Dziga Vertov's
Kino Pravda

Video camera from Michael Snow's Timed Images
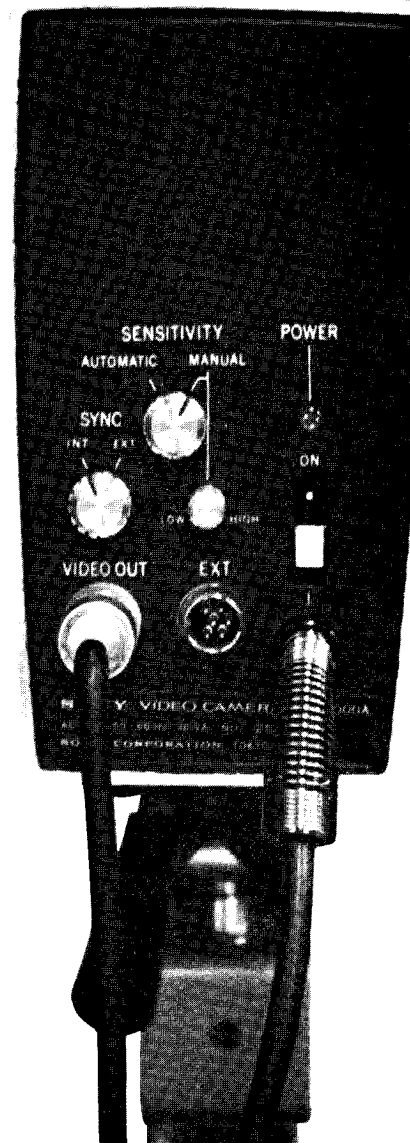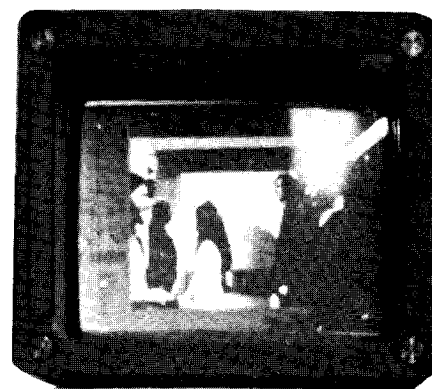
Television is no more like film than Punch and Judy is like theater. Sadly, broadcast tele-vision presents us with the spectacle of Punch dropping his brickbat and delivering Hamlet's soliloquy. No wonder the audience turns away in boredom. Each art has its own formal necessities which it ignores at peril. Film was boring while it imitated the conventions of the proscenium arch stage; and television remains trivial while it imitates film. Artists and innovators signal their break with such trivial use of television by calling their uses "video." Video rejects the conventions of both film and broadcast television and attempts to discover the unique formal necessities of its electronic processes. Video is finding the con-ventions suitable to such necessities; and we now have an electronic visual art form to complement electronic music – Video Art.

The form
and sense of video

ROBERT ARN

How then, if formal characteristics are so im-portant, are we to explain the assumption that television is like film? Or the almost total ab-sence, after more than 20 years, of formal des-criptions of the television process? The answers are mostly to be found in economic and social rather than artistic history and need not concern us here. The fact remains that to date, television both in production and viewing has been domi-nated by the conventions and assumptions of narrative film. It is criticized in terms of content of the crudest narrative or logical type. Which is odd, since very few who regard television in this limited way would chance interpreting film purely in terms of the narrative conventions of the novel.

From the first, film has been perceived practically, critically, and theoretically by those whose interest is primarily narrative or content-related, or by those who see its process as open-ing new forms of perception to the audience and thus new fields of expression to the artist. But of course film did not suffer from a flight of intel-lectuals at its birth. Born in the Constructivist period of technological optimism, it was imme-diately the focus of intellectual attention, while television even now faces a technological para-noia which has blocked serious conceptual study of its formal characteristics and has thus enforced an *artistic* triviality as profound as its *social* im-pact. However, even film criticism is shaky in some of its formal descriptions; some miscon-ceptions about the filmic treatment of time will need to be righted before we can reach an ade-quate formal description of video (or television-as-an-art-form).

