

Etra Consulting

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Dr. Dieter Daniels,
Zentrum fur Kunst und Medientechnologie Karlsruhe,
Kaiserstr. 64,
7500 Karlsruhe 1,
Germany.

28th October 1992

Dear Dr. Daniels,

I met with Woody Vasulka over several days last week and because of Woody's prior art commitments and what Woody felt was my unique understanding of the history and technical background of machines, we have decided to work together.

Woody Vasulka will handle the philosophical and art implications of the technology and I will handle the acquisition, restoration and recreation of various devices.

We feel that there is an updated and expanded version of the Linz show. We also feel that there is a second show covering the origins, artifacts, people and images of purely computer related digital tools.

I would like to speak with you on the phone since we have never met and can then provide you with any support materials you may require.

Sincerely,



Bill Etra

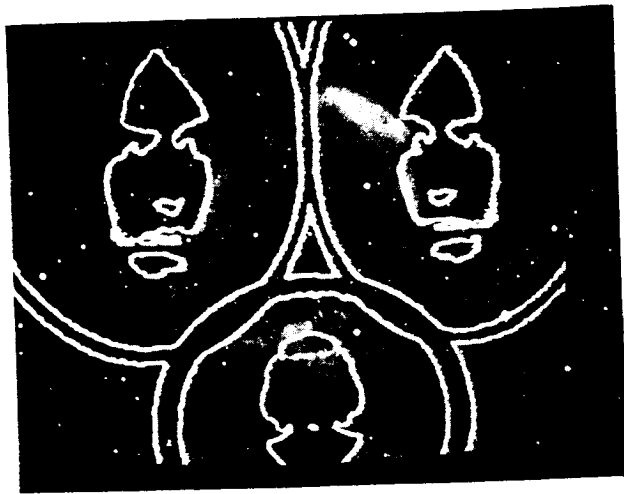
c.c. Woody Vasulka



stral Projections



Laser Quantum L



Bill and Louise Etra

1971—BILL ETRA

- earliest work in video as a documentary cameraman
- Onward Christian Soldier*—first video work involving manipulation of imagery and feedback techniques

1972—BILL ETRA

- continued experimentation in video feedback; began working with laser modulation and audio oscillators
- began working at WNET-TV Lab as an Artist in Residence
- Mars: An Optic Aspice* and *Laser Quantum L* were produced with this technology

1973—BILL ETRA

- coinvented the Rutt/Etra video synthesizer—primary responsibility for systems design and configuration engineering of the first portable voltage control analog video synthesizer
- PDP11-10—*Abstractions on a Bedsheet*—first video synthesizer/digital computer interface tape

—BILL AND LOUISE ETRA

- Video Wallpaper*—14 short studies in color and motion using the Paik/Abe colorizer and 6 free running oscillators

- Narcissicon*—first tape using the R/E synthesizer—a narrative self-discovery theme done in real time in the art nouveau style

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—*Heartbeat Tape*—with Peter Crown—uses biotelemetry equipment and video synthesizer

1974—BILL AND LOUISE ETRA

—*Astral Projections*—coproduced with Survival Arts Media (5 performances at the Strasenburgh Planetarium in Rochester—live music and video event

—Codirectors 2nd International Computer Art Festival—The Kitchen

—began researching the use of the computer as a compositional tool for video

—*Lady of the Lake*—a short piece of Gothic horror

1975—BILL AND LOUISE ETRA

—continuing research in computer technology and video

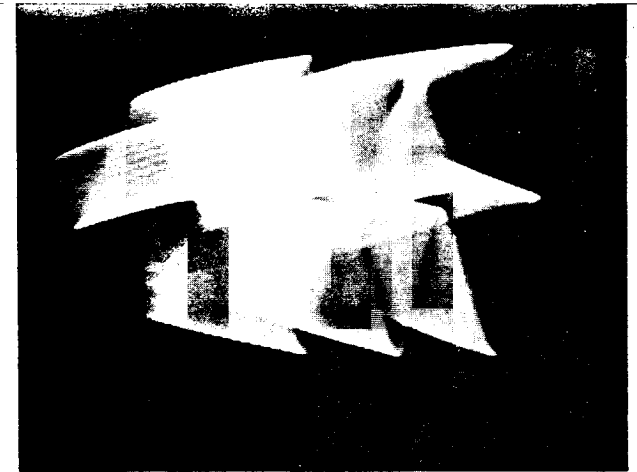
—Codirectors 3rd International Computer Art Festival—The Graduate Center—C.U.N.Y.

