenwich and Bristol in the United Kingdom, and Cadiz, Spain, and more recent versions can be visited in Santa Monica and San Francisco, California.[12] Smaller versions are accessible at museums of science and photography around the world.

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[9] Erasmus Reinhold, *Theoricae novae planetarum Georgii Purbachii Germani ab Erasmo Reinholdo auctae*, (1542) in Gernsheim and Gernsheim 3.

[10] Foucault 2.

[11] *Horizon* 1974, Vol .6:3 in Hammond 132.

[12] This list is not exhaustive. For a guide to existing camera obscuras, see Mike Feist, *Pocket Guide to Camera Obscuras of Britain and the World*, (Hove Borough Council, 1995).

As recently as WWII, the Royal Australia Air Force used both portable and permanent camera obscuras for measuring the accuracy of simulated bomb drops,[13] and today it is enlisted in high-energy physics to image X-rays and gamma rays.[14] Colonel Gaddafi reportedly was once interested in constructing a camera obscura with sophisticated optics for surveillance in his desert stronghold in Libya. Its non-electronic capability would have allowed it to escape detection and survive electrical black-outs.[15]

The camera obscura remains a peculiar item, however - somewhat like the Aeolian harp and 3-D. Since they have never really found a firm practical role in the scheme of things, generation after generation can rediscover their features. In the last several decades, the camera obscura effect had almost disappeared from general public awareness (with the exception of the towers mentioned previously); however, recent revivals of the device prove that the response to the phenomenon does not appear to have diminished with time or the sophistication of subsequent technologies. From the earliest accounts, witnesses have been awed, intrigued and entertained by the effect.

What is the difference between looking with our eyes across the street or shuttering a room down to a minute opening and gazing at the image then formed? Why look at someone with a telescope, when you could sit next to him or her?

With the telescope, the vignetted view becomes an intense subject of regard; through selective focus objects are pulled out of their background, brought to the foreground and privileged. This contrasts with the camera obscura; due to the infinite depth of field offered by a hole as lens, there is no pre-eminence of focus or depth; everything appears as if on the same plane. This altering and amplifying of vision continues to lure us. Kemp writes:

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[13] Hammond 153.

[14] Eric Renner, *Pinhole Photography: Rediscovering a Historic Technique,* (Newton, [MA]: Focal Press, 1995) 18.

[15] Based on a personal interview with an Australian scientist who chose to remain anonymous. Adelaide, South Australia, 1996.

> A camera obscura image of reasonable quality does possess a special visual 'feel' It produces condensed enhancement of tone and color, providing subtle intensification without harshness or glare. Nuances of light and shade which seem too diffuse or slight to register in the original scene are somehow clarified, and tonal effects gain a new degree of coherence. The shapes of forms, miniaturised in such a way that they seem to be condensed to their very essence, acquire a crystalline clarity. Striking juxtapositions of scale at different planes, of which we remain largely unconscious in the actual scene, become compellingly apparent.[16]

While Kemp articulately describes the visual properties of the camera obscura image, we might ask, what are the emotional, psychological effects of the experience? It is often described as akin to entering an internalized space from which to view a distant world.[17] The landscape is mute; its silence audible. This experience of soundlessness contributes to feelings of distantiation, detachment. The viewer's position becomes consciously "apart" from the scene being viewed. Henri Bergson's passage here, written in reference to photography, could also be applied to the activity of the camera obscura: "Instead of attaching ourselves to the inner becoming of things, we place ourselves outside them in order to recompose their becoming artificially."[18]

While viewing an image formed in the camera obscura, I also recall Bryson's words, "The screen casts a shadow of death... The screen mortifies *sight*..."[19] There is an acute sense of loss - a realization of the impossibility of sustaining this experience, one I strongly felt the first time I viewed the Sladanowsky brothers' film, *Kindergruppe Ploetz-Lorello*, where young girls perform a beautiful peasant dance in a suburb of Berlin for the early film camera - or while watching a group of schoolgirls projected on the curved horizontal screen at my waist level from the heights of the Bristol camera obscura tower.[20] It is no wonder that almost since the

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[16] Kemp 193.

[17] From which this joke might have sprung: what is a stomach camera obscura called? A womb with a view.

[18] Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell, (New York: Holt, 1911) 322.

[19] Norman Bryson, "The Gaze in the Expanded Field", *Vision and Visuality*, ed. Hal Foster, (Seattle: Bay Press, 1988) 92.

[20] The Lumiere's first public showing was in December, 1895 - the Sladanowsky brothers showed this and 8 other film strips in their Wintergarten-Programm in November, 1895. Barret Hodsdon, *The Dawn of Cinema: 1894-1915*, catalogue, (Sydney: Museum of Contemporary Art, 1996) 27.

inception of photography, then cinema, links have been made with the notion of death (from Ralph Waldo Emerson in 1841 to more contemporary musings by Roland Barthes).[21]

There is detachment, but also a strange and exquisite intimacy experienced while viewing these images in the darkened room; this intimacy is not reciprocated by the unsuspecting pedestrians below. While our psychological interiority is accentuated, we simultaneously become voyeurs.

Contemporary audiences register genuine excitement at being able to see the direct mechanics of the optical phenomena as opposed to the hidden, more inaccessible workings generally encountered in the digital realm. The intensity of the color (or that it is "in color" at all), the strange inversion and the movement provoke additional exclamations of wonder.

We can have a fresh, contemporary experience of a phenomenon known for over two millennia. Its importance in former eras is underscored in Frances Terpak's observation, "When standing in a room camera obscura or with the device in hand, individuals possessed their own moving images, long before the modern film and video industry would make that a commonplace."[22] This yearning to further "possess" the beauty naturally inscribed on the screen, to retain the intimacy of close, unobserved scrutiny is notable - and understandable. It is no wonder so many proto-photographers were inspired to find a means to "possess" or record the fleeting, pristine and ultimately ephemeral scene displayed within such intimate proximity to the perceiver.

In *Burning with Desire*, Geoffrey Batchen emphasizes the importance of the camera obscura to the invention of photography:

> The camera obscura looms large in traditional historical accounts of photography's invention. And with good reason. Almost every one of the proto-photographers,

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[21] Jay 134.

[22] Frances Terpak, "Théâtre de l'univers", *Devices of Wonder: From the World in a Box to Images on a Screen*, catalogue, eds. Barbara Stafford and Frances Terpak, (Los Angeles: Getty Research Institute, 2001) 313.

> including Brougham, Wedgwood, Niépce, Morse, Daguerre, Hubert, Talbot, Wattles, Bayard, Florence, and Zapetti, spoke of their desire to photograph primarily in relation to the image formed within a camera obscura.[23]

This aspiration to hold the transient view in the camera obscura is reconstructed here by William Henry Fox Talbot (inventor of the first paper negative form of photography in 1839) in his evocatively titled *Pencil of Nature*.

> One of the first days of the month of October 1833, I was amusing myself on the lovely shore of the Lake of Como, in Italy, taking sketches with Wollaston's Camera Lucida, or rather I should say, attempting to take them: but with the smallest possible amount of success....
>
> I then thought of trying again a method which I had tried many years before. This method as, to take a Camera Obscura, and to throw the image of the objects on a piece of transparent tracing paper laid on a pane of glass in the focus of the instrument....
>
> Such, then, was the method which I proposed to try again, and to endeavor, as before, to trace with my pencil the outlines of the scenery depicted on the paper. And this led me to reflect on the inimitable beauty of the picture of nature's painting which the glass lens of the Camera throws upon the paper in its focus - fairy pictures, creations of a moment, and destined as rapidly to fade away.
>
> It was during these thoughts that the idea occurred to me ... how charming it would be if it were possible to cause these natural images to imprint themselves durably, and remain fixed upon the paper![24]

What is the difference between a camera obscura and a photographic camera?

A camera obscura can become a camera by using light-sensitive paper or film opposite the hole or lens of the box or room and configuring an exposure system for controlling the amount of time the path of light is opened and closed.

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[23] Batchen, *Burning With Desire* 78.
[24] Talbot in Batchen, *Burning With Desire* 34.

Photography was invented when methods were developed for successfully affixing the image formed in a camera obscura onto light-sensitive material.

Fox Talbot in England and Louis Daguerre and Niépce in France claimed the invention of photography almost simultaneously around 1839. But what is not widely understood is that droves of inventors were convinced that they should have had the honors, as evidenced by this list compiled by Pierre Harmant in the 1830s:

> Twenty-four persons claimed to have been the inventor of photography as from 1839 and can be grouped thus: Seven Frenchmen: Niépce, Bayard, Daguerre, J-B Dumas, Desmarets, Vérignon, Lassaigne; six Englishmen: Talbot, the Rev. J. B. Reade, Herschel, Fyfe, Mungo Ponton (to the English section of this list there should perhaps be added a mysterious ecclesiastic who goes under the pseudonym of Clericus); six Germans: Steinheil, Kobell, Breyer, Hoffmeister, von Wunsch, Liepmann; an American: Samuel F.B. Morse; a Spaniard: Zapetti; a Norwegian: Winther; a Swiss: Gerber, and finally a Brazilian: Hercules Florence. Quite a list for a single discovery in so short a time! [25]

What is even more remarkable about the synchronicity of these discoveries is that the chemical and optical ingredients for photography had long been available.

> Considering that knowledge of the chemical as well as the optical principles of photography was fairly widespread following Schulze's experiment [in 1725]... the circumstance *that photography was not invented earlier remains the greatest mystery in its history*.... It had apparently never occurred to any of the multitude of artists of the seventeenth and eighteenth centuries who were in the habit of using the camera obscura to try to fix its image permanently.[26] (Italics mine.)

In *Burning with Desire: The Conception of Photography*, Geoffrey Batchen traces the scientific and philosophical circumstances from which the "desire" for photography finally emerged in the late eighteenth century to became a social imperative in the early nineteenth century.

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[25] Pierre Harmant, "Anno Lucis 1839: 1st Part," *Camera* 5: 39 (May 1977) in Batchen *Burning With Desire* 35.
[26] Gernsheim and Gernsheim 6.