In 1924 film was new and fascinated with itself. Dziga Vertov, out with his camera end-lessly walking, created *Man With a Movie Camera* and revealed the new possibilities open to man's cinextended perception. He called this mechanically extended perception "cine eye." Through his viewfinder Vertov saw space ex-pand and contract and perspective shift with

Eisenstein's Potemkin. *Opposed verticals and horizontals control the editing of the whole sequence which cuts back and forth between Cossacks on horizontals and the verticals of the crowd.*

lens change. He found that time was under his control: crank the camera a little faster and it all slowed down. Film allowed man to experience what was hitherto beyond his perception – the malleability of space and time. However, others realized the corollary: to say that film extends perception is the same, in one sense, as saying that it distorts perception. Current followers of Vertov – say Jean-Luc Godard and Jim McBride – maintain a reflexive commentary in their films on the distortions of reality introduced by the filming process and our conditioned expectations of it. In fact, the illusion of reality is only achieved by relatively large distortions of actuality. Vertov tells us what now seems obvious – that the matter of film is the manipulation of time and space.

Intuitively, one might expect the manipulation of time to be the dominant formal characteristic of film – the illusion of movement after all is its primary difference from mere photography, and its primary use is in dramatic narrative which exists (barring several attempts at Aristotelian temporal unity such as Agnes Varda's *Cleo de 5 à 7*) by tricking the time sense. Intuition is a bad guide in this case, however, since such a system of temporal illusion is the basis of all narrative art whatever. Much more

to the point is the question of how film *differs* from other forms in its use of time. Film's most characteristic means of temporal manipulation, parallel editing (The Maiden on the Railway Track Rescue at Hand, phenomenon; or, Meanwhile Back at the Ranch) is not intrinsic to film at all but derived from the Dickensian novel by Griffith and developed by Eisenstein. It, like most other conventions of film editing, is necessary to all flexible narrative forms and is found equally in most. The most purely filmic distortion of time – slow or fast motion – is seldom used and relatively obtrusive, a "tic" of certain directors and penchant of the inexperienced.

The basic problem of film editing is easily stated – what shot to use next? Eisenstein saw that the decision was not a purely narrative or temporal one – that certain shots "worked" and some did not and that this was determined not by narrative sequence but by the graphic, compositional relationships of consecutive shots: editing sequence follows spatial relationship. Thus, though film does inevitably alter both time and space, it is primarily space art. A visual Marxist like Eisenstein cut for graphic conflict while most directors cut for graphic similarity to achieve smooth continuity. But composition rules the cut. Graphic space orders time.

Video art, in contrast to film (and also to television which is mostly a feeble narrative reflection of film), has suffered an arrested development. After 25 years of television, video art is entering its adolescence – still looking for its Dziga Vertov and vainly awaiting its Eisenstein. Like film in its earliest period, video is in a phase of self-examination or perhaps narcissism, absorbed in its own processes. The difficulty for the viewer is the fact that these processes – so superficially like those of film – are really quite different; and the responses we bring to film are inadequate and deceptive in relation to video. For example, for a long time I thought that the apparently clumsy editing of video pieces was a mere function of the mechanical difficulties of editing with existing equipment. The low-cost $\frac{1}{2}''$ and $1''$ tape recording equipment used by most artists does display its instability particularly in editing. But I now suspect that I have been applying expectations derived from film,
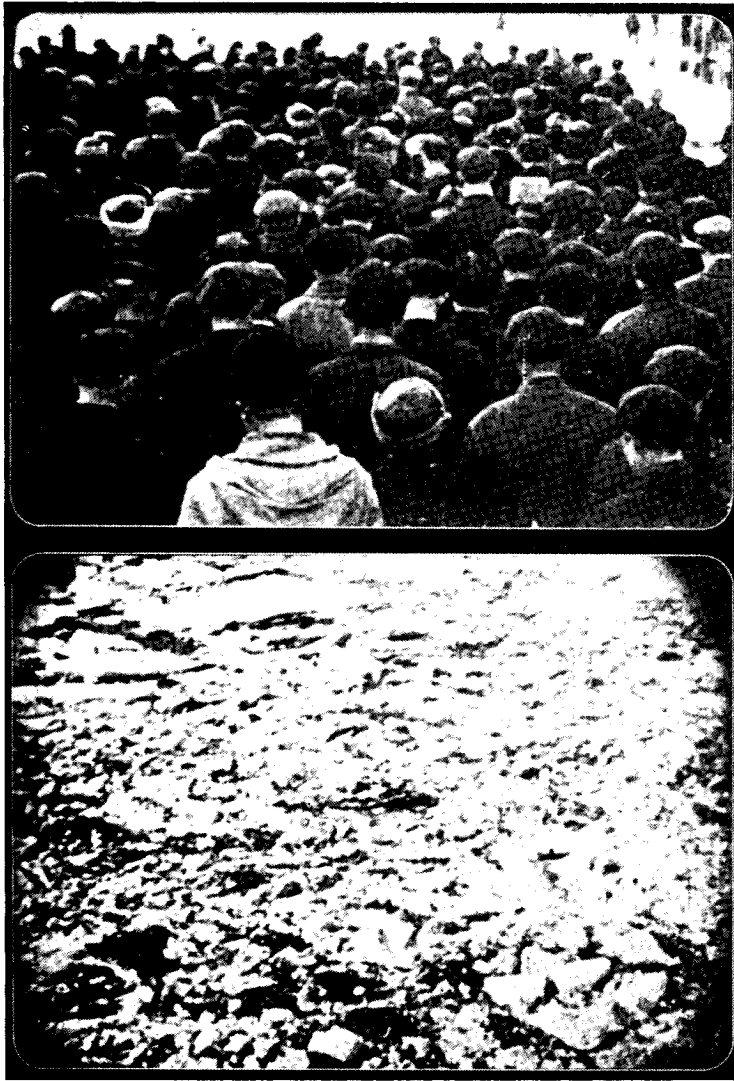
Two successive, graphically matched shots from Pudovkin's Mother, 1927, *suggesting a simile between the aroused workers and the irresistible movement of ice flows on the thawing river.*

