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1.

It was my generation that was first presented with the opportunity of an encounter with technology at a stage when the gathering and generating of sounds and images electronically became not only possible, but in need of an esthetic formulation. As always, the work split into two categories with those who would use technology as a vehicle or those to whom the technology offered itself as a poetic source.

With film I learned that both technological and esthetic experimentation should be conducted on personal grounds, in a non-industrial and non-scientific environment, away from institutional supervision, away from the film industry, away from the industry of television. Fortunately, the advent of video as an art form provided shelter and support for experimentation with electronic images.

At first video was an undefined discipline. Unsupervised, I could walk its periphery, looking for the technological and esthetic boundaries, far away from the concerns of the mainstream of art, trying to identify its phenomenology, its materiality, its behaviour. The way in which things became clearer was a way of play, with no responsibility, no rules. Only after the computer became the companion to my work did I realize that the personal dimensions for technology may have limits,

that the work with computers is a participatory task, immense in its own dimension. Until then I had rejected the argument that there is a division between the technological and esthetic, combining it within a single craft. The knowhow in both made the myth of a "New Renaissance" very attractive.

In spite of limitations, one should still take an extreme individualist position. It is essential that one knows the dimensions of technology as a personal and a creative condition with which one lives and works apart from an institutional network, run by another logic, by another priority.

2.

When we speak of film, we automatically associate the term "moving image" with film. Film is film. Film is the experience of moving images. But when we step out of the exclusively filmic context, looking back at film from the vantage point of video or computer generated moving images, we clearly see the dual nature of the filmic performance: the machinery of an "image delivery system", and the "moving image" as a perceived phenomenology.

It is also clear also that any medium of the future will only host the phenomenon of the moving image for shorter or longer periods of time, and that it will deliver the entrusted cargo of the moving image phenomenology to the next medium. New media, even those under computer control, emulate on the invention of film, not only as a system of perceptual communication, but as a syntactic set that some call a language, suggesting a notion of visual literacy as its special branch.

In speaking of the esthetics of "moving image", one can't stay within an exclusive filmic context, since the term "film" is located historically. The experience of "new media" is manifestly accumulative, inclusive, evolutionary and extended through its original and inherited phenomenological set.

Each medium develops in its own ideosyncratic environment. In other words, the specificity of the medium has a decisive say in the esthetic formulation. But the experience of the computer has shown that no new imaging principle involving moving images can possibly be meaningfully articulated without containing film to begin with. The long and sustained appreciation of film puts a demand on moving images even in their experimental phase. It is not enough to present "new" artifacts, the broad experience of film has positioned all the "new" works of moving images in a competitive cultural environment, where it must sustain its intellectual challenge.

The prospect of looking at "new" media as an accumulative discipline is not only essential to a practitioner, it offers the excitement of theory as well. Massive amounts of initiatives are needed to formulate new languages that prescribe, initiate and control the image. Initiative is also needed in design and development of tools and other esthetic structures which are outside of industrial or scientific interests and those which critical abilities can direct the essential intellectual discourse.

3.

Obviously, the machines have no initiative to acquire images on their own. They are constructed to capture, process or generate images which after all must be in some cognitive relationship to our visual interpretation. Before any image can appear before our eyes, the concept of the image has to be formulated for the machine in a specific way. Certain models of image organization must exist ahead of time before the active process of recording, alteration or generation can take place.

Traditionally, images of the world extracted from light/space by a camera (obscura) have been dominant in two senses; firstly, in the way they appear to be the most detailed and complete of all representations of reality, and secondly, the way they represent the truth as an objective and agreed upon fact, although subject to interpretation. In light/space, the camera operates through the specific element of a pinhole, phenomenologically a "decoder", which has the property to organize redundant light pattern into a structure, familiar to our vision. Here the image is modelled by the conditions of light/space. The camera has a dual function: it assures the physical arrangement (a pinhole/lens, darkened environment, the positioning of the media against the lens), and further, confines the artifact of a pinhole into a frame.