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As has been mentioned, for most of the 20th century, the camera obscura receded - to relative "obscurity" It re-emerged when pinhole or lens-less photography became popular in the art school climate of the 1970s, when alternatives to the rigidity of the standard camera formats produced by manufacturers were being sought. Pinhole photography resurfaced alongside other resurrected techniques, such as brushed on emulsions (Vandyke brown, cyanotypes, gum bichromates, liquid light) and hand-applied color; these relatively gestural forms allowed photographers to fulfill their desire for a personalized touch in the execution of an image. An entire magazine, *The Pinhole Journal*, is devoted solely to pinhole photography, and many lecturers now assign pinhole camera construction and operation as an effective and compelling pedagogical tool for grasping the basics of photography.[27]

Notable amongst artists using the camera obscura as a pinhole camera is Steven Pippin, a British photographer whose process and content, camera vessel and subject, are humorously and intrinsically linked. One work he "performed" as a student at Chelsea in a toilet stall (recorded on film in *Follies of an Amateur Photographer,* 1987) (figure 29, 30). The toilet bowl became the camera body and "exposed" his portrait in the privacy of the stall, then became the processing vessel as the exposed paper was "flushed" through the various chemical stages. In *Laundromat Pictures* (1991), a commercial laundry was the site where a washing machine became both camera (by fitting a pinhole lens system over the front window of the machine) and processing tank (figure 31, 32). Following their development "cycle", the B/W images (figure 33) appear scratched and gouged, testimony to their tumultuous washings.

Pippin's "instruments of waiting" (as his cameras converted from bathtubs, wardrobes, toilet bowls and washing machines are described by Brian Catling)[28] are in the spirit of the Victorian chimeras that combined walking sticks, sedan chairs, books, guns and hats with the camera, the bicycle with the shower, etc.. In another

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[27] *The Pinhole Journal*, edited by Eric Renner, Sante Fe, New Mexico.

piece, *House Converted into a Pinhole Camera,* Pippin stands directly outside of a house fitted with a pinhole for eight hours while he and the direct surroundings of Cerkenwell, London, are inscribed on the opposite wall (13'x20') inside. This performance recalls another act of self-portraiture described by Talbot: "And this building I believe to be the first that was ever know to have drawn its own picture" [29]

In Cuban-American photographer Abelardo Morell's series of poignant photographs, he uses an eight-hour to two-day exposure with a large-format camera to document the camera obscura image created in individual private spaces, allowing the outside world to become permanently inscribed across the internal space in a disconcerting mix of public and private. For instance, a Manhattan bedroom is converted into a camera obscura (simply by rendering the room light-tight and adding a single hole onto a brightly lit scene) in which the phallic shape of the Empire State Building is draped across a carefully made bed (1996). Also featured are the Grand Tetons inside a hotel room, while in another image a Massachusetts's neighborhood is projected into his son's bedroom.[30] The effect is startling, formally stunning and disturbing.

Just after the fall of the Berlin Wall in November 1989, German artist Marcus Kaiser[31] traveled to Berlin and used a surviving section of the wall as a camera in *Wall Views* (figure 34, 35). Pre-existing holes that had been picked into the wall became the openings in which he inserted a pinhole camera that could face both east and west. The jagged edges of these holes also irregularly frame bleak streets and lifeless architecture. Tellingly, the scene is similarly desolate whether you are looking east or west. The images become testament and document - of a changing time and space.

While there are many artists using pinhole cameras, these few are cited because they deftly combine the archaic device with contemporary environments to create meaning between the context and the apparatus. However, the focus of this

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[28] Brian Catling, "Mutt's New Pin" *Steven Pippin: The Rigamarole of Photography,* (London: Institute of Contemporary Art, 1993) 19.

[29] Batchen, *Burning With Desire* 66.

[30] <<http://www.mfa.org/pressroom/morell/release.html>>

[31] Dr.Réné Hirner at <<http://www.cake.de/kaiser/wallviews.html>>

chapter is not to concentrate on the camera obscura as a recording device, but on the direct experience it provides the viewer independent of electronic or reproductive mediation.

In this context, I will discuss the work of Ellen Zweig (U.S.), an artist who occasionally enlists the camera obscura in her performance and installation works. Zweig is a performance artist, writer, composer and poet who has been creating biographical works since 1984.

Obviously, the camera obscura is much older, but Zweig's work refers to its use in a 19th century context - not out of nostalgia, but to emphasize our immediate connection to the media of the 19th century. As Zweig acknowledged, "I am trying to evoke the nineteenth century, partly because it is the basis for so much of what we are."[32]

Zweig's *She Traveled for the Landscape* is part of a larger body of performance works entitled *Ex(Centric) Lady Travelers* which portray experiences of Victorian women who traveled alone, including *We Must All Be Explorers*, featuring Alexandra David-Neel, a Victorian scholar who traveled through Tibet.

She Traveled for the Landscape (1986) was a performance based on the life of Marianne North (1830-1890), a Victorian English painter who traveled the world painting tropical fauna (figure 36). Crucial to this discussion of Zweig's work and to the impact of the performance was the site - *The Giant Camera* at Seal Rocks in San Francisco (a modern, optically brilliant camera obscura placed between the popular tourist attraction, Cliff House, and the pounding Pacific Ocean); a site where North actually spent a day sketching in 1876. As in many of the Victorian tower camera obscuras, the outside view is collected (via a lens / mirror system atop the building which can be rotated 360 degrees) and projected down onto a white parabolic table in the darkened space (figure 39).

In Zweig's piece, ten performers in Victorian costume, including North's character, negotiated the outdoor space with choreographed poses and movements (figure

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[32] Ellen Zweig in Berson 38.

37). Upon entering the internal space of the camera obscura, the audience (intermingled with standard Seal Rocks tourists) observed the performer's movements within the stunningly picturesque scene projected before them.

An audio-taped montage of snippets from North's autobiography, John Hammond's *The History of the Camera Obscura* and F. Kingdon Ward's *Modern Exploration* (chronicle of famous voyages of discovery) accompanied the performed image.[33] The fragmented texts are layered and repeated, at times by a number of voices, to create a soothing, mimetic effect. From inside the camera obscura, Zweig (also dressed in period costume) controlled the framing of the image on the screen, moving the lens to follow the activity outside often in relation to the spoken text or to follow the action of the performers.

In "Whose Life Is It Anyway?" Christine Tamblyn discusses four artists in whose work "biography serves as the perfect vehicle to examine postmodern concerns about the illusory notion of personal identity, an identity that was constructed by the bourgeois culture of emergent capitalism and seems to be undergoing a schizophrenic disintegration in our era" [34] Tamblyn, like other reviewers, consistently focuses on the structure and performance of Zweig's text as an effective alternative to the narrative theatricality of modernist presentations:

> Trained as a poet, Zweig was influenced by Charles Olson's ideas about projective verse. Her search for an accurate way of notating oral poetry dovetailed with her interest in the minimal music of Phillip Glass and Steve Reich. Thus, she developed a compositional technique that privileges the sound of words over their meanings. A prosaic line like 'the small hole made by crossing the fingers of one hand over the other' becomes mysteriously de-familiarized when it is wrenched from its original context, an explanation of the optics of the camera obscura. North's project of 'painting fast and hard to catch the flying movement' merged with Zweig's maneuvers as she framed the performers within the rotating confines of the luminous disc.[35]

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[33] For the description of the event, I have relied upon reviews and discussions with Ellen Zweig and my experience of the *Giant Camera* at Seal Rocks.

[34] Christine Tamblyn, "Whose Life Is It Anyway?", *Afterimage*, 1987: 24.

[35] Tamblyn 24.

Zweig's work could be extensively discussed in relation to postmodern biographical text and performance, but I am specifically interested in the strategic importance of the technical apparatus of the camera obscura in destabilizing notions of traditional narrative and visual submersion in favor of a model of fractured subjectivity. The anachronistic use of the archaic optical device in combination with the period clothing in a contemporary setting is wonderfully consistent with the telling of a Victorian woman's story - especially that of a traveler. By offering numerous vantage points (there is no fixed view as the audience may move among the performers over a large "stage", peer from the overlooking Cliff House or enter the camera obscura), the fragmentation, then conflation between the real and imaginary, allows the characters to float in time and space, both figuratively and physically. The intermingling of actors and tourists, both in the outdoor space and on the table of the camera obscura, adds to the confusion and displacement as the viewers attempt to locate themselves within this schizophrenic matrix. All (or nothing) in a camera obscura is privileged, collapsed, served on the same plane. Zweig's control of the framing of the "stage/landscape" which appears in the camera obscura allows her to manipulate, choreograph and punctuate the relationships between image, movement and text; and unlike traditional theatre or still photography, the audience is privy to her framing process.

In another reincarnation of *She Traveled for the Landscape* (1986), the audience (four at a time), accompanied by Zweig in Victorian costume, entered a mule-drawn stagecoach that had been converted into a camera obscura. For twenty minutes they were steered through the streets of Houston by two cowboys. The anachronistic transportation/visual apparatus is beautifully and humorously compatible with the time period realized by Marianne North's character. Former beings and events were brought to life through a combination of audio-tape, technology and image. Perception was amplified and transformed - and time and place compressed - in a confusion of distance, immediacy and mediation. The archaic technologies of the stagecoach and the camera obscura assisted in effectively enlivening a historical incident (and redressing gender stereotyping) while simultaneously providing a fresh perceptual rupture.

The same audio-taped text from *The Giant Camera (Seal Rocks)*, which started, "The time has long since passed since these words have had any meaning,"[36] offered a poetic, rap accompaniment to the isolated, severed images of Houston arbitrarily framed and projected in causal relation to the direction of the mule's hooves. Hinting at time-travel or a drive-by, pinhole movie, this submerged the viewer in an empathetic experience of the 19th century landscape artist.

Zweig's theatrical use of the camera obscura has a curious historical precedent in the work of Giovanni della Porta. As discussed earlier, the camera obscura served della Porta as a way of producing visions to delude his spectators. Helmut Gernsheim says of della Porta's camera obscura events, "He arranged elaborate theatrical productions on a sunlit stage just outside the dark room, with scenery, actors in costume, models of wild animals moved by children inside them, music, etc."[37] Martin Kemp adds, "By projecting scenes of battles, strange animals, or diabolical apparitions into a darkened room, a skilled operator would be able to evoke feelings of wonder and terror in its innocent audience" [38]

Zweig's presentation has little to do with della Porta's desire to delude or terrorize, but more with a desire to illuminate. The re-exposure of the camera obscura works for the phenomena of light in the 1990s in much the way Australian artist Joyce Hinterding's work has functioned in the electrical environment. Describing the work, *Siphon*, Pam Hansford writes,

> ...Using 300 specially constructed Leyden jars, an 18th century invention which demonstrates the possibility of storing electricity in insulated containers. Each acts temporarily like a battery as the containers 'fill' with electricity and then 'empty'. The artist has amplified this process so that a phenomenon, normally neither seen nor heard, is made evident. Although we are totally immersed in electronic culture, and depend upon it to an extraordinary degree, we are generally unaware of the underlying nature of ordinary utilitarian structures. We know these things work only because they function; the flash of light and the flicking of a switch requires a leap

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[36] William Steen, *Artscene*, Summer, 1986.
[37] Gernsheim and Gernsheim 5.
[38] Kemp 191.