where spatial graphic continuity determines editing, to video whose space/time structure makes such criteria meaningless. Classic editing technique *is* to be found among video artists. Andy Mann, for instance, produces tapes of almost vintage Eisensteinian montage. Most video artists who create such work support themselves by producing documentary tapes for business and organizations who demand film-like products; and I suspect film conventions inevitably creep over into their other work. Now when I see video of traditional film editing style it seems slightly out of place. The critics' dilemma: how to avoid seeing "different" as "inferior."

In film the impression of movement is derived from a succession of frozen moments. In contrast, the video image, even if each frame is examined, is all motion. Even a still video image is in motion – a single rapidly moving and constantly changing dot, one dot only, does all the work. The basic *illusion* of film is *motion*. The basic *illusion* of video is *stillness*. A detail of

the video image may be located by pointing out where it is (as in film), but also by specifying its distance in time from any other point of the image. Any point on the image is both "where" and "when" or "wherewhen" from any other point. Video is quite literally a space/time machine. In this context the lack of the simple juxtaposition of shots characteristic of film editing is more comprehensible. Continuous motion or metamorphosis is the continuity line of most video art; an art of becoming rather than comparison, an art of time.

Before exploring in more detail the space/ time nature of video and its implications in the work of video artists, some of the ways video resembles film in its processing of reality should be considered. Godard has said that film is the truth 24 times a second, which is to say that it is a lie – unless truth really happens at that frequency. Video, then, is a lie 30 frames per second, or rather 60 "fields" a second since each frame consists of two alternate fields of scan lines.* The intermittent nature of both film and video gives rise to the stagecoach wheel phenomenon, or "strobing." Combine two periodic motions and you get an apparent motion proportional to the difference in rates. We have accepted this distortion in relation to rotary mo-

tion, but cameramen are careful with panning and tilting rates across vertically or horizontally barred fields to avoid strobing effects that might destroy the *illusion of reality*.

In both film and video, achieving realistic color requires some distortion of actuality and here we find a phenomenon of art that would have delighted Yeats. Video has become so widespread that public reality is modifying itself so as to look "real" on television. The announcer's blue shirt was just the beginning. The decor of almost all public events is now chosen with an eye to the sensitivity of cathode ray tubes. The line/scan of the video picture is also an important factor in this context. Horizontal stripes have almost disappeared from public life since they react with the scan lines or "raster" on television to produce a disturbing moiré. A reality which cannot be comfortably facsimiled on television tends to drop out of public life.

The nexus of image/reality is the catalyst of a whole branch of video art that might misleadingly be called documentary, but is, I suspect closer to some sort of reality repair. Because of its low cost and immediate playback capabilities, video is becoming a major tool in psychotherapy and social action. Trapped as we seem to be in the cliché of alienation, we seek corroboration of our existence, and video is on its way to being a mirror for masses. The displacement of reality into the conventions of representation leads us to paraphrase Descartes – I appear on the screen, therefore I am. The key to therapeutic and activist use of video is found in the ambiguity of the word "image". Therapists talk of the difficulty of their patients in generating a body image; activists have found that politics is the art of the body politic image. Glancing through the National Film Board's *Challenge for Change* newsletter you catch a double refrain. People become real to bureaucrats only when they can document themselves within the conventions of television reality. And, even more basically, people only take their own problems seriously and actively after they have been assured of their own reality by seeing themselves on television. Such image/reality inversions are not unique to video. What writer has not felt his self-image enhanced by seeing his work in print?