The camera representation of reality has been the dominant instrument since the beginning of film. Its principles still applies on electronic image gathering in video and indeed impacts the computer as well. But by its performance, the instrument of camera attaches itself to firmly to the moment in time, making a record in history.

Now however, the instrument of camera is being replaced by the computer.

light/space does not provide the model of image organization. Here the model comes from an internal source, a generic machine source. In film, it is the optical transformation of images through the technique of printing that is most available. In a special case in video, the product of a waveform generator - an oscillator - could provide this alternate model. Or the system itself is employed to participate in formulating the image through a video or a system feedback or a combination of both.

However, the ultimate challenge to the dominance of the camera comes from a computer, where images come from a numerical formulation - a numerical model - in all its visual aspects. Guided by the mathematical formulations, forms and textures can appear in a simulated camera/frame. Additionally, in a hybrid imaging mode, the computer may acquire images of the world through a camera (obscura), integrating both possible worlds. Once this is accomplished, alternative representations of reality can be suggested.

One could ask why this is even interesting, when the world around is the perfect generator of images, updated continuously with passing time, watched by the faithful guardian of truth - the camera (obscura)...

It is this confinement to a moment in history which distinguishes image making through a camera in comparison to the other arts. Camera images in order to live, must continuously produce "now", a protocol repeated over and over again. The most complete moment capturing all that minute detail, makes the images a part of the past which, unlike painting, can't return with renewed reality. The more convincing the

The phenomenon of a moving image is carried on by the mechanics of a succession of frames, all referenced to the system of reproduction. A special care is given to the alignment of each frame, so that the axis of reproduction will maintain a precise position within the preceding and succeeding frames. This axis of stills-in-motion is a phenomena in which we experience a screen-retinal image realized in the visual cortex. If this relationship is violated by one or more components of this equation, "interferences" are introduced.

The positioning of the frame is achieved differently in each medium; in film, physical "sprocket holes" position the film horizontally while the gate positions the leading edge vertically. In video, the image/frame is constructed from timing pulses prescribing the position of the lines and the axis of the frame. The timing pulses are encoded into the video signal to emulate the "sprocket holes" of film and to position each succeeding frame in the precise place of the preceding one.

The frame in a computer is treated in two separate time constructions. The frame itself is a part of the image display, outside of the computer architecture. In fact, the computer memory contains the image in the form of locations - certainly not a pictorial concept. When the numerical functions of the image are performed, the two time zones, that of a computer and that of a display must be related in a sequential relationship to accomodate a line by line display. Here the numerical address code is expressed through (imaged by) the position of each point on the screen. <sup>which is</sup> ~~Each point on the screen organized by a~~ computer is identified by a dual code, one representing the character

All moving image media rely on frames, according to an original and still unchallenged concept of perceptual process originated in film language. It is only change in content of the frame itself that is the subject of a phenomenological evolution.



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A computer organized image presents several dilemmas to the operator as an artist. From the construction of a single frame to the continuity of a series of frames representing a kinetic illusion. When the image source is simply generated on the spot, the machine's function is to assist the human determined process as it happens in film animation. However, in the case where the machine is to construct images of a photographic nature, many rules and detailed procedures have to take place, spatial and light conditions are to be simulated...and internal mathematical tools must be evoked.

- 1) A library of algorithms
- 2) A library of archetypes
- 3) A library of movements and transformations
- 4) A library of ETC....

A computer can be characterized as an empty stage on which a performance is to take place. A concert, a ballet, a drama. Each genre must be constructed by specific rules. In our case, a viewpoint of a camera with associated features (perspective, light, color, ETC) must be written into the basic program as a primary utility without which no performance could be given or seen.

This process of using a machine which is comfortable with numbers exclusively involves a certain amount of ingenuity by the operator, but even this extraordinary achievement does not bring us closer to the process in which the banal becomes unique. This transformation requires a creative involvement of an artist.

