MSIB

VIDEO FEEDBACK: How to Make It; An Artist's Comments on its Use; A Systems Approach.

Feedback is the image configuration most video experimenters discover first. It is produced by the most simple complement of electronic tools, a camera and a display monitor. By manipulating these two objects the artist can conjure limitless variations of stunningly complex imagery. In the early days of discovery, feedback is magic: spirals, flowers, mandalas burst forth with the touch of a fingertip and regenerate themselves indefinitely on the screen. Later, for some, feedback's simplicity becomes deceptive and its ease occasions serious questions of composition.

What follows is a general description of the methods used to obtain feedback, an artist's comments on its use, and a systems approach to the phenomenon.

1. Feedback: How To

Video feedback is produced by aiming a camera at a monitor; the camera actually takes a picture of itself. The patterns thus engendered can be altered in several ways, by exerting various controls over the electronics, and by affecting the optical path of the picture/monitor loop.

The first time you set up a camera for feedback, get a wide shot of the monitor and make sure the f stop is open and the screen's brightness and contrast are turned up. Re-

peats of the outline of the monitor will appear. As you zoom into the spot of light on the monitor, the feedback will begin coming out in blobs toward the side. The precise nature of those blobs will vary depending upon the light sources, including the ambient light in the room. As you move closer and closer in with the zoom, you will begin to lose the definition of the blobs and will get a steady flow away from the center and toward the edges of the monitor.

Every slight movement affects the pattern. If the camera is moved haphazardly, it will flash by things that haven't had time to appear. Miniscule, gradual movements are absolutely necessary in order to begin to attain some kind of control over the pattern.

Changing the relationship between the camera and the monitor will alter the feedback. A camera standing upright will give a spiral pattern; when the camera is tilted slightly, a circle occurs; a camera placed at a 90° angle produces a rectangular shape. Work at the Center is done with small Sony cameras; broadcast studio cameras are obviously too heavy to juggle in this way, so under these circumstances tilt the monitor. After the camera/monitor relationship is set, the optical variables to manipulate are the f stop, zoom and focus of the camera's lens.

The monitor's brightness and contrast levels greatly affect the feedback pattern. Generally speaking, the lower these levels, the more intricate the design. It is sometimes

useful to start with both levels all the way down -- in black -- and begin slowly controlling each. In addition, it is almost impossible to make intricate patterns when the camera is moved from the center of the monitor. Perhaps the light level is most intense there.

Combining elements -- any kind of material -- with feedback means introducing other images into the light pattern of the feedback loop, thereby changing the original feedback pattern. Using two cameras, this can be done with any sort of object, a person, or with reflective surfaces such as pieces of mirror mylar. In the latter case, feedback becomes the fixed element, with the camera set and unattended, and the changes are produced by moving lights on the mylar pieces and by moving the camera which is picking up the mylar reflections.

Use of feedback becomes more sophisticated as electronic variables are introduced into the loop -- additional cameras, level control from a switching device, reversed polarity, color, "special effects" (particularly keying), and time delays.

Negative polarity allows the same possible variety of patterns that occur with positive feedback. The variables in making the images are identical. The major difference is that negative polarity achieves alternating unshaded black and white bands, or distorted bands. Instead of white images on a black field, black and white images occur on a black field. Negative feedback is more hard-edged than that produced by positive settings.

Feedback made with a color camera is heavier and more globular than the black and white variety; it is less intricate, harder to make and to control because color cameras require a higher level of light. But black and white feedbacks can be colorized though a switcher or mixer to produce very interesting image combinations. For example, record on videotape a solid feedback pattern like a flower which is rotating slowly and simply; play back that tape into a monitor and pick it up with two cameras so that you can take parts of the images and rearrange and combine them. By introducing flat solid colors into these combinations you find yourself in Matisse-like places.