The ability of video to overwhelm our other reality indices is demonstrated by experiments that require subjects to perform simple tactile tasks while watching a slightly delayed recorded image of the action. Total confusion is the usual result. Even when one can feel an object, the image of the object is convincing enough to make us doubt our tactile sense. In the wider

*The repetition rate of video is not determined just by the persistence of vision but also by the line frequency of the electrical power-lines. Hence in North America film on video runs six frames per second faster than in the theater – but in Europe it runs the same speed, since the power-line frequency of 50 cycles per second gives 25 frames per second, which is equal to the established European cine-camera speed.

Jean-Luc Godard's Le Petit Soldat. *Where is the reality behind the image?*

context of social response, few people who have seen a studio television production with live audience have failed to notice the audience preference for watching the action on the studio monitors even though the original is immediately before them. Two notable pieces recently shown in Toronto demonstrate video artists' concern with the power of their medium to dominate reality; both share a major metaphor indicating a basic distrust of such domination. Elsa Tambellini's piece *Cats*, shown at the *international festival of women and film* portrays caged tigers pacing nervously behind 300 bars. Live performers shooting each other with closed circuit cameras and finally stringing rope bars between the audience and its own picture on monitors, imprison first actors then audience in the medium [see p 38]. Juan Downey's piece at the Electric Gallery traces the image of imprisonment, or reality as medium, to its source in Plato's *Myth of the Cave*. The image is somehow more actual than the action it emulates. Is it any wonder that psychiatry and politics talk so much of image? Pygmalion and Dorian Grey admonish from the mythic wings.

However, I doubt that we should regard confusion of image and reality as pathological. That

confusion surrounds one of the most paradoxical and contentious issues of art. What is real in art? In film, graininess and greytone degradation – the side effects of low lighting and forced processing of newsreel footage – became conventions of a school of realism, the stamp of vérité on any film image. It is difficult to know to what extent Cinema Vérité looks like newsreel footage because of similar technical constraints, and to what extent it *tries* to produce a grainy and degraded image in the knowledge that the audience associates such an image with recordings of real events. In my experience the two are inextricably tangled. Clearly the convention is totally conscious in Godard's *Le Petit Soldat*, or *Les Carabiniers*, films which dwell on our tendency to confuse conventional representations with the "real thing". The conquering heroes of *Les Carabiniers* return with postcards of conquered wonders as booty. They feel they have plundered the things themselves. The newsreel quality surface of the film presents us with the same dilemma as the heroes – is newsreel really real?

Manipulation of the conventions of representation has by now become almost a cliché – the bread and circuses of intellectuals. Never-

theless, the relation of art, conventional representation, and reality is perhaps the basic theoretical issue of modern art and has been so since the late nineteenth century. Does art imitate reality? Or does it create our very conception of the ultimately unknowable "out-there?" The issue is not substantially different in poetry, fiction, graphic art, film, or video. Video just accelerates this eternal dialectic of art. So Yeats argues:

> That girls at puberty might find
> That first Adam in their thought
> Shut the door of the Popes chapel,
> Keep those children out.
> There on that scaffolding reclines
> Michael Angelo
> With no more sound than the mice make
> His hand moves to and fro
> Like a long legged fly upon the stream
> His mind moves upon silence.

He refers of course to Michelangelo's masterpiece of God creating Adam – *The Touch*. Yeats describes Michelangelo's painting hand in relation to the picture as the same as the relation of God's hand to Adam *in* the picture. Who then is the Prime Mover? Who created Adam? And God? Substitute Chic Young for Michelangelo and a half-tone screen for the brush, and Yeats gives birth to Andy Warhol. Yeats never guessed that crass conventional forms of representing reality would be widespread or powerful enough to create "reality." But further speculation on epistemological problems common to all arts will not bring us closer to a description of those formal processes and possibilities that are unique to video – and just such a description is necessary before we can understand the field of intent and judge the execution of a piece of video art.

It is difficult fully to comprehend that calling video an art of time is not a metaphorical statement but a literal description of the process of generating the video image, any video image. As I mentioned before, the image of video is an illusion; there is only one rapidly moving dot of varying intensity on the screen. In an ordinary television picture the dot scans regularly whether an image is present or not, generating the set of 525 lines called a raster. To produce an image, one introduces a patterned modulation of the dot's intensity as it races across the screen. The varying intensity of the beam is perceived as a range of grey tones from white to black. The critical point here is that the video image is sensitive. It is not fixed but responsive to outside control and alteration at any point in its scan. Thus the essential nature of the video artist is quite different from that of the film artist who seizes discrete frozen images. The video artist controls or intervenes strategically in an ongoing process. Clearly, the aesthetic and critical implications of this distinction, in relation to the typical concerns of most video artists, are sweeping.