—*Ms. Muffet*—computer/video interface piece—with Dr. Lou Katz

—BILL ETRA

—*The Tube and Eye*—with Peter Crown—a show on perception and television watching behavior for the WNET series VTR

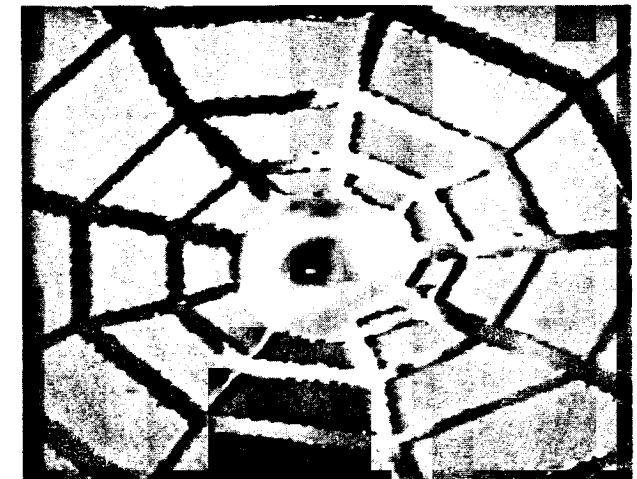
—*Das Ring*—computer/video interface piece—with Dr. Lou



PDP11-10-Abstractions on a Bedsheet



Lady of the Lake



Ms. Muffet

**THE DEVELOPMENT OF DIGITAL VISUAL TOOLS
TALES FROM THE EARLY YEARS**

PREFACE

To anyone who believes they live in the wrong time that adventure and exploration are things of the past , pay heed to these tales . For as the saying goes "adventure is where you find it " , the only skill required is knowing where to look . The opportunity described here is ongoing and will be for some time to come since these are also the roots of a vast unexplored ground , virtual reality ,robotic sight , bionic vision , to touch on just a few . If everyone who reads these words were added to those already working in this field the work would only just have begun.

This book is our attempt to put into perspective the chaotic early years which have led to the flourishing of digital visual art . Alas, this cannot be a definitive history , that set of volumes awaits at least another decade of research. We have instead opted to communicate the spirit and feeling of exploration of this wonderfully exciting time . Wherever possible the accuracy has been checked with the individuals who participated . Where only second hand knowledge was available we have tried to indicate any uncertainties . Some stories however are too good to be left out , and of these I say the same as the Arab story teller about to recite from " The Tale of A Thousand Nights and A Night " , but Allah alone is all knowing !

"nice nice very nice , nice nice very nice
so many different people in the same device ."

Kurt Vondergut - Cats Cradle

The story we are about to tell involves characters and institutions that run the gamut of human endeavor from scientists in top secret government research labs to artists in museums . The history of the digital video tools jumps from the " Big Board " in the " War Room " at The Pentagon to The Artificial Intelligence Lab at M.I.T. to The Kitchen (video theatre in NYC) to CBS News . In this telling of the tale we attempt to concentrate on the individuals who despite all odds and the difficulty of being creative inside a bureaucracy or accomplishing anything outside such structures have managed to significantly contribute to the development of the tools.

The heroes of our tale come from many backgrounds, cultures and countries . The one uniting factor is they all have caught some part of a vision of the future and the belief that they could help create the unbelievable. This faith in the future has sometimes led to recognition and fortune, sometimes recognition alone, and often to neither fame or fortune . Pioneers in any field always have a struggle ahead of them and as often as not their bones are seen bleaching in the sun from the cars and trains traveling along trails they blazed . As we write our story the bones have not had time to bleach and fortunately many of the early pioneers are still with us . Progress in the field of computers in general and digital imaging in specific has been so rapid that it has outstripped any previous human enterprise by several orders of magnitude . As _____? put it " if the development of flight had gone like computing the day after Kitty Hawk we would have landed on the moon." computer graphics and digital imaging have not been that slow ! The result of incredibly rapid progress is revolutionary ideas become standard practice in as little as five to ten years resulting in many of our heroes being told that their innovations were obvious . Fame and fortune are rarely the forces that drive the innovator , artist, and inventor, it is a form of obsession with a vision of what he or she sees as the future that drives them on .

The environment of technological change has been and remains so rapid that since the beginning of our story in the 1950's till today, digital engineers can only rely on the change being constant . Everything from the way software is written to the fundamental nature of the parts used to create the devices to the basic architectural of the machines to the mathematics that are applied to the problems have been and are in constant flux . In this changing environment the consummate survival characteristic involves the ability to constantly replace and update technical knowledge and skills without losing ones ultimate goal . For those who are rebels, loners, and generally considered different or strange in other words

artists , inventors , and true entrepreneurs this marshland has proven very fertile ground .