2. Feedback: An Artist's Comments

Feedback is the most simple means of generating abstract video patterns that exists, and the forms it permits an artist are almost limitless. It has, in addition, two necessary elements for making art -- a reasonable amount of flexibility, and a reasonable amount of predictability. And with it, fairly complicated images can be produced with very simple tools.

Feedback's primary drawback for the artist is that, because of the ease with which one can produce lovely patterns, it is tempting to get caught up in the process of discovering it to the exclusion of anything else. Several years ago, a poet visiting the Center observed: "feedback is a whore." Its prettiness can be so enticing that time and en-

ergy are destroyed without leading to any serious expression or work. In this situation, it's been fun, but may be almost counterproductive to art.

Once one gets past a concentration on its flair and attractiveness, one discovers a movement about feedback that is, to me, its most distinctive characteristic. It is a kind of organic movement which is not reminiscent of any other. Feedback also has a remarkable ability to enrich other images or -- with more than one camera and monitor -- to multiply images and parts of images. Feedback can be combined with itself, or with entirely different sorts of video imagery.

Making with feedback is just like making with any other artistic tool: it takes patience to learn the use and control of it. This is time consuming, since there are so many variables involved in each feedback pattern. Often it is difficult -- or impossible -- to return later to a form once produced. It's advisable, therefore, to videotape an intricate kind of feedback; you may never find it again. These tapes can form an "image bank" of material to be used later by themselves, or to be fed into another combination of images.

The artist working with feedback should learn his tools well so that he can build up a vocabulary of patterns; when he needs a particular kind of form or movement he knows it is feedback that can give it to him; and he knows how to get it.

People often deal with feedback as an interesting "effect." As an effect, it's not very interesting. What's important is what's done with it. In my own experience, I prefer carefully using the same feedback as a different element in many tapes to concentrating on finding a new feedback form for each new work. The young state of video art tends to emphasize the new. So often with feedback it's just new, but compositionally rather uninteresting.

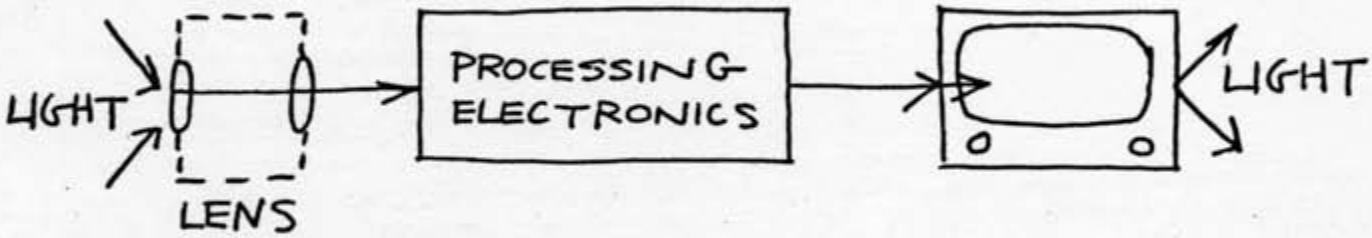
Is feedback a whore? I'd ask, "Are you an artist?" And, "Is feedback something you can use to make art?" It can be anything you make it.

William Gwin

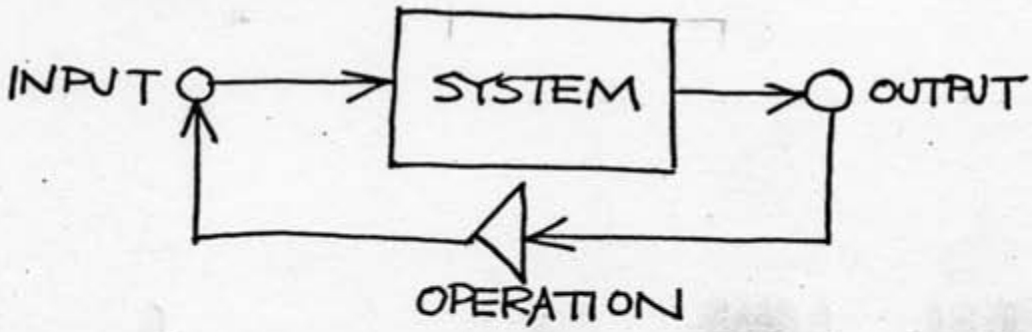
3·VIDEO FEEDBACK
ASYSTEMS APPROACH
• NOTES •