Perhaps the simplest and most obvious con-


Michelangelo, The Creation of Adam

One dot only: the space/time mechanics of video

Since the image *per se* is illusion, a functional formal description must deal with what *is* actually there from moment to moment – the dot – a phosphorescent trace left by an electron beam hitting the phosphor covered surface of the tube moving across the tube and back and scanning from top to bottom 60 times each second. On retrace from right to left the beam is blanked out, as it is on return from bottom right to beginning at top left (dotted lines). The distinction between the film image and the video could be likened to the relation of press printing to typewriting. In film, as in printing, all information is impressed simultaneously; in video, as with the typewriter, each bit of information is laid down sequentially in a left to right and retrace scan.
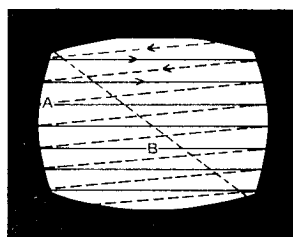
RASTER

ODD FIELD
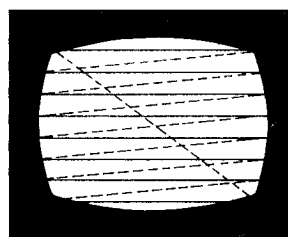
EVEN FIELD

A video *frame* – one complete image – of 525 scan lines consists of two alternate *fields*, an odd and an even, of 262½ lines each. Consider then the motions necessary to create a raster of 525/2 lines, 60 times a second. Clearly the dot must move horizontally across the tube and back 525/2 x 60 times a second or 15,750 cycles per second (HZ). (Hence 1 line lasts 1/15,750 seconds and Point A is 25 x 1/15,750 seconds

from Point B.) Equally obviously the dot which creates these horizontal lines must move from top to bottom of the tube and back 60 times a second (once for each field.) Thus we have two basic constants – 15,750 cycles per second, the horizontal frequency, and 60 cycles per second, the vertical frequency. These relationships may be visualized in a force vector diagram.

SINGLE HORIZONTAL SCAN

SINGLE VERTICAL SCAN
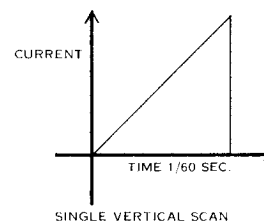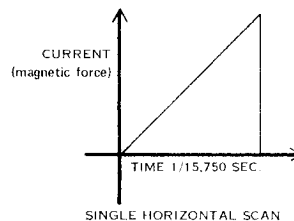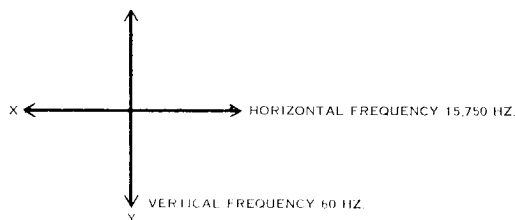
Thinking of the image in terms of force vectors becomes more useful as we consider the actual force used to deflect the beam on these two axes. The force, electromagnetic force, is created by passing electric current through a coil wrapped around the neck of the picture tube. Two coils are used; one deflects horizontally, the

other vertically. The amount of deflection is proportionate to the amount of current passing through the coils. (The *intensity* of the dot is proportional to the energy of the electron beam itself which is controlled by the *voltage* applied to the electron gun). Thus we can translate our vector diagrams into electrical terms.

The relation of such vector diagrams to the concept of analogy is simple. If I were to use another electrical force pattern derived from, say, analysis of sound to alter the shape of the vertical scan pattern, the vertical scan rate would vary *in analogy* to the sound.