> of faith, and any experience of the electrical phenomenon which makes it all possible is essentially absent.[39]

Zweig, like Hinterding, fuses the technological and the poetic, allowing metaphors to be stirred by the medium and the context in which they are used.

Zweig's proposal, *Mentor,* (figure 44) describes the extensive painting excursion in 1880 of British painter Marianne North who traveled to Albany, Western Australia. There she met Ellis Rowan. The two women spent several weeks painting together in that region.

For *Mentor*, Zweig enlists three tent camera obscuras similar to a type which has been credited to Kepler, with a revolving reflector and lens at its apex which could be conveniently dismantled for transporting from one site to another.[40] While Zweig's apparatus may resemble the practical device applied to topographical surveys - civil, military and artistic - the use to which she puts them is more akin to time travel.

Sir Henry Wotton, traveler and diplomat, describes a portable tent camera obscura in 1620, "a pretty thing", used by astronomer Johannes Kepler for his survey of Upper Austria in his capacity as Imperial Mathematician:

> In this man's study, I was much taken with the draught of a Landskip on a piece of paper, methoughts masterly done: Whereof enquiring the Author, he bewrayed with a smile it was himself, adding he had done it *non tanquam Pictor sed tanquam Mathematicus.* This set me on fire: at last he told me how. He hath a little black tent (of what stuffe is not much importing) which he can suddenly set up where he will in a field, and it is convertible (like a Wind-mill) to all quarters at pleasure, capable of (accommodating) not much more than one man, as I conceive, and perhaps at no great ease; exactly close and dark save at one hole, about an inch and a half in the Diameter, to which he applies a long perspective-trunke, with the convex glass fitted to the said hole and the concave taken out at the other end, which extendeth to about the middle of this erected Tent, through which the visible

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[39] Pam Hansford, "Joyce Hinterding, Siphon: Conjuring on the Electrical Grid", *Perspecta,* catalogue, (Sydney: Art Gallery of New South Wales, 1991) 54.

> radiations of all the objects without are intromitted, falling upon a paper, which is accommodated to receive them; and so he traceth them with his Pen in their natural appearance, turning his little Tent round by degrees till he has designed the whole aspect of the field: this I have described to your Lordship, because I think there might be good use made of it for Chorography [topographical drawings]: For otherwise, to make Landskips by it were illiberall: though surely no Painter can do them so precisely.[41]

In *Mentor*, the participant is encouraged to enter the tent and actually use the device as a drawing machine. By controlling the lens system, which allows a 360-degree view, the participant may choose what to draw, then trace the view projected onto a drawing pad while wearing headphones. Three audio tapes allow the story to unfold: one about North, a tape of imaginary letters between the two women and a text-sound piece about Ellis Rowan in a style similar to *She Traveled for the Landscape*.

By providing a phenomenological encounter, Zweig allows the viewer's experience to become the field of recognition. By using an apparatus of the 19th century, we are more likely to feel we are "crossing over" into a similar perceptual experience to North and Rowan. The recreation of the event becomes infinitely more powerful. We are reminded of other popular 19th century activities - the séance and spirit photography - forms of communication where departed souls are personified.

It is significant that Zweig's 19th century female character is a traveler and that the experience undertaken by North is described via the distancing device of the camera obscura. Stereotypically, the travel experience of women from this time period was confined to popular stereography, which allowed the armchair viewers to travel the world without leaving their home. Zweig's integrated experience of self-portrait, biography, narrative, activity and technology allows us to establish other kinds of "projections" for Victorian female activity beyond the housebound representations we have inherited from the Media.

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[40] Kemp 189.

[41] Sir Henry Wotton in William Sanderson, *Graphice, The Use of the Pen and Pencil, or the most excellent Art of Painting*, (London: R. Crofts, 1658) 86 quoted in Gernsheim and Gernsheim 9.

In each of her projects, Zweig's text is an important feature, rolling poetically through in evocative waves of repetition and syncopation. In *A Barrel of Her Own Design* (1998), a camera obscura/peephole device designed for *Artpark* conveys the story of Annie Edson Taylor, the first person to go over Niagara Falls in a barrel and survive. Three voices narrate the text in repetitive cycles with slight word changes from verse to verse: "the images kept rising to the surface of her mind.... she was in the unconsciousness, the crash of falling water ... she was riding in a strange craft, a barrel of her own design."[42]

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Peter Richards, an English artist living in Northern Ireland, also stretches the performative potential of the camera obscura by emphasizing the theatricality of the camera obscura stage and the temporal interlude between "live" performance and photographic recording.[43]

Earlier the notion of silence, or "ascesis", was mentioned as a significant attribute of the camera obscura experience. Richards successfully extends this concept beyond the internalized space of the camera obscura to the area being imaged in a performance event that significantly emphasizes the power of silence.

In *Another Day, Another History of Performance Art* (1994), Richards erected a camera obscura tent on the lawn of Sewerby Hall, Bridlington, amidst the chaotic context of a vintage car show, an exhibition of one-stroke engines, a cricket game, pony riding, picnicking and the general festival-like atmosphere of a typical, sunny August Sunday at this seaside resort mansion in Northern England.[44]

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[42] This text and others can be heard at: <<http://www.harvestworks.org/ccs/frame0042.html>>

[43] A website features Richard's experience: <<http://www.again.freeserve.co.uk/page37.html>>

[44] My exhibition *Liquid Scrutiny* was exhibited in an oak-lined room inside Sewerby Hall and *Throw-Away Camera* was shown outside on the same lawn, sponsored by Hull Time-Based Art as part of *Root '98 Festival* in August 1998.

Richards then solicited a large group of volunteers from among the milling crowd.[45] In groups, they were asked to select an image to perform from Rosa Lee Goldberg's *Performance Art: From Futurism to the Present*, Paul Schimmel's *Out of Action: Between Performance and the Object, 1949-1979* catalogue and *The History of Performance Art*, by Art and Design.[46] Each group outfitted themselves with the help of paint and props and prepared their pose to represent their chosen image. Ulay and Abramovic, the Futurists and other performance groups were impersonated with props and costumes by a cast largely unfamiliar with performance art.

In the large white tent/pinhole camera, a large sheet of color type-C photographic mural paper was ready for exposure.

All the "performance groups", (including Richards himself, resplendent and ridiculous in blue body paint, angel wings and fake leopard skin thong, in tribute to Isaac Julian's *Looking for Langston* from *The History of Performance Art*, by Art and Design) took their positions and held them for the predetermined six minutes it took to expose the photograph.

Amazingly, the repose of the stilled performers caught the attention of the formerly distracted, noisily milling crowd. Silence descended while the onlookers stood riveted by the "nonperformance" of the performers. Most were oblivious to the image-making process, but were drawn to the hush and rigidity. Silence and immobility proved infinitely more powerful than any other strategy for gaining attention that day. The event outside brilliantly replicated the ascesis experienced from the inside of the camera obscura and also acknowledged the theatrical aspect of the image that appears on the screen therein (della Porta would have loved it). The completed image was later developed and shown in negative form for Root '98 in Hull, sponsored by Hull Time Based Art.

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[45] Many of the volunteers were from the workshop I'd led at the Warren Community Centre in Hull a drop-in center for disadvantaged teenagers (1996). Their pinhole work produced in the workshop was on show in Sewerby Hall. See also <<http://www.again.freeserve.co.uk/page37.htmb>>

In the work of both Zweig and Richards, the "real" and the theatrical are enticingly intermingled on the screen of the camera obscura.

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Zweig's artistic endeavors aren't confined to installations incorporating the camera obscura - along with installations, she is also widely known for her performance works, teaching, writings and videos.

In the summer of 1994, Zweig was invited to participate in *42nd Street at Times Square*, a project sponsored by Creative Times, Inc. Twenty-five artists and designers including Nam June Paik, Vito Acconci, Ned Smyth, Ron Kuivila, Theodor Geisel and James Luna were invited to inhabit the windows, wall, marquees and gates of 42nd St between Broadway and Eighth Avenue at Times Square just prior to major renovations in the area. With concealed modesty, Creative Times Inc. described the event on their brochure as:

> ...the world's busiest, bawdiest and most visually raucous intersection, traversed by hundreds of thousands of tourists, shoppers and commuters every day. When artists come here to develop site-specific projects, they create on America's most public canvas of all.[47]

Zweig's *Hubert's Lure* was conceived for this context. The installation was appropriately sited in the location of Hubert's Museum and Flea Circus, in business from 1925 until well into the 1960s. Zweig describes:

> Its most famous and longest lasting act was Professor Roy Heckler's Flea Circus, but if you visited Hubert's you might also see Lady Olga, the bearded lady; Estelline, the sword swallower; Jack Johnson, heavyweight boxing champion; Sealo the Seal Boy; Albert/Alberta, the half-man/half-woman; a magic act that included

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[46] Rosa Lee Goldberg, *Performance Art: From Futurism to the Present*, (New York: HN Abrams, 1988) and Paul Schimmel, *Out of Action: Between Performance and the Object, 1949-1979*, catalogue, (New York: Thames and Hudson, 1998).

[47] Brochure, *42nd Street Art Projects*, Creative Time Inc., 1994.

> 'the Floating Lady', and an assortment of special people and amusing performances.[48]

In *Hubert's Lure*, Zweig incorporates many of the traditional elements of the old time freak show: the lurid and alluring painted banners, the invitations to see the never-before-seen, and the 18th century magician's illusion of Pepper's ghost (variously referred to as phantasmagoria, fantasmagoria, phantasmagori, or fantasmagie), which "is produced by an inclined transparent glass plate, which reflects an image of a performer, who stands on a stage or support below the stage, and is strongly illuminated by electric or lime light from lanterns."[49]

In Zweig's form of phantasmagorie, the hidden actor/hosts of apparition (whose projection traditionally became discernible to the audience by its uncanny suspension on gauze, glass or smoke) is replaced by a video image reflected on glass of a tiny Lady Olga (Zweig in period costume as the great bearded lady) moving amongst Lilliputian wooden chairs and table on a miniature stage. Using angled glass as the repository for the projected moving image (Zweig made her video projector from a discarded photocopier lens) the 20th century viewer sees an effect similar to the 18th century magical apparition dancing upon a theatrical three-dimensional setting. Contemporary audiences experienced the same combination of horror, curiosity and delight evoked by early renditions of the mechanism in which virtual ghosts and skeletons appeared to float in space.