Task: Make a tree!

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- A) - Get the archetype (a tree)
- B) - A specific kind?
- C) - Make the tree into an object (so you can develop many viewpoints).
- D) - Make background to it (maybe a hill)
- E) - Make afternoon sun (a shadow)
- F) - Make wind (to move each leaf)

What is an archetype? Archetype in the context used here is a numerical image-object, containing all possible facets of likeness, sameness. It is assembled from a large number of samples of thorough compromise, a process of averaging, so that all possible unique features are erased.

This is an informational object/archetype where no numerical fact is missing. In that it is an useless object. Another process must come into play in order to retrieve the usefulness of the archetype. Here it is an interactive process through a personalization which takes place. Here the banal transfigures to the unique. It must then be within the process of using the archetype where personalization of image takes place.

To ensure that the density of the data base is sufficient to represent reality, an enormous amount of points and actions have to be entered. It has to match the number of the surface molecules of the observed scene to match the practical potency of photography. To enter the domain of "moving image", an even greater magnitude of code has to be manipulated.

The benefits of code processing are extraordinary. Besides having the computer as a potent tool to handle them, the codes themselves show immense affinity for selection, organization and transformation. Their ability to commute between our notion of media makes them immune to specialization. Here for example, the medium carrying a "moving image" loses its specificity, its territory, its dedicated environment.

To conclude, the role of eye-mind here is merely referential. In the computer environment, the viewpoint of film (and video) loses their physical identity, becoming a set of prescriptions, assignments, a possibility containing all the physicalities denuded of the randomness of nature (camera obscura).

The performance of film is described here by two artists,  
Peter Kubelka and Werner Nekes:

"Where is, then, the articulation of cinema? Eisenstein, for example, said: it's the collision of two shots. But it's very strange that nobody ever said that IT'S NOT BETWEEN SHOTS BUT BETWEEN FRAMES. It's between frames where cinema speaks."

(Cinematic articulation: Peter Kubelka in conversation with Jonas Mekas): (Dat?)

"I came to the answer that cinema is the difference between two frames: the work the brain has to do to produce the fusion of the two frames. This small unit which I call kine(\*) is the smallest particle of a film I can think of. Though it is composed of a lot of elements, the visual components do not yet determine the filmic language. If you, for example, take this big unit: a single frame, you have a photographic information; if you take two frames, the difference between them defines the smallest unit of filmic language that is possible, one filmic information".

(And later:)

"The constant deception of perception is a function of time. The work or the capacity of the brain within time segments is dependent on the organ of sense. The kine stores two different time segments and the perception of a kine happens within one time segment, which is at the same time a part of a second time segment. If you associate the stored times of two frames with memory which is a storage of time, the laziness of the perception of memory units produces imagination. Imagination becomes the illusion of a stored time which is fictitious. Imagination is a function of memory units. The collision of memory units produces imagination."

(Whatever happens between the pictures, a lecture by Werner Nekes, Afterimage, November 1977)

From my position there are roughly two moving forces ~~advancing~~ advancing the field ~~of~~ <sup>OF ELECTRONIC IMAGING.</sup> ~~creativity~~. The first in which creative force inevitably gives

its power to pragmatic forces, things will be done because they can be done, things are new thus better - new era creates new art - new tools initiate new syntax, progress initiates evolution.

At ~~the~~ other places the creative forces <sup>(ARE)</sup> at the service of ideology, or in its extreme, to an individualist's strategy of diversity.

The pragmatic motives and modes satisfy the collective or industrial production of cultural artifacts, particularly since the industry and commerce are almost always interlocked within its cycle of ~~the~~ PROFIT MAKING.

IN THIS, The position within industry and commerce is severely anti-intellectual, a position <sup>IN WHICH</sup> ~~with~~ the label 'elitist', <sup>IS CONTRARY TO</sup> ~~whose essence defeats the~~ popular, the very stuff that profits are made of.