SOUND MODULATING SIGNAL
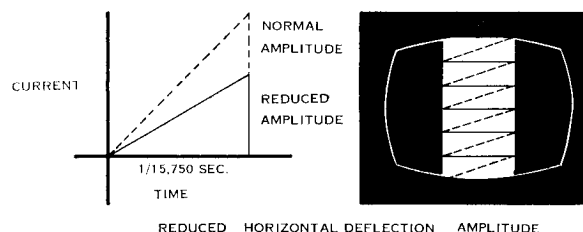
MODULATED VERTICAL DEFLECTION

RESULTANT PICTURE
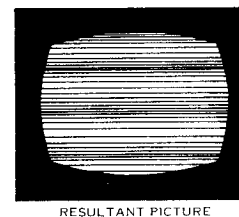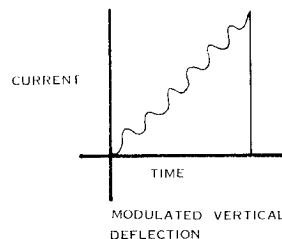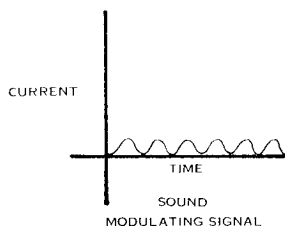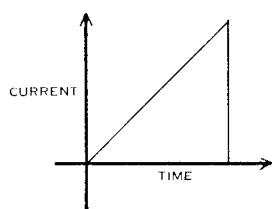
Analogue distortion may be introduced by altering the shape, frequency, or amplitude of the deflection force patterns. The simplest case (see above), *vertical spatial distortion*, is familiar to us in the works of Bridget Riley and other Op

artists. The illusion of contour in a field of horizontal lines is generated by the spacing of the lines. In a video picture the spacing of the lines depends on the rate of rise of current versus time. The normal deflection pattern is linear to

provide even line spacing and hence the illusion of flat space. If, however, we took the wave form of a sound and imposed it upon the deflection pattern, the line spacing, and hence the space, would ripple in analogy to sound.

REDUCED VERTICAL DEFLECTION AMPLITUDE
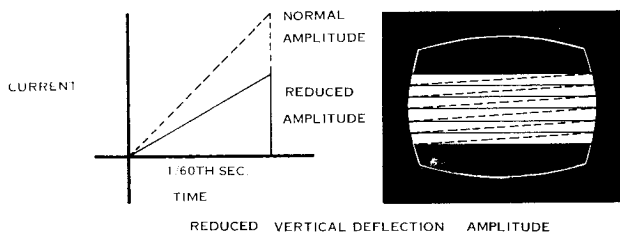
REDUCED HORIZONTAL DEFLECTION AMPLITUDE

Reducing the total amplitude of the vertical deflection pattern will squash the whole picture on a vertical axis.

And similar reduction of the horizontal deflection amplitude will squash the horizontal axis. Video synthesizers give simultaneous control over these and many other dimensional and tonal properties of the image.

cern of video art is with the nature of "process" itself, and with the paradoxes and illusions of time on which the concept rests. Consider, for example, the multiple tape-delay environments which have fascinated so many video artists. The simplest form of tape-delay is familiar to broadcast television viewers; the instant replay has transformed sports viewing. But few sports enthusiasts realize how an extension of this technique can break down the conventions of time, and cause and effect.* Video, unlike film, requires no processing; it may record a live event on one machine and play it back simultaneously with varying delays by passing the tape through playback decks at various distances from the recording machine. Moreover, while the tape by its nature must pass in progression from one machine to the next, the displays from these playbacks may be arranged so that the viewer experiences them out of their normal temporal order. Most tape-delay pieces multiply these time-windows and often scramble their sequence so as to attack our conventional sense of time. It requires very little in these environments for the viewer-actor to lose track of the present – even though the screens may be portraying his own actions. Present, past and future become arbitrary, cause and effect absurd. The environmental pieces of Woody and Steina Vasulka pursue the paradoxes of reality a step further. Again, multiple presentation of image is used, but now the same image is displayed moving uniformly across the screen so that it appears to enter at one side and leave the other. Strings of screens placed next to each other give the impression at first that the image is moving from one screen to the next, but soon the images seem to stand still leaving the viewer with the impression that the whole environment is accelerating across the field of the image like the sensation of a train pulling out of a station: a concrete representation of the paradoxes of Einsteinian physics – relativity art. (Michael Hayden has remarked to me that he responded to neon signs and theater marquees in this way and I suspect we can anticipate relativity effects in three dimensions in his projected *Waves* video/computer project.)
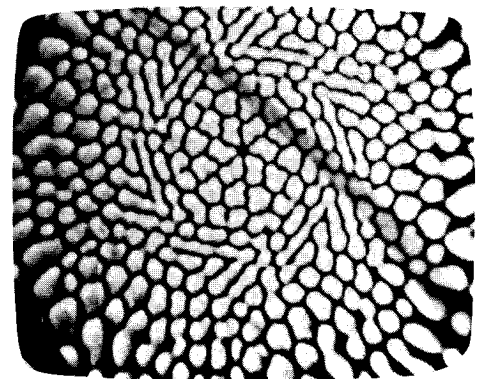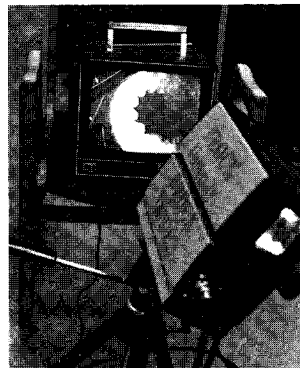
Obviously in all such pieces the viewpoint and reactions of the viewer are an essential part of the work itself – these trees make no sound as they fall in an empty gallery. An interlocked loop tends to form of the video process and the