The colorful Frenchman Etienne Robertson is often credited with inventing phantasmagorie. Francois Martin Poultier-Delmotte wrote a satirical review of a Robertson performance he attended on March 24, 1798:

> At precisely 7 o'clock a pale, gaunt man entered the apartment where we were; after having extinguished the candles, he said: 'Citizens and gentlemen, I am neither one of those shameless adventurers, nor one of those impudent charlatans, who make promises they do not keep. I have been assured in the Journal de Paris that I have resuscitated the dead, that I will bring them back to life. Those in the company who desire the apparition of persons whom they hold dear and whose life

[48] Ellen Zweig, exhibition notes, *Hubert's Lure*.
[49] Hecht 140.

> was terminated through illness or in some other respects, now is their time to speak: I obey their command!'
>
> Then followed a great silence; whereupon a man in confusion, his hair bristling, the eyes sad and wild, *la figure arlésienne*, said: 'Since I have been unable to reestablish the cult of Marat in an official journal, I would at least like to see his spirit.
>
> Robertson poured two glasses of blood, a bottle of vitriol, a dozen drops of aqua fortis and threw two copies of the Journal des Hommes-Libres on a flaming brazier. Instantly, little by little, a small, hideous, and livid phantom, armed with a dagger and covered with the red cap of liberty appeared: the man with the bristling hair recognized him as Marat; he wanted to embrace him; the phantom grimaced horribly and vanished.

Poultier-Delmotte described several visits to the stage from the dead, including a wife "who transfixed her young friend with a tender and mournful stare", William Tell, Voltaire, Brutus, Mohammed, and Virgil. Finally, Robertson was asked to make Louis XVI appear. As Louis XVI had been beheaded five years before, Robertson discreetly replied that he'd irretrievably lost the recipe that would bring back the Kings of France.[50]

Analogies could be made between Robertson and Zweig's attempts (200 years apart) to bring personalities back from the dead. The story of Lady Olga and the rich history of Hubert's Lure told via the mechanics of 18th century technology (with some cast-off 20th century parts) provided New York locals and visitors with a sense of historical continuity previously unrealized (I was unaware of this history even though I walked by the site almost daily for three years). An unexpected bonus was the unplanned appearance of Hubert himself, who would speak to the gathering crowds and spontaneously share his stories.

What surprised Zweig most was how compelled passers-by were by the diminutive size of the representation actively moving in the storefront window. Walkers would actually cross 42nd St. to discern the tiny movements. The reversal of grand,

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[50] Francois Martin Poultier-Delmotte, *L'Ami de Lois*, March 28, 1798, in Hecht 58.

overwhelming scale was effective. The resulting image and activity from the hand-made apparatus and its illusion intrigued even this media-savvy New York audience.

Is there a subtle warning here about the eagerness of governments to sanitize and erase social histories? *Hubert's Lure* came at a time of great controversy within New York City over the razing of the area. Its demolition was defended on the grounds that the area was unsavory due to its proliferation of sex trade establishments and visible eyesores. Coincidentally, this offered tremendous opportunities for developers to wipe away the historical sediment, including lifelong residents, and replace them with a homogenized, sterilized urban geography from which great profits could be generated.

The exhibition notes from Zweig's *Hubert's Lure* are reprinted here:

> This piece is dedicated to Lady Olga, whose real name was Jane Barnell. She exhibited her beard in practically every dime museum in the country, but she liked Hubert's the best. She was part of the Ringling Circus's Congress of Strange People from 1932-1938 and was in Tod Browning's movie *Freaks*, which she hated, thinking it an insult to freaks everywhere. She considered Hubert's her winter quarters, performing from 11 am to 11 pm: two shows an hour. Her cat Edelweiss, a fat white Persian, sat beside her while she worked.
>
> As a performer, Lady Olga was unsmiling and dignified, but sometimes she got angry, especially if people asked her questions she thought were too personal. 'None of your business,' she'd say. In her spare time, she studied shorthand and dreamed of becoming a stenographer. Unlike many sideshow performers, she didn't mind being called a "freak" 'No matter how nice a name was put on me,' she said, 'I would still have a beard.' She was proud of her beard and her profession, thinking that a freak is as good as any actor. 'If the truth were known, we're all freaks together,' she said.[51]

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[51] Ellen Zweig, exhibition notes, quotations from Joseph Mitchell, *Up in the Old Hotel and other Stories I*, (New York: Pantheon, 1992). See also <<http://www.creativetime.org/42street/artist_html/artist6.html>>

In the catalogue brochure, Zweig writes, "*Hubert's Lure* evokes a place where deviance is valuable" There is a degree of nostalgia represented, but it is nostalgia that values and immortalizes difference - amongst human spaces, bodies and personalities, especially in an environment where those differences are so often purposely leveled.

After twenty years of enlivening the history of Victorian women travelers and their stories, Zweig's most recent alter ego, Lucy, entered the Internet.

> This is the story of Lucy Anna Morel, who lived in the year 1900 until an accident with electricity turned her into electricity itself. As a result of this accident, Lucy has traveled in time to our year 2000. She is inside the Internet, inside your computer, and she wants to talk.[52]

Zweig developed this live web-based project or "science fiction story about science history" with eight undergraduate and graduate students, in a "distributed, collaborative, interactive story" while an artist-in-residence at the Massachusetts Institute of Technology over five days in 2000.

In the project, Zweig (in Lucy character), was featured in a chat space communicating with visitors to the website and with other characters created by MIT students. Lucy had to decide whether to stay in the year 2000 or go back to the year 1900 (she stayed in 2000). Visitors to the site helped determine Lucy's fate by adding facts to an interactive map of knowledge for either era. Lucy stayed in the world with the most facts. In an interview with Mary Haller, Zweig commented:

> I'm not interested in bringing back the 19th century or going back to it. I'm interested in what it's like for the 19th century to invade the present, because it still lives in the present. Inventions like cinema, photography, the typewriter, computer, phonograph; ideas like psychoanalysis, alienation, sexual repression - all these we

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[52] Ellen Zweig, in Mary Haller, Office of the Arts, MIT, December, 2000 on website: <<http://xenia.media.mit.edu/lucy>>.

> have from the 19th century. The web-based project will allow visitors to explore the past in order to understand the present.[53]

While the camera obscura is one of the oldest recorded vision devices and phantasmagoria one of the earliest forms of mass entertainment, recent practitioners such as Ellen Zweig and Peter Richards have revealed its conceptual and technical relevance to contemporary art by enlisting the apparatus to enrich our understanding of history, technology and perception.

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[53] Zweig in Haller <<http://xenia.media.mit.edu/lucy>>.

Chapter 5

Toshio Iwai

Our machines are disturbingly lively, and we ourselves frighteningly inert.
Donna Haraway

Play, like Kierkegaard's irony, releases subjectivity. Jean-Paul Sartre

The re-Enlightenment of contemporary disillusioned instruction might draw a lesson from this love for curious, prodigious, and astonishing things.
Lorraine Daston

Toshio Iwai (Japan) reaches back in time to use the tools and vocabulary of pre-cinematic technologies (such as the zoetrope, phenakistiscope and thaumotrope) to significantly extend their technical and symbolic capabilities with contemporary technological systems. Through viewing Iwai's work, we realize that while evolving models of perception are veering towards virtual spaces, it is important that other historical examples persist, not only as historical curiosities, but as vital devices in their own right. His works also offer alternative models to the cultural prevalence of cinema.

As discussed earlier, the zoetrope, thaumotrope and flipbook are persistence-of-vision devices developed in the 1820s and 30s; their use demonstrates subjective aspects of vision that displaced previous models of objective reality, largely represented by the camera obscura.[1] They also beautifully demonstrate the basic principles of animated movement - thus they are often labeled pre-cinematic.[2]

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[1] *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century.* (Cambridge: MIT, 1990) 27.

[2] The zoetrope ("wheel of life" in Greek) is cylindrical with slits in its sides and a chronological series of images or 3-D shapes inside. The phenakistiscope features a disc with slits on its parameter in which the chronological drawings face a mirror. In both instances, the viewer looks through the slits while the device spins to perceive animated movement. A thaumotrope features images on each side of a card or disc; when spun the two images appear merged.

While viewing Iwai's extensions of these pre-cinematic devices, we become more conscious of the limitations, capabilities and possibilities of our perception. This opportunity to directly engage in visual experience increases our awareness in a playful, yet informative, interactive environment.

From an early age, Iwai has been preoccupied and delighted by movement and the mechanics of animation. His father abetted young Iwai by providing the tools and encouragement for do-it-yourself mechanical projects. He filled his early school notebooks with figurative characters that leaped and squirmed when the pages were turned. The same impulses expressed in these early school flipbooks have remained a preoccupation for Iwai:

> The margins of all my elementary school textbooks were filled with these. This is where my work begins. The excitement I got from making these animations has never disappeared - that and the fact that these are personal media, things you can carry around and look at alone.[3]

Iwai, born in Aichi, Japan, studied Plastic Art and Mixed Media at Tsukaba University. There he began to make short 8mm films (influenced by the films of Walt Disney [*Fantasia*], of Oscar Fischinger and Norman McLaren). He was also introduced to the zoetrope, phenakistiscope and thaumotrope. Simultaneously, Iwai began to use computers - and he realized the potential of merging the old and new: the computer and video combined with the flipbook (figure 47), the phenakistiscope combined with the photocopier. From these historical devices, even more complicated and exciting solutions began to emerge.

In the exhibition *Toshio Iwai* (1994), ingenious and elegant 3-D zoetropes and phenakistiscopes (figure 48, 49, 50) depict human, animal and geometric characters (peanuts, runners, horses, scissors cutting paper, origami birds in flight).[4] The compelling intricacies and sheer inventiveness in the variety of characters and their movements are mesmerizing and truly delightful. Several of

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[3] Iwai quoted in Brown 190.

[4] *Toshio Iwai*, exhibition, Gallery OTSO, Helsinki, Finland, Aug.- Sept.1994. I saw this exhibition, but for an updated viewing I am indebted to an unedited videotape on Iwai's works loaned by Billie Grace Lynn, University of Pennsylvania.

the zoetropes are driven by a mechanical crank, which allow the viewer to control the moment and duration of illusion. The activity of perceiving this animated movement is a gift to the senses.

Like a number of artists (including Max Ernst, Jim Pomeroy and Marcel Duchamp), Iwai was influenced by the 3-D zoetropes produced by 19th century French physiologist Etienne-Jules Marey for his motion studies. They featured sculpted models of pigeons and seagulls in sequential, but frozen poses. When the zoetropes were spun, the fluid animation described the bird's movement in flight.