1 SYSTEM

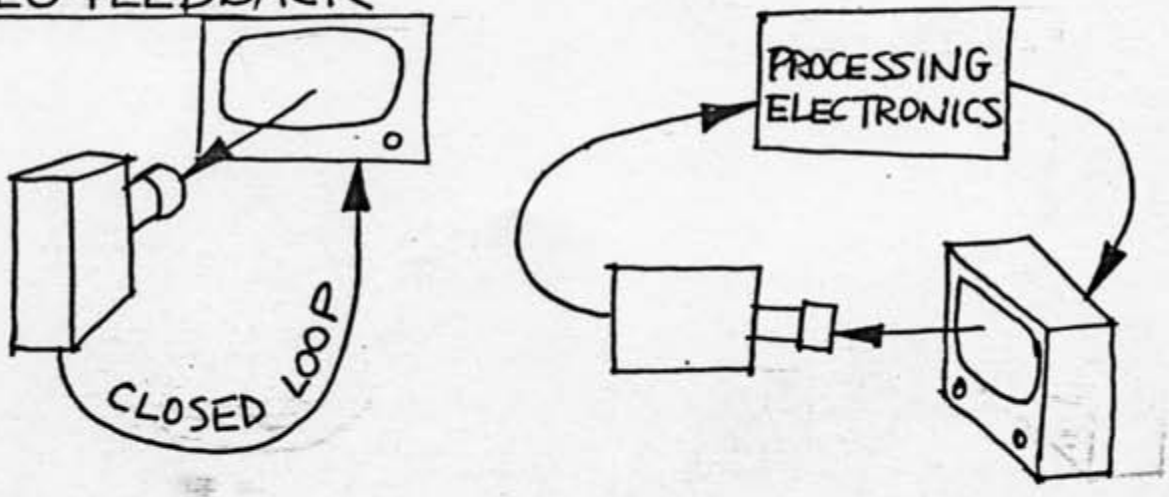
2 VIDEO SYSTEM



3 FEEDBACK SYSTEMS



4 VIDEO FEEDBACK



OPERATIONAL FEEDBACK CONTROL ELEMENTS

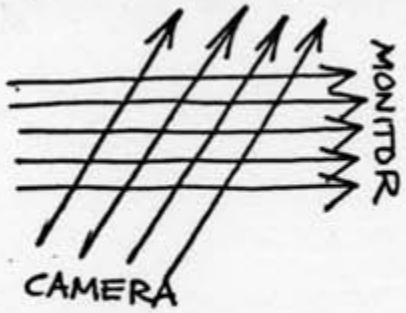
A. OPTICAL PATH

1 LENS (FOCUS AND FRAMING)

2 CAMERA ⟷ MONITOR ORIENTATION

SCAN ANGLES

SCAN PLANE ANGLES



3 OPTICAL OBSTRUCTIONS AND REFLECTIONS

B ELECTRONIC PATH

1 MONITOR ADJUSTMENT

BRITENESS AND CONTRAST

2 PROCESSING ELECTRONICS

PICTURE LEVEL

POLARITY

NON LINEAR EFFECTS

"KEY", EDGE OUTLINE

3 SIGNAL

PATH TIME

DELAYS

4 USE OF COLOR • (DIFFERENT COLORS HAVE DIFFERENT FREQUENCY RESPONSES)

NATURE OF CLOSED-LOOP VIDEO FEEDBACK

CERTAIN CONDITIONS OF FEEDBACK