*A length of film or tape represents a temporal separation of recorded events. That is, since videotape moves through the playback deck at approximately 7½ inches per second and 16 mm film through the projector at 40/24 feet per second, an event separated in time from another by one second is separated in distance by 7½ inches or 40/24 feet respectively. If we use several playbacks, displayed continuously and simultaneously, of the same tape or film, the distance between the machines will determine the temporal separation between the images. Any image appearing on one display will eventually appear on the next; the intervening time being determined by the distance that point on the tape or film has to travel to the next deck or projector. Film, however, cannot be recorded and played back simultaneously. It must be sent away for processing.

viewer's physiological process, and hence a different viewing style is required. The viewer must become part of the process of what he views, and this requires a much longer attention span than the usual scan of graphic art, or the fitful attention of narrative film. Physiological process video operates on a longer time scheme than most other experimental forms and seems merely boring if not pursued to the point of object/observer fusion. (Luckily for artists studying physiological process, videotape is cheap – their work would be prohibitively expensive, even if possible, in film format.) Anyone experimenting with video in any form is likely to chance on physiological interaction patterns incidentally. I have noticed that vivid color hallucinations may be produced by pulsing different parts of a video image at different rates. Many people will see such a black and white picture in vivid (if unpredictable) color. Interestingly, there seems to be some positive

correlation between intensity of color hallucination and the incidence of night blindness. Sadly, I don't hallucinate colors at all.

Feedback

In imitation of physiological systems, an image that is responsive to control can become reflexive – self-controlling or regulative. This possibility gives rise to perhaps the purest line of video art: feedback patterning. "Feedback" in this usage is a technical term, designating the procedure of connecting camera and display-monitor in a loop, the camera photographing the display and feeding the result back into the same display. If, for example, a camera is photographing its monitor and projecting this image via its monitor, and the camera is then tilted, the monitor will be receiving a tilted image of itself – but this new image will contain the upright image of the monitor that was already on the screen before tilting the camera: there is no hiatus. The resulting image thus appears as a kind of superimposition; and with every subsequent alteration of the system the image will accumulate, generating an echo-corridor pattern which rapidly transforms itself into the mandala-like imagery typical of much feedback work. It is through step-by-step control of this cumulative property of the feedback system that feedback images are constructed. Images may be injected into the loop from other cameras or tape machines, or by placing objects between the camera and the screen; but even without external image intervention the system is itself

a source of almost infinitely varying patterns, merely echoing the shape of the screen and the texture of the scan raster.

Synthesis

In feedback, we reach the limit of talking about the video image as image. A feedback image is not a picture of anything finally; it is a balance of purely electronic forces below the threshold of perception. It is our entrance into that very specialized branch of video called image synthesis, in which the images are not records but creations achieved by manipulating the basic electronic forces at work in video cameras and displays. The term "synthesis" is familiar in the context of electronic music and the Moog synthesizer – or even in relation to chemistry or physics. Before a pure synthesis of anything is possible we must have a set of *basic* forms, forces, or building blocks from which to start. We do not synthesize a house from walls and roof but from board, brick and nails. Only when such basic units are established by analysis can we decide on a system of inter-relation which will lead us to the desired final product. If you don't analyse to small enough basic units you limit the variety of end products – witness the prefab house.

In electronic media the basic units are not tangible shapes or forms but forces – electrical energy: complex patterns of energy are built by inter-relating simple ones just as in more concrete forms of synthesis. In this context, however, the methods of inter-relating energy forms are of greater and more critical interest because they bear directly on the fundamental concepts of all art – analogy and metaphor. To control one thing with another is the simplest case of what we call analogy; a successful analogue relationship may result in a fusion which we could call a metaphor. To create complex patterns of energy one simply uses one aspect of one simple form to control or alter an aspect of another simple form. Very complex patterns may be produced by elaborating the stages of control and relationship. Anyone who has used a Spirograph knows how to operate an analogue computer.