Iwai, like Marey, has been obsessed with movement:

> Movement is still my greatest interest. I believe movement itself is a communicative language, and I'm trying to use it that way. If we see an interesting type of motion, say, a flock of birds turning in coordination, we often get involved in what it is, that's moving birds, in this case. But even if it were not birds, but just dots on a screen or something else equally abstract, we can still be totally engaged by it.[5]

While almost everyone who has investigated the mechanical history of cinema has been charmed and inspired to experiment with these early animation techniques, Iwai lifts these investigations to new technical and conceptual levels of consideration. While viewing Iwai's work, we share his delight in these devices, but we also strive to define just what the nature of our engagement is. Anne Holland in the Introduction to *Moving Pictures* expresses her connection to these devices - one that reaches beyond their historical curiosity:

> ...proto-cinematic imagery sets the viewer's psyche in motion, reveals arbitrarily rather than describes thoroughly, disturbs more than it satisfies, and strongly suggests the impossibility of seeing everything at once. I contrast such pictures to the classic kind, which create a fictive world where completeness is the aim and the true subject of the narrative is the artist.[6]

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[5] Iwai quoted in Brown 212.
[6] Holland 7.

Experiencing a zoetrope, thaumotrope or phenakistiscope requires a constant perceptual reconciliation of differences - the viewer is perceptually overcoming the temporal disjunction that occurs from image to image.[7]

In *Time Stratum II* (figure 51), the capacity of the traditional zoetrope is extended by video and computer. 120 cut-outs of Iwai appear to dance merrily and incessantly on a revolving circular base within a large plastic dome. Suspended above the revolving base is a flickering video monitor pointing directly down at the Iwai figures. Strobe light emitting from the monitor replaces the aperture of the zoetrope to produce the illusion of animated movement - throngs of 3-D figures appear to energetically rotate and gyrate in what appears as an infinite variety of patterned dance steps. Iwai enlists an apparatus generally designed to portray seamlessness (the video monitor) and converts it into a stroboscopic device - allowing it to become the light source and to control the flow of light.

The effect is hypnotizing, surprising and mystifying ... audiences of all ages stare, riveted for long periods of time, trying to discern the mechanics of the motion. Iwai re-animates animation. Iwai finds he needs no narrative or storyline...and happily, no subtitles are necessary here!

Each of the small Iwai figures feature an eye in place of a head (figure 52), reminiscent of the seminal eye in Georges Méliès' film *Le Voyage dans la Lune (A Trip to the Moon)* 1902 (Iwai also shares a fascination for magic and illusion with Méliès). The eye in Iwai's figure could be symbolic of the dominance of vision over the other senses, the opportunities for illusion it provides or a reference to "I"

In the *Well of Light* (figure 53), developed at the Exploratorium in 1993, Iwai again engages the video monitor as a stroboscopic device in several domed environments into which the viewer can peer. Spinning objects are selectively lit by the video strobing in green, red, blue - oscillating colors and patterns of light allow us to see a variety of configurations, which appear to rise and fall in layers. In one piece, racing horses (perhaps in reference to Eadweard Muybridge's initial studies of horse movement) are suspended - moving and changing speed in shifting

[7] Friedberg 23.

patterns of light. Here, the gaze is allowed to wander at length, unlike conventional cinema, where the viewer concurs in a relatively passive interaction with the screen. As André Bazin has written, the duration of the cinema experience is significantly controlled.[8] VR and interactive media such as Iwai's substantially interrupt this durational restriction - and hint at possibilities for other dynamic kinds of relationships that could melt the traditional boundaries between the viewer and the artwork.

Iwai's projects ground viewers in an immediate, bodily felt presence. He firmly believes that future technologies should provide further opportunities for interaction. He reminds us of the connections current technologies have with the past, while offering concrete examples of directions for the future. These works reverse the suppression of peripheral technologies that occurred with the emergence of cinema. By excavating specific obsolete technologies, they again enter a realm in which they can be observed and appreciated alongside what has become the dominant media form.

However, rather than seeing animation as being dominated by or subverting cinema, Catherine Vasseleu makes the point that animation has always retained autonomy. And now, with the proliferation of computers, screen animation has been recently re-invented by the opportunities presented for combining embodied actors or "real-life" with computer-drawn imagery. Rather than being viewed as outdated precursors, animation techniques are being freed from their position on the technological "evolutionary ladder" Untethered from the history of cinema, this unique and discursive phenomenon is now at the cutting edge of technological development.[9]

As discussed previously, various forms of animation and projection for public entertainment and education existed prior to the commercialization of cinema as

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[8] André Bazin, *What is Cinema*? vol. 1, trans. I. Gray (Berkeley: University of California Press, 1967) 96.

[9] Catherine Vasseleu, "The Moving Image and Spectacular Animation", lecture, UTS Ultimo Series, Aug. 11, 1999. This paper is forthcoming in *Cinema and The Senses: Visual Culture and Spectatorship*, ed. Jodi Books (Sydney: Power Publications).

achieved by Gustav and Antoine Lumière in their first public showing of the cinematograph in December 28, 1895. Cinema didn't spring fully formed into being, but evolved from an incredible and eclectic variety of apparatuses, viewing conditions and social contexts. But, as Jonathan Crary has pointed out:

> The history and background of these devices and inventors have been well documented elsewhere, but almost exclusively in the service of a history of cinema... Their fundamental characteristic is that they are not yet cinema, thus nascent, imperfectly designed forms... At the same time there is a tendency to conflate all optical devices in the 19th century as equally implicated in a vague collective drive to higher and higher standards of verisimilitude.[10]

The development and predominance of cinema should not be seen as a chronological march of technological development that reached its pinnacle with the celluloid projector and screen and remained that way until the present day. Numerous writers adhere to a positivist view based predominantly on a march of "firsts", where each development for the most part must be precipitated by a direct technical precursor. Thus we have an evolutionary line drawn from the camera obscura, to persistence of vision toys, to the photographic camera to cinema to VR. This view ignores the conceptual and historical singularities of these devices and the singularities of a range of devices that were never recognized.

Indeed, history reveals many examples of now massively adopted inventions which almost didn't make it; as with radio, photography, microfiche, the photocopier and the airplane, television came into popular consumption much after the necessary technical conditions for its development were in place. "As early as 1880s it was known in theory what was required to make a working television, though the necessary valves and tubes had yet to be invented."[11] Bell Telephone demonstrated a television system in New York City in April 1927, however most people saw it for the first time at the New York World's Fair in 1939. "The New

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[10] Crary provides a bibliography of diverse works that reflect this view in *Techniques* 110. See also Ceram; Jean-Louis Comolli, "Technique et idéologie," *Cahiers du cinéma*, no. 229, May-Jun. (1971): 4-21; Jean Mitry, *Histoire du cinéma*, vol. 1, (Paris,1967) 21-27; Georges Sadoul, *Histoire générale du cinéma*, vol. 1,: 15-33; Neale 9-32; Leo Sauvage, *L'affaire Lumiere: Enqêute sur les origins du cinéma*, (Paris:, 1985) 29-48 and Gilles Deleuze, *Cinema 1: The Movement-Image*, (Minneapolis: 1986) 4-5.

[11] *American Heritage*, Sept/Oct. (1995): 48.

York Times, with its now standard lack of prescience, forecasts that it would never be a serious competitor for radio because 'people must sit and keep their eyes glued on a screen; the average American family hasn't time for it' "[12]

The story of Thomas Edison, generally acknowledged for his production and marketing genius, illustrates the unpredictable, whimsical relationship between invention and user interface (an issue current multimedia designers and producers continually grapple with). As evidenced two of his inventions, the kinetoscope (1891) and the phonograph (1877), Edison possessed the technology for introducing cinema well before the Lumiéres. However, he chose to provide a one-to-one viewing experience in the form of a peepshow-like device which contained fifty foot loops of film footage, thus seriously misjudging the public's desire for a collective viewing experience (Edison's decision was largely motivated by profit). As in present times, predicting the marketability of inventions is difficult.

The positivist view reduces the richness surrounding media development. Previous histories tend to have been described in a factual, blindered approach that does not provide a context for the development of the targeted linear outcome. For example, E.J. Marey, a renowned French physiologist whose brilliant photographic work (with the photographic rifle and the chronophotographic camera) has been credited as instrumental to the development of cinema, also features prominently in the annals of physiology as a pioneer in the development of instruments for measuring bodily functions (his spyograph was the first apparatus to measure the human pulse). However, until recently, these achievements weren't discussed in tandem; instead, they rested separately in independent histories. Marta Braun has written an excellent biography in which she emphasizes that none of Marey's achievements should be looked at in isolation from the others.[13]

Other contemporary writers, including Christian Metz, André Bazin, Henri Bergson, Jonathan Crary and Geoff Batchen stress that inventions come about as much as a

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[12] Jeffrey Shrank, *Snap, Crackle and Popular Taste: The Illusion of Free Choice in America* (New York: Delacorte Press, 1977), 17.

[13] Marta Braun, *Picturing Time, The Work of Etienne-Jules Marey* (Chicago: University of Chicago Press, 1992).

result of collective desires and social considerations as through advancement in techniques.

As discussed in chapter 4, the invention of photography showed that technical circumstances are not necessarily the motivating factors behind technological developments. Perhaps even more noteworthy is this observation noted by Bazin:

> The synthesis of simple movements studied scientifically by Plateau had no need to wait upon the industrial and economic developments of the nineteenth century. As Sadoul correctly points out, nothing had stood in the way, from antiquity, of the manufacture of a phenakistoscope or a zoetrope.[14]

There are many tales from the chronicles of missed inventions. Probably one of the most dramatic involves Emile Reynaud (1844-1918), an inventor who provided complex narrative screen entertainment to 500,000 people between 1892 -1900. Reynaud spent twenty-three years perfecting a technique that projected hand-painted moving images painted on celluloid - one film was 29 meters in length - its projection lasted fifteen minutes! Following the public screenings of the Lumière's and others, his entire life's work became redundant (although he continued to draw audiences for a time after cinema became available). Ceram tells us that, "One evening in 1910 in a fit of severe melancholy over his failure to achieve any outward success, he dumped most of his films and apparatus into the Seine. In 1918 he died in a sanatorium in Ivry."[15]

A host of screen entertainments, stereography, magical acts and camera obscura experiences were flung to the wayside after cinema became accessible. Even the popularity of amusement parks diminished. As Dr. Martin Arthur Couney observes, "Once upon a time Coney Island was the greatest amusement resort in the world. The radio and movies killed it. The movies killed illusion."[16]

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[14] Bazin 18.

[15] Ceram 195.

[16] Martin Arthur Couney quoted in John Kasson, *Amusing the Millions: Coney Island at the Turn of the Century* (New York: Hill and Wang, 1978) 112.

Dennis Michael Wilcox (Australia) is also interested in formulating alternatives to cinema. In *Zenotrope* (figure 54, 55), Wilcox borrows then extends the persistence of vision experienced with the zoetrope by creating a kinetic computer light sculpture. On the arm of a mechanically swinging pendulum, a computer powerbook monitor spins at 200 revolutions per minute (quite a feat of engineering). The screen features a wire rendering of a 3-D object, also spinning, but in the opposite direction. Created is a continuous, virtual 3-D object, which can be perceived from multiple vantage points.