The men and women who survived and even thrived in the chaos of the birth of computer graphics and electronic imaging made up a unique and unlikely group . Wesley Clark is credited with the design and invention of the first personal workstation (the LINK & LINK- 8 computers) , light pens , Deck tape , and among other things was fired at least three times from MIT's Lincoln Labs . The amazing thing is that Lincoln Labs had sense enough to hire him back . Bob Richman an early programmer at Lincoln Labs who along with his colleagues thought his job had become obsolete when the FORTRAN computer language was announced , since the new language was so simple it would allow the physicists to do their own software . Sarah Blygh who ran the weapons simulation computer at Lawrence Livermore Rad Labs (where the sign at the entrance to the parking lot said American Greeting Card Company) had only a pool game to show for years , since every thing else was classified . Lou Katz who brought up the first real time display for modeling RNA and wore socks with ants embroidered all over them . Stan Vanderbeek who could take film thrown away at Bell Labs and edit it into a masterpiece which he would then project on steam . Lilian Shwarts wife, mother and artist in residence at Bell Labs whose work was an uncannily accurate prediction of things to come . These are a small random sampling of the characters from our tale , and we have yet to meet the machines !

If the folk of our tale are wide and varied the machines they individually and collectively created are the wonders of the modern world , they range from titans stretching over acres of government laboratories to elfin chips that fit on a finger nail . These devices mutate so rapidly that a building full of hardware fits in your palm fifteen years later . The machines are almost living entities , certainly in the early years an individuals status and inclusion in the group was to a large extent defined by the hardware with which they were associated . So important was hardware that the major professional organization in the computer industry bears the name ACM or Association of Computing Machines . Machines analog and or digital or a hybrid of both .

To properly tell our tale we must speak not only of computers but also of the devices which allow us to see their output the displays . The history of computer display is tied by cosmic binding to the development to that of television (though at times neither television or computer people where willing to admit it .

Since the nineteen twenties while modern computers were still a half formed dream in the mind of visionaries like Herman Hollarith (Whose dozen or so employees laughed when he told them he had decided to call the company International Business Machines) there were numerous schemes for the display of text and pictures by wire or radio . Jenkins one of the founders of The Society of Motion Picture and Television Engineer (SMPTE) published a book called " Vision by

Radio " in which he describes the modern Television in both analog (CRT) and digital forms (individual light bulbs) . Unfortunately for Mr. Jenkins his plan (using scanning prismatic discs) went by the wayside one year after publication of his book when Telefunken demonstrated their first practical Television camera . In one moment Jenkins view of the future was preempted he went on working. Others such as San Francisco inventor Farlo Farnsworth fared less well despite the fact that he was possibly the first person to make Television work .

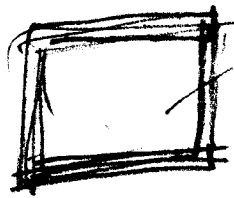
50's - WHIRLWIND - (MIT)
1955 (2)

MIT

STANFORD
\$100,000

LINK

HYBRID



WESLEY

LINCOLN LABS

BOSTON

MILITARY

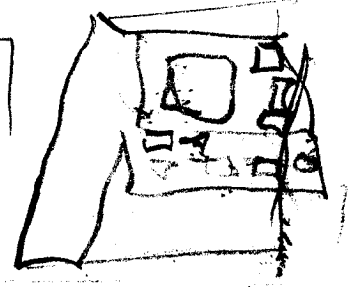
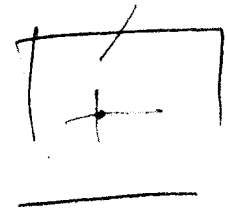
GENERAL RESEARCH

1954

68-69

58' CANNON → MIT

DICK SHAP → CANNON



PHILCO

250,000



150,000

SKIP SWEEDEY

July 9, 1974

WILLIAM ETRA
Video Consultant

(212) 929-3516

165 Eighth Avenue
New York, N. Y. 10011

Dear Casneros,

Yakse mashe? Inclosed you will find a
much bullshit Video Computer proposal, with the
bullshit spread thin to make it last longer. I
thought that pages 3 to 5 would go well in
some printed format. I will send when finished
my report on displaying images of the future,
which will contain much higher quality bullshit.

Bill

F.S. Warning! don't push red button on
beard # 121