A deepening fascination with the processes of analogy is easy to detect in the background of most video artists. Some, of course, came to video from film or the graphic arts, but the majority had some involvement in the light-show movement of the 60s, and moved through an interest in electronic music before working in video. The drive of lightshows was fairly simple; a quest to give a visual impression of sound. The full significance of that drive, as an exploration of the central mystery of metaphor and symbol, and hence of art, has only become clear in artists' successive absorption in electronic music and video.

The lightshow is a single term analogy; image is controlled so as to be analogous to the music. Eisenstein grapples with this concept in his theorizing on the use of sound in film. He tends

to reject simple, positive one-to-one correspondence as too mechanical and prefers a negative counterpoint relationship, not noticing that a negative relationship is equally an analogy as is a positive. It is not the valence of relationship that matters, but its complexity; most metaphors are interlocking analogue systems of great complexity. The search for methods and principles of relationship seems to have intuitively attracted artists to electronic music and the Moog synthesizer, which builds up complex sound patterns out of the inter-action of simple electronic waveforms; and then finally to video synthesis where both image and sound may be analysed according to basic waveforms which in interaction with one another may produce literally any sound/image. Study of artists concerned with the analogue process seems to have led an intuitive critic like Gene Youngblood to create what can be seen as an aesthetic of analogy: he calls most avant-garde video art "synaesthetic." Unfortunately, his aesthetic is partisan and value-based. and fails to reveal the connection between the arts of complex analogy and the more general process of metaphor at work in all art.

Video synthesis proceeds along two lines – direct synthesis, which creates patterns by direct manipulation of time without any external input; and indirect or image-buffered synthesis which modulates input from an external source. Synthesizers developed by Eric Segal and Steven Beck work on the direct system; machines developed by Nam June Paik, Steve Rutt and Bill Etra work on indirect principles. For direct synthesis, imagine the raster of scan lines of the video image as a time track. Switching the beam intensity in varying time intervals will result in basic geometric patterns on the screen. These simple patterns can be elaborated by feedback into ever more complex shapes. Steven Beck's synthesizer starts from the very simple basis of generating two vertical and two horizontal lines, the positions of which may be changed by changing the time constants which determine their positions; and simple logic circuits can cancel the lines, leaving only the dots where they cross. A combination of external control on line position (each line may be made to move in analogy to a separate outside control) and feeding the image back on itself results in both delicacy of control and amazing complexity.

The indirect method of synthesis stems from Nam June Paik's early experiments in magnetic distortion of the video image. Since the raster of scan lines of the video tubes is generated by magnetic deflection of a single beam of electrons, any outside magnetic field will distort the scan field and any image it carries. Paik started by using permanent magnets which introduced a stable distortion to all images displayed on the altered set, but finally tapped into the deflection coils of the set itself so that he could introduce special distortions by means of an external control system. Rutt and Etra's design extends Paik's design by incorporating a separate deflection amplifier designed to permit modula-

Bill Etra, from Laser Quantum 1, *a color videotape made with the Rutt Etra synthesizer*

Walter Wright and Rudi Stern, from Video Light Compositions, 1973
The tape from which this image was taken was the result of recent experiments with Scanimate (a first generation video synthesizer pioneered by Wright); involving the exploration of various animation techniques in conjunction with the synthesizer and colorizer.

tion by outside control signals rather than by tapping into the somewhat crude deflection circuitry of the display monitor. The Rutt/Etra design gives analogue control over size and shape of picture, tonal structure of image, and spatial distortion on three axes. Its capabilities outrun those of the very expensive and inflexible digital computer systems currently in use to produce graphics for broadcast television.

It is tempting to see the technical problems of video synthesis as essentially solved. Combinations of the different synthesizer types give analogue control access to almost all dimensional aspects of the video image. Work remains to be done on electronic color, switching, keying and special effects – some of which is going ahead in Canada in my laboratory at Brock University, St Catharines, Ontario.* Still, when all the technical work is done one has merely established a certain possibility– the equivalent of a brush, a chisel, a musical instrument. It remains for artists to create human and significant metaphors with this analogue capability, and for critics to find descriptive terms that illumine their concerns.

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* Anyone wishing a copy of our first technical bulletin, a 30 minute videotape outlining the state of the art in helical scan video equipment, send ½″ or 1″ videotape plus $5 dubbing fee (if no tape is available, send $20) to: Video Support Project, 36 Decew Road, R.R. 1, St. Catharines, Ontario. (Specify English or French version.)