By example, *Zenotrope* challenges the dominance of the linearity of invention. Billy Crawford acknowledges this potential for further developments:

> Perhaps in 50 years time we will see Dennis Michael Wilcox's sculptures as an essential development towards a twenty first century entertainment technology. But in the present, by truly combining art and technology, they reconfigure and re-invent our own persistence of vision.[17]

By re-examining and expanding elements of the zoetrope, Wilcox delineates alternative parallel possibilities for a technological future; a future where the authoritative projection of the cinema is countered by the opposite motivation - that of increasing the psycho-spatial experience and realization of the viewer. Serge Daney has said,

> (The cinema) postulates that from the 'real' to the visual and from the visual to its reproduction on film, the same truth is reflected infinitely without any distortion or loss. And in a world where 'I see' is automatically said for 'I understand' such a fantasy has probably not come about by chance. The dominant ideology which equates the real to the visible has every interest in encouraging it...[18]

In a work such as *Zenotrope* this dominant ideology is challenged. The capabilities of our vision are celebrated; we are offered multiple vantage points - and further

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[17] Billy Crawford, "Dennis Wilcox", *Video Art Plastique*, catalogue, (Gèmes Rencontres Hérouville Saint-Clair, le Centre d'Art Contemporain de Basse-Normandie et le Café des Images, 1995) 20.

[18] Serge Daney, "Sur Salador", Cahiers du Cinéma 222, July 1970:39 quoted in Jean-Louis Comolli, "Machines of the Visible", *Electronic Culture: Technology and Visual Representation*. Ed. Timonthy Druckery (New York: Aperture, 1996) 111.

alternatives to the fixed cinema screen. The methods of Iwai and Wilcox are not mimetic or narrative; rather, they are designed to reveal the functioning of our eyes and brain. We become viscerally aware of what we theoretically understand to be true, but may not have experienced directly or consciously.

These animation devices highlight a subjective experience of vision that is at once empowering and revealing. We are empowered by the opportunity to understand and perceive these mechanisms of "deception", but we can also be intimidated by the realization that we cannot trust what we see. They extend our relationship to movement while simultaneously accentuating or amplifying the fallibility of our senses.

This direct visual accessibility to mechanical and optical phenomenon also contrasts to the inaccessibility the viewer often confronts in the digital realm - and to the separation from direct experience that occurs while viewing virtual or tele-visual worlds. Paul Virilio's words are pertinent here:

> 'Everything I see is in principle within my reach, at least within reach of my sight, marked on the map of the "I can" ' In this important formulation, Merleau-Ponty pinpoints precisely what will eventually find itself ruined by the banalisation of a certain teletopology. The bulk of what I see is in fact and in principle, no longer within my reach. And even if it lies within reach of my sight, it is no longer necessarily inscribed on the map of the 'I can' The logistics of perception in fact destroy what earlier modes of representation preserved of this original, ideally human happiness, the 'I can' of sight, which kept art from being obscene.[19]

Iwai chooses to focus on and celebrate perception and the mechanisms that make this possible, recalling M.Merleau-Ponty's observation:

> .for if it is true that I am conscious of my body *via* the world, that it is the unperceived term in the centre of the world towards which all objects turn their face, it is true for the same reason that my body is the pivot of the world...[20]

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[19] Virilio, *The Vision Machine* 7.

[20] M. Merleau-Ponty, *Phenemenology of Perception*, trans. Colin Smith, (London: Routledge, 1962) 82.

Cinema, photography, and television are relatively indirect experiences compared to that of viewing a zoetrope - in Iwai's words "images that comes alive through our own movement" [21] The shopping center, games arcade and virtual reality games also threaten to eliminate more immediate forms of phenomenological experience.

Studies in the fields of neurobiology, phenomenology and cognitive science are relevant but beyond the scope of this paper to address. However, there is general concern that as a result of the proliferate use of computer games and television, children are losing bodily skills and not developing vital kinesthetic aptitude essential to abstract learning. Simon Penny suggests the inherent relationship between physical and conceptual development:

> Not simply is the range of body knowledge (body intelligence) being vastly limited (the body is being de-skilled), but the process which links conceptualization to physical realization is destroyed. Manipulation of abstract, symbolic quantities is premised on bodily physiological experience. Why do we call a high note 'high'? Could it be because when we sing a high note the physiological experience is in the head, as opposed to the throat or chest. German psychologists have observed that children who cannot walk backwards cannot subtract.[22]

Iwai's work is playful; however, this should not diminish its importance. Playful interaction can be a successful strategy to engage. Visual games in the work of Iwai honor the realization that knowledge has anatomical, physiological conditions. D. W. Winnicott articulates the importance of play:

> It is playing and only in playing that the individual child or adult is able to be creative and to the whole personality, and it is only in being creative that the individual discovers the self. Play exists as a resting place for the individual engaged in the perpetual human task of keeping inner and outer realities separate but interrelated.[23]

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[21] Vasseleu, "The Moving Image".
[22] Simon Penny, "The Virtualisation of Art Practice" 12.
[23] D. W. Winnicott *Playing and Reality*, (London: Tavistock,1971) 54.

Iwai's works could also refer to the excitement people must have had in former times to these technologies. The interconnectedness of new and old technologies is eloquently emphasized.

In *Man-Machine-TV* (1989), Iwai's intense regard for audience engagement is obvious. A row of monitors feature buttons attached to their screens. When a participant presses the screen, light balls are catapulted between the viewer's fingers. The light blasting off the finger's touch moves in an arc towards the other finger - appearing as a direct energy emission from the body. The longer the fingers are engaged, the more active the nimble light projections become. The luminescent blue or red balls appear anthropomorphic - alive.

It is difficult to articulate, but there is something quite titillating about being able to generate such eruptions and effects at the touch of your fingers. In contrast to what could be regarded as "high-art" literary sources of Ellen Zweig, Toshio Iwai works with devices that have traditionally been regarded as simple optical entertainment, "low" parlor art.

In another work, a cartoon robot peers out of the monitor. A crank attached to the apparatus provokes a physical and visual illusion of a direct, mechanical connection to the robot's action (rather than the computer-programmed relationship it is). As you move the crank, the robot moves - at the same speed you do. As mentioned, these works provide a glimpse of alternatives to what may have developed in competition or in tandem with cinema had it not assumed such a dominant role.

On another monitor, the joystick is mimicked on the screen and a simultaneous response is elicited when it is manipulated. The interface is clever and satisfying - and absurdly eager in its responsiveness.

In yet another series, viewers are invited to place their hands into a void beneath the video monitor box. By moving their hands, illusions of frenetically bouncing balls and streaming light are generated on the screen above. Using the same housings available in conventional media (the monitor box), Iwai attempts to create new kinds of experiences for gallery participants. As Shirai Masato comments:

> Pursuing, in his words, 'visual media that becomes part of one's body and can be controlled at will as an extension of the bodily functions', Iwai makes deliberate use of interfaces where reality and visual media intersect in order to blur the boundary between material and virtual realities... In the process, Iwai continues to create visual media devices that he hopes will 'raise people's consciousness, sensibilities, and creativity to ever higher levels' [24]

The term "interactivity" has become a pervasive buzzword, yet it is clumsy and difficult to define. What is it supposed to achieve? How do we approach interactivity in art in a meaningful manner? The ability to simply make something move is not that important. More significantly, why do we want to make it move or what does it mean if it does? In relation to current usage, does this mean that older media are not interactive? As Simon Penny rightly points out:

> .interactive media exists in the corpus of Happening-environment-installation-Performance-Fluxus artwork of the last 30 years... radically formally experimental genres that took the 'user interface' and 'interaction' as their subject matter... Allan Kaprow, Jim Dine, Claes Oldenberg in the 60's, later Joseph Beuys, Vito Acconci, Adrian Piper, Arnulf Rainer and a host of others who explored the realm of art as interactive play, of dissolving the artist / audience division... [25]

Artists' work such as Toshio Iwai and Dennis Wilcox remind us that "interactivity" was not introduced by new technologies. As Iwai describes:

> I was fascinated by the fact I was animating solid bodies, in front of my eyes, and the result was spatial distortions. Although the zoetrope was an invention of some 150 years previous, it was an image device indisputably filled with many other hidden potentials. Through the correspondence between the winding-handle speed and image speed, the zoetrope was also a superior accomplishment in the early evolution of interactive imagery devices. [26]

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[24] Shirai Masato, "On the Artist's Works", http://www.nttlcc.or.jp/permanent/iwai/iwai_work_e.html>>.
[25] Simon Penny, "Consumer Culture and the Technological Imperative: Artist in Data Space" *Critical Issues in Electronic Media*, ed. Simon Penny, (New York: State of New York Press, 1995) 7. See also «<http://www-art.cfa.cmu.edu/penny/texts/Artist_in_D'space.html>>.
[26] Toshio Iwai, catalogue, *Zentrum für Kunst und Medien Technologie*, (Karlsruhe: Galleriea OTSO, Esposo, Finland) 23.

"Interactive media" also assumes that more recent technologies automatically replace the "passive" spectator of former media with an "active" viewer. Much of interactivity appears to be based on a ruse of true interaction that doesn't fulfill the audience's genuine desire to engage and participate. A major criticism or limitation of interactive media is that the interactor can only perform within the parameters created by someone for that interaction. Many, like Hugh Kenner, express their skepticism at the notion of interactivity: "I don't feel any more empowered by a video installation programmed to start up when I enter the room than I do when I make eye contact with a silver-gelatin print that remains, as it were, permanently turned on regardless of whether or not I'm in the room."[27]

While cynical reactions to the overuse of the word "interactivity" are understandable, there are opportunities for these works to truly expand our notions of human interaction. True interactivity occurs when the user becomes an active participant in the creation of meaning. How do we encourage mutual participation rather than passive consumption? Hakim Bey's suggestion is useful here, "...we need a rough hierarchy of media, a means of measuring their potential for our uses. Roughly, then, the more imagination is liberated and shared, the more useful the medium."[28]

In Iwai's *Musical Insects* (1992), developed at the San Francisco Exploratorium, users may create musical compositions by "drawing" obstacles in the path of marching computer-generated insects - the collision prompts sound and sparks of color as well as a change of direction for the tiny creatures. As Iwai says:

> This work presents the viewer/user with a gridded playing field that's literally crawling with insects. Each insect represents a stream of sound, which can be triggered by painted objects that the user places in its path. Four insects can be used at once, with each one generating a distinct instrumental sound. It's a riot to watch as the insects wriggle and make noise, with animated shapes emanating from the creatures each note.

