Electronic Video Image Processing: Notes Toward a Definition

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In order to understand the concepts and practice of electronic video image processing, it may be helpful to first explore the more general term "video art." Artists began to intensively investigate the medium of video when the first portable recording systems began to appear on the commercial market in the late 1960s. For the past fifteen years, video artists have been producing works which have helped to extend many of the important notions of contemporary art. They have investigated and expanded performance, conceptual, narrative, documentary, formalist, and experimental art traditions.

The term "video art" helps to communicate the intention of the maker and establishes the context within which the work is to be viewed. The term reinforces the use of video as a means of creation and expression. It refers to the medium with which the art is created, but makes a distinction between the medium of video and that of television. The emphasis is on video as a productive medium; broadcast television is only one of the many possible avenues of distribution of the work. Art tapes can be displayed using broadcast technology, but can also be screened in closed-circuit situations in museums or at home. The proliferation of alternative technologies like cable, satellite, video disc, and Video Cassette Recorders (VCRs) all make possible a more focused definition of the intended audience and offer a certain amount of viewer control over the material being screened. The term "video art" places emphasis on the *idea* of video as a means of making art rather than on television as a means of *transmitting* art or, more generally, information.

Electronic image processing uses as art-making material those properties inherent in the medium of video. Artists work at a fundamental level with various parameters of the electronic signal, for example frequency, amplitude, or phase, which actually define the resulting image and sound. The electronic tools are the instruments with which the signal is created and then altered. These signals carry the imagery in an electronically coded form. These coded structures are what the artist actually works with when creating an image-processed work. When these signals are decoded by a television monitor, the images and sound are displayed.

Image processing can be thought of as a genre within video art. It shares many of the concerns of twentieth century art. It is a machine art, using new technologies in the making process; it is an art created with and displayed on a machine. The process of creating video encompasses methods ranging from the artist controlling each device by hand to the artist specifying only a set of parameters within which the machine will then automatically function. The "art" can refer as much to the processes of making as to the "art object" which results. As image processing tools have evolved, each single frame or image can be specified in a very detailed manner, as can the transitions between moving images. Image processing can be a real-time medium, in which the making of images is a process of handcrafting at each moment; the resulting tape can be thought of as a document of an activity or gesture performed. Using computers and analog audio control systems like electronic music synthesizers, the specific images as well as more general structures can be pre-programmed and are therefore repeatable. The computer programs or "patches" can be thought of as scores for the visual image.

Image processing is an art which uses light as a plastic compositional medium to define and to display shape, color, and form. In the process of electronic imaging, video is understood to be a reproductive, camera-art medium as well as a generative medium. It is possible to create wholly synthetic images using such devices as oscillators or a computer. Camera-based images (literal or abstracted representationalism) can be combined with non-objective, purely formal, and geometrically-based imagery. In this sense the artist may use image processing techniques to interpret and to create a reality.

Image processing involves the use of electronic tools which allow the artist to define changes within the parameters of the electronic signal.

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Synthetic color can be added, images mixed, and their gray values rearranged. Holes can be created and filled with other images ("keying"). Geometric patterns can be created and their symmetry disrupted or juxtaposed with representational imagery. Discrete images can be sequenced so rapidly that they appear to be superimposed and eventually dissolve into bands, each containing sections of the original images. Audio can determine video image treatments so there is a direct correspondence between sound and picture. With the computer, images can be digitized and broken into discrete and tiny rectangular bits which can be colorized or their gray values reassigned, sequenced in a step-motion fashion, or treated with any other imaging technique. These techniques in themselves, however, do not alone define an image-processed work. As techniques they are seen on broadcast television, notably on commercials as special effects which serve primarily as attention-getting devices. Used in this way, they often have no inherent relationship to the content.

Image processing is time-based and time-dependent both in its creation and its viewing. The imagery appears in a sequence, the rapidity of which induces the perception of motion. The sense of continuity, like that of film, exists as a function of human perception and memory. Video recording and display occur as a continuous process of construction and deconstruction of the image. The "whole" image is actually a process of scanning the face of a television monitor dot by dot along a line, and line by line down the face of the picture tube. The viewer sees whole images and motion because the process occurs so rapidly that the eye-brain perceptual system is unable to resolve the discrete elements with which the images are composed.

With most cinematic art forms, the viewer has little control over the structure as it unfolds in time. To see the work the viewer must accept the time frame as it is defined by the artist. With the advent of new technologies like home VCRs, video disc, and small computers, however, the viewer has control over the time base of the work. Entire pieces can be easily replayed or sections slowed down. Single images can be still-framed for detailed study. With the interactive video disc, the actual sequence of the images or the order of the presentation of frames is under the viewer's control.

Many video artists working in image processing are also working with the single frame. Some are producing still photographs, using the techniques of electronic image processing to replace chemical methods of image transformation. The video image, created electronically, is displayed on a monitor and then photographed. Other artists are working with computers and printers to produce images directly. In this mode, artists are again working on a basic level with electronic signals to create images. It allows for the basic techniques of image processing, keying and superimposition for example, but instead of dealing with a kinetic form the artist deals with a still image. There is no "re-photographing" of the image; rather the signal, which is created using a computer and which defines the image, is fed to the printer. The printer accepts the electronic signal—the coded image—and translates this information into a variety of gray values printed on paper and arranged as small rectangles, or "pixels," within a larger grid structure. The number of pixels permissible in the horizontal and vertical dimensions determine the resolution of the computer-generated print. If the "image" has been stored on a computer disc, it can be reproduced an infinite number of times. The signal or image is created or encoded using a computer and decoded or displayed using a printer.

Video art calls the whole notion of art as "precious object" demanding specialized viewing space into question. With reproductive techniques of art-making came questions related to the "location" of the art. To varying degrees, photography, film, audio, and video are all reproducible media. Is the art work actually a defined number of prints within an edition? Is a copy made by the artist inherently of more value? Does the copy need to be made by the artist? Is a copy discernible from the original? Additionally, because video art requires a tv set for display, the association with the commonplace puts the work within the larger context of broadcast form and content and everything that connotes: program lengths in multiples of 30 minutes, the interruption of attention for commercial information unrelated to program form or content, standardized content and structure, an emphasis on entertainment. As such, video art works require

a deliberate effort on the part of the viewer to divorce him/herself from the commonly understood and accepted experiences associated with television watching. Video art works, though spanning approaches from conceptual, narrative, or expressive to performance and formalist, all seek to establish a fundamental and integrated correspondence between the structures of the imagery and its meaning.

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