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[27] Hugh Kenner in Coleman 20.
[28] Hakim Bey, *Electronic Culture*.

Virtual insects become active music-collaborators in this compositional device, which is both game and instrument.

In *Piano-as Image Media* (figure 56), Iwai equipped a grand piano with a MIDI interface to allow visitors to create visual accompaniments to the musical compositions.[29]

> By moving a trackball, visitors made the notes depicted on a screen run across the musical score to collide with the key board, producing a rhythmical sound, whereupon three-dimensional images would suddenly emerge from the keyboard. Fusing together the materiality of the piano as mechanism and the immateriality of computer graphics as light, the work gave people a glimpse of the new relations between sound and image through the mediation of interactivity.[30]

There are other examples in history of the desire to align color and sound. Aristotle and Pythagorus speculated over the relationship between the rainbow and the musical scale. Da Vinci, Archimboldo, Newton, Kircher (also the inventor of the cat piano mentioned in Chapter Two, who also popularized the magic lantern), Melabranche, Voltaire and Denis Diderot all made reference to the concept within their writings. Newton believed in a "universal harmony of the world" and showed "that the seven bands of color in the rainbow have the same widths in the same harmonic ratios as the string lengths on the monochord that produced the musical scale" [31] He wrote,

> As the harmony and discord of sounds proceed from the properties of the aerial vibrations, so may the harmony of certain colors… and the discord of others… proceed from the properties of the aetherial. And possibly color may be distinguished into its principal degrees, Red, Orange, Green, Blew, Indigo, and

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[29] Masato "On the Artist's Works"<<http://www.nttlcc.or.jp/permanent/iwai/iwai_work_e.html>>.

[30] Masato "On the Artist's Works".

[31] Penelope Gouk, "The Harmonic Roots of Newtonian Science", *Let Newton Be! A New Perspective on His Life and Works*, ed. John Faubel et al. (Oxford: Oxford UP, 1988) 101-125 in Thomas L. Hankins and Robert J. Silverman, *Instruments and the Imagination*. (Princeton: Princeton UP1995) 75.

> deep Violet on the same ground, that sound within an eighth is graduated into tones.[32]

In 1725, Louis-Bertrand Castel (aware of both Kircher and Newton's theories) announced his ocular harpsichord, a "universal instrument of the senses" that would play color rather than sound. Curiously, while the idea of his instrument received enormous publicity and critical response, Castel showed no interest in actually making it. In response to criticism, he responded, "I am a mathematician, a philosopher... and I have no desire to make myself into a bricklayer in order to create examples of architecture" [33]

In addition to Castel's stance that it was "the idea and not the artifact that counted"[34], it was also technically quite difficult to realize. Two trials did occur; one by Castel featured 60 small colored windows poised above the harpsichord. Tiny curtains on the windows were lifted to display the color corresponding to the key being struck. Another followed his death, arranged by his anonymous assistant and exhibited in London. It incorporated 500 lamps and was demonstrated - but not played.[35] As William Moritz observes, "It must have been hot, smelly and awkward."[36]

More recent versions of the color music machine have been more successful. A. Wallace Rimington's *Color Organ* used moving lights in the 1915 premier of Scriabin's "synaesthetic symphony *Prometheus: A Poem of Fir*" William Moritz describes that "Scriabin wanted everyone in the audience to wear white clothes so that the projected colors would be reflected on their bodies and thus possess the whole room."[37] Other color organs were presented on stage and in film by the Futurists Arnaldo Gina and Bruno Corra. Thomas Wilfred's color organ was called the Clavilux and the artform of color-music projections were called "Lumia", which

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[32] Isaac Newton quoted in H. W. Turnbull ed., *The Correspondence of Isaac Newton*, (Cambridge: Cambridge UP, 1959-1977) 1:376 in Hankins and Silverman 75.
[33] Louis-Bertrand Castel quoted in Hankins and Silverman 77.
[34] Castel quoted in Hankins and Silverman 77.
[35] Hankins and Silverman 77.
[36] Walter Moritz, "The Dream of Color Music, and Machines That Made it Possible" <<http://www.awn.com/mag/issue2.1/articles/moritz2.1.html>>.
[37] Moritz 2.

could be used in concert or exist self-contained in "lumia boxes" Mary Hallock Greenewalt performed on her color organ - the Sarabet, and Walther Ruttman and Oskar Fischinger pioneered visual music films in Germany using tinted animation to musical accompaniment. Fischinger later invented a color organ, the lumigraph, which allowed one to play lights to any music quite simply. Alexander Lazlo toured Europe with a color organ featuring colored spotlights and slide projections. Dockum's MobilColor Projector[38] was purchased by the Guggenheim, but disassembled shortly thereafter.[39] Other artists, including Nicolas Poussin and Vasily Kandinsky, were also concerned with color tone.[40]

Two hundred and seventy one years after Castel, Iwai has found the perfect tools to "bricklay" this fusion of sound and image by synchronizing computer-generated images with piano music. In *Piano-as Image Media*, neither the music nor the image are privileged. While the ocular harpsichord is an extreme example of the fusion of sound and color, Iwai makes the point that before the invention of the phonograph, all musical experiences were also visual experiences. "I'm hybridizing based on new technical capabilities, but the effect will be to restore what has only recently been discarded."[41]

In *Music Plays Images x Images Play Music*, 1996, Iwai collaborated with Ryuichi Sakamoto, a highly respected Japanese pianist and composer, who performed live, but remotely. As the keys were engaged, disembodied, brilliant shafts of light were formed and flung upwards. Various colors and shapes were wrought in response to changes of pace and tone. The light appeared to be emerging from the piano keys - the musical experience was made visual - and its magic extended. This was broadcast in real time on the net in December 1996 to Indonesia and Hong Kong.

There are distinct connections between Iwai's work and with the work of Paul DeMarinis, who has also developed interactive music-producing pieces. *The Music Room* 1982 is a wonderful interactive chamber installed in the Exploratorium. Six "musicians" can pick up computerized electrical guitars - and with no previous

[38] Moritz
[39] Moritz
[40] Oliver Seifert, "Toshio Iwai", catalogue. *Media Scape*, (New York: Guggenheim Museum, 1996) 23.
[41] Brown 190.

training "jam" with their cohorts to "interact in creative musical decisions and sophisticated improvisations regardless of skill or talent" [42]

DeMarinis jerry-rigged the guitars for the *Music Room* from a Texas Instrument's *Speak-and-Spell* game. The piece was a hit for young and old and received extensive publicity. Unfortunately, unauthorized imitation versions, including *Electronic Art's Instant Music*, were pirated and made available commercially - an obvious example of unwelcome appropriations for techno-artists exhibiting in public museums.[43]

Alien Voices is a DeMarinis' piece that accentuates speech melodies. Two telephone booths within clear viewing distance of each other provide participants with the opportunity to alter and exchange their voices simply by pushing buttons. A choice of intonations based upon a variety of speech patterns such as monotone, whisper, high, low, robot voice, Mickey, Gregorian chant, slow rock, alien voices, enthusiastic speakers such as hypnotists, politicians, and salesmen are available to for the participants to "try on" Participants are both titillated and awed by the "other" voice they find themselves emitting. And, as DeMarinis attests, it has proven to be a great medium for matchmaking: *The Music Room* and *Alien Voices* offer ample opportunities for expanding human interactions.

Compelling comparisons have been drawn between recent developments in technology and early kaleidoscopes, zoetropes and stereoscopes. Jonathan Crary and Erkki Huhtamo point to undeniable links between the contemporary observer absorbed in computer technology and the new kind of observer that emerged in 1820/1830.[44] Barbara Stafford asks us to "step back to go forward" - drawing rich analogies between our current interests and those of the 18th century: "Our contemporary interest in playful learning, in computer sketchpads, and in video

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[42] Pomeroy, "Black Box S-Thetix" 278.

[43] Pomeroy, "Black Box S-Thetix" 280.

[44] Crary, *Techniques*. Erkki Huhtamo, "From Kaleidescope to Cybernerd: Towards an Archaeology of the Media", *ISEA '94* , catalogue. Ed. Minna Tarkka. (Helsinki: University of Art and Design, 1994)130-135.

games relying on children's fascination with electronics was already predicted in eighteenth-century interactive technology."[45]

With the current interest in computer imaging and the potential of virtual reality, are we returning to an appreciation of visual language similar to that experienced in the 17th and 18th century? Visual devices and images have suffered denigration in recent centuries, whereas in previous times, especially in the 17th and 18th century visual entertainments were embraced as important tools for learning.

Indeed, since the Counter-reformation there has been a distinct distrust of visual iconography and it has often been associated with a lack of critical thought. Stafford writes, "Intellectual 'vacation' was also synonymous with the apparent lack of work that went on in vision. Mere beholding was contrasted to the work of reading and writing."[46]

Stafford, Margaret Wertheim and Martin Jay have written extensively about the political and philosophical rupture which occurred during the enlightenment - a schism that lead to a demotion in the status of an oral-visual mode of learning, exchange and entertainment to one based upon the more silent, solitary activity of reading. The resulting Protestant / Catholic split was in large part based on the Protestant reactions to ocularcentrism; church use of iconography and optical devices was highly criticized as idolatry and charlatan trickery - designed to awe illiterate masses.

Visual displays or imagery were deemed undesirable in favor of the "rationality" of the written word. "The iconophobic," according to Margaret Miles, "betrays an elitist hostility to untethered masses and particularly women."[47] Those who depicted such displays, like the 18th century lanternist, were considered lower-class.[48] Metaphors intact from the Enlightenment continue to proliferate. Even within contemporary computer lingo, Umberto Eco perceives an Enlightenment comparison:

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[45] Stafford, *Good Looking: Essays on the Virtue of Images*, (Cambridge: MIT, 1996) 194.
[46] Stafford, *Good Looking* 34. Also see Jay; and Wertheim, *Pythagorus's Trousers* on the distrust in vision as a result of the counter-revolution.
[47] Jay 38.
[48] Hankins and Silverman 48.

> Mac [MacIntosh] is Catholic, with 'sumptuous icons' and the promise of offering everybody the chance to reach the Kingdom of Heaven ('or at least the moment when your document is printed') by following a series of easy steps. DOS, on the other hand, is Protestant: 'it allows free interpretation of scripture, demands difficult personal decisions... and takes for granted that not all can reach salvation.'[49]

In a segment entitled *Ingenious Pastimes*, Stafford emphasizes the serious, important educational function of games in the 18th century.[50] Formerly celebrated modes of activity also included optical technologies, ingenious experiments and exhibitions of curiosities, theatrical performances and digital dexterity.

Just reading the titles of these publications gives us insight into this synthesis of visual entertainment with education: William Leybourne's, *Pleasure with Profit: Consisting of Recreations of Diverse Kinds... Published to Recreate Ingenious Spirits; and to Induce Them to Make Farther Scrutiny into These (and the Like) Sublime Sciences; and to Divert Them from the Following Such Vices, to Which Youth (in This Age) Are So Much Inclined;* Henry van Etten's, *Mathematical Recreations, or a Collection of Sundrie Excellent Problems Extracted out of the Ancient and Modern Philosopher, as Secrets in Nature, and Experiments in Arithmeticke, Geometrie, Cosmographie navigation, Musicke, Opticks, Architecture, Staticke, Machanicks, Chimistrie, Waterworkes, Fireworkes, etc. Not Vulgarly Made Manifest until This Time Fit for Scholars, Students, and Gentlemen,That Desire to Know the Philosophical Cause of Many Admirable Conclusions;*[51] Nicholas Hunt's *Newe Recreations. Newe Recreations. Or the Mindes Release and Solacing. In a Rare and Exquisite Invention for the Exercising of Acute Wits and Industrious Dispositions. Replenished with Mysteries, Secrets, and Rarities, Both Arithmetical and Mathematicall: Not Formerly Discovered by Any. (And) Judiciary Exercises and Practicall Conclusions* and my favourite - Thomas Johnson's, *A New Booke of New*

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[49] Lee Marshall, "The World According to Eco", *Wired*, Mar. (1997) 145.

[50] Stafford, *Artful Science* 23.

[51] William Leybourne, Printed for Richard Baldwin, London, 1694; Henry Van Etten, Printed by T. Cotes for Richard Hawkins, London, 1633; both quoted in Stafford *Artful Science* 315n.

Conceits,with a Number of Novelties Annexed Thereunto. Thereof Some Be Profitable, Some Necessary, Some Strange, None Hurtful, and All Delectable.[52]

Stafford urges us to embrace the power of communication inherent in images and work to provide people with the critical awareness to fully comprehend and work with the power of visual imagery. She advocates the acknowledgement that imagery - from high art to popular illusions, is still the most efficient means of conveying ideas and that there is an "intelligence of sight" [53]

> No one who has watched the computer graphics and interactive techniques revolution can doubt that we are returning to an oral-visual culture. Animation, virtual reality, fibre optic video, laser disks, computer modeling, even e-mail, are part of a new vision and visionary art-science. What is lacking today is a concomitant high-level visual education to accompany the advances in visualization.[54]

After seeing an Iwai exhibition in Tokyo, a respected TV director from Fuji TV invited Iwai to create virtual sets for *Einstein TV* (1991-1992), a late night television show featuring new developments in science and technology presented by two young women (figure 57). Iwai's sets combined Amiga computer graphics with real time live action television. Graphs, menus and objects materialized on screen in combination with the movements of the two presenters. The look and technical innovations were a hit amongst designers and directors - many prime-time imitations soon followed.[55]

In 1992, Iwai designed a television show specifically for children, called *Ugo Ugo Lhuga*, (which Iwai defines as "... go-go-girls pronounced backward in Japanese. It doesn't have anything to do with the show. That's very Japanese, don't you think?").[56] He was primarily concerned with providing the context for kids to directly

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[52] Nicholas Hunt, Printed for Luke Faune, 1631, *The Epistle Didicatorie*; Thomas Johnson, Printed by E.A. for Edward Wright and Cuthbert Wright, London,1630 both quoted in Stafford *Artful Science* 316n.
[53] Stafford, *Good Looking* 4.
[54] Stafford, *Artful Science* 38.
[55] Iwai in Pijnappel 91.
[56] Iwai in Pijnappel 91.

participate in their own effect on the television media experience. Iwai wanted to resuscitate television as a participatory, rather than passive experience:

> I worked very hard because I hated the fact that mass media is a completely oneway experience. With my artwork I wanted to change this situation, change the relationship between people and moving images. I believed that if I could change the passivity of viewing, it would allow me to develop my art into new areas.[57]

Originally, *Ugo Ugo Lhuga* was pre-recorded. Iwai convinced the studio to do a live broadcast. It was the first interactive television show in Japan - children could call in and communicate with characters in real-time. For example, children were invited to send drawings of sumo wrestlers, which were scanned, then positioned on the set. Children could then call in and scream to determine the outcome of a match between the cut-out wrestlers. The louder they shouted over the phone, the better their wrestler performed. Volume equaled strength.[58]

The backgrounds also were continually manipulated with bold, colorful graphics. The show had a frenetic pace as the costumed child cast also interacted with bizarre computer-generated characters, such as Professor Poo Poo, robots, talking televisions, a tomato that gave advice to call-in guests and a cubo-surrealist artist named Sun (who looked like Iwai). "A lot of what I do is designed to have an appeal for children, to be approachable, like the flipbooks," says Iwai.[59]

Iwai's approach to learning or presenting new ideas is consistent with the 18th century English physician and translator William Hooper's *Rational Recreations in Which the Principles of Numbers and Natural Philosophy are Clearly and Copiously Elucidated, by a Series of Easy, Entertaining, and Interesting Experiments. Among Which are All Those Commonly performed with the Cards,* (1774), in which "sober philosophy" must be led by "...the hand of the sportive nymph Imagination, decked in all the glowing ever-varying Colours of the Skies."[60] Hooper would have probably approved of Iwai's attempts in television.

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[57] Iwai in Pijnappel 91.
[58] Iwai in Pijnappel 91.
[59] Brown 200.
[60] William Hooper quoted in Stafford, *Good Looking* 149.

Another example of Iwai's intent to help people interact with their media by altering the nature of live broadcasting combined the television with an exhibition entitled *The Museum of the Air* at a major art museum in Tokyo. Program viewers (mainly children) were invited to send faxes - and thousands responded from all over Japan. Their faxed images were hung in the museum.

At the same time, Iwai installed 16 Amiga computers with a simple drawing animation program he had created. Again, thousands of children visited the museum space and created their own animations (which were displayed on video or computer). After 26 days the museum was filled with their work.[61]

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Toshio Iwai creates environments in which spatial and kinesthetic intelligence are valued and where mutual participation, not passive consumption is invited. His work provides excellent examples of how old optical technologies can intersect with contemporary art to provide pertinent, thought-provoking models for inspiring attention, curiosity and knowledge. Stafford articulately describes the potential for vibrant interactions using models from the past, "The anomalous leads onlookers beyond the normal, but is capable likewise of revealing the unusual lodged in the prosaic and the quotidian. Brute facts and intractable objects can be made to address the imagination and thus awaken a genuine enthusiasm to know."[62]

While we interact with Iwai's works, we are engaged in his vision - but we are also encouraged to activate our own. With proto-cinematic devices, and by extension in Iwai's work, the viewer's psyche is set in motion - thus the works are "interactive" and require the active engagement of the participant in producing / stimulating the illusion of moving images. While these works provoke longing and delight, they also produce a sense of discomfort as we are reminded of the fallibility of our senses. Unlike the cinema, we control the duration of our experience.

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[61] Pijnappel 91.
[62] Stafford, *Good Looking* 4.

Iwai and artists like him are optimistic that the arts and sciences can provide insights into understanding of "self" and the world. Curiosity and enchantment can induce a genuine desire to understand - and stimulate imagination and problem solving. As Iwai states, "In my opinion, interactive art produces experiences, not images."[63]

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[63] Johan Pijnappel, "Toshio Iwai: From the Flip-Book to the Museum in the Air", *Art and Technology: Art and Design* #39: 89.

Conclusion

I began this thesis by exploring the notion that the desire to extend our senses through technological prosthesis is not new, as exemplified by the incorporation of technologies from former eras in the works of these contemporary artists. My subsequent awareness of a wealth of historical and contemporary writing has confirmed and allowed a fuller articulation of this observation - that the narratives that inform these works have long, pre-electric, pre-cinematic histories. It has also whetted an enormous appetite for the strange and wonderful ideas, discoveries, inventions and patterns of thought.

The term *proto-virtual* was coined here to annex the roots of pre-cinema to that of recent developments in virtual reality (VR), thus acknowledging certain historical continuities that connect centuries - despite current claims to the radical newness and never-seen-before-ness of our own technological era. Even Virtual Reality (VR) is part of our ongoing search, which began before recorded history, for ways to see more, to simulate reality and to transcend our physicality.

As emphasized in this thesis, the technological recycling of artists Paul DeMarinis, Jim Pomeroy, Ellen Zweig and Toshio Iwai encourages us to be aware of the cultural and social constructs from which technologies emerge - and to embrace technology on our own terms. The "unassailability" of technology is somewhat demystified by their self-conscious approach to it.

An appraisal of these artworks reveals neither a doomsday approach - nor a fetishistic one; rather they provide examples of poetic and effective thinking with technology. Baudrillard's comments also reflect a more balanced view:

> I offer a very critical account of technology and of technology's impact on the world. I'm not the only one to do this - everybody speaks of technology in this way. But now having reconsidered technology... I'm beginning to formulate another hypothesis... In other words, there's a difference of vision. Let's say that the rather critical or pejorative vision of technology represents a first position.
>
> Now, from a second position, I'm more interested in seeing technology as an instrument of magic. Up to now I think that technology has been analyzed in too realistic a way... it has been typecast as a medium of alienation and depersonalization. That's what we've done, and that's what we're continuing to do in analyses of virtual reality - it's possible to continue forever in this sort of direction.
>
> But I sense now that a sort of reversal of focus is taking place... I'll always continue to offer a radically critical analysis of media and technology - one's obliged to do this. But it's also necessary to identify another sort of analysis - a more subtle form of analysis than that one.[1]

The artists featured in this thesis do offer subtle, evocative and playful ways of positively exploring these issues. As Barbara Stafford posits, "Writing about what is wrong in old optical formats and new imaging technologies is relatively easy. Harder is proposing mind-opening analogies between historical displays of visual intelligence and computer-age information viewed through the eyes."[2]

The works presented do offer mind-opening analogies, as has been argued throughout this paper. Through the practices of these artists, old media have become new media, given their altered content and context. Far from being "dead", archaic media have "rolled over"; they have been enlivened and enlisted as valuable tools for accosting a range of pertinent issues relating to contemporary art and technology.

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[1] Jean Baudrillard, (Paris, 4 June 1993) quoted in *Continuum*, 8:1 (1994).
[2] Stafford, Barbara, *Good Looking: Essays on the Virtue of Images*, (Cambridge: MIT, 1996) 3.

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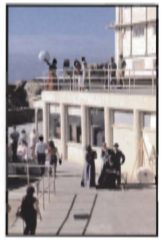

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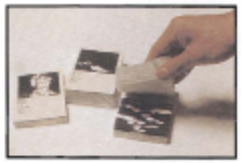

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