CONTROL ELEMENTS ⟶

SELF SUSTAINING OSCILLATIONS

LIGHT PATTERN OUTPUTS

DIFFERING CONDITIONS OF ELEMENTS

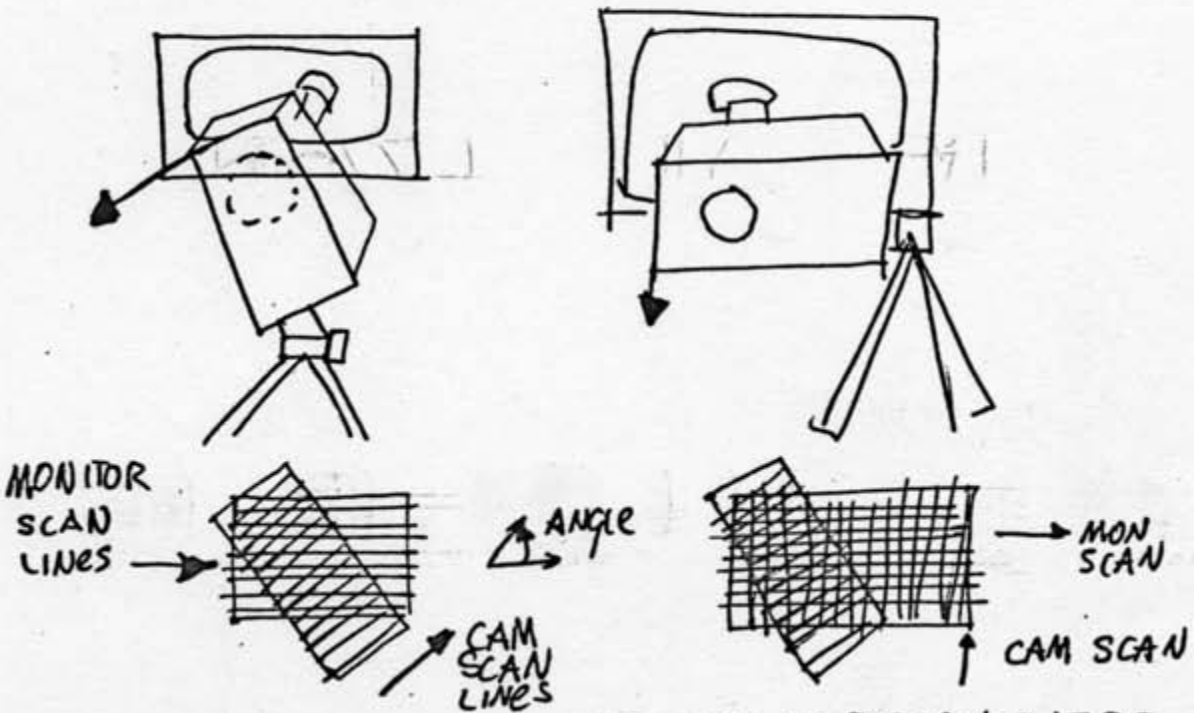
⟶ DIFFERENT MODES OF OSCILLATION (ACCOUNTING FOR DIFFERENT VARIETIES OF FEEDBACK)

QUESTION: HOW INTERESTING THAT THE TELEVISION SYSTEM HAS NATURAL, SELF SUSTAINED OSCILLATIONS IN THE FORM THAT IT DOES, WHAT IS THE SIGNIFICANCE? (I.E. NATURAL RESPONSE OF PENDULUM, PERIODIC, (GRAVITY-MASS) USED FOR "TIME.")

5 CASE OF A PARTICULAR FEEDBACK

1 OPTICAL CAMERA — MONITOR ORIENTATED 90° TO ONE ANOTHER

2. FOCUSING AND FRAMING ESTABLISHES RELATIONSHIP BETWEEN THE CAMERA SCAN AREA AND THE MONITOR SCAN AREA IMAGED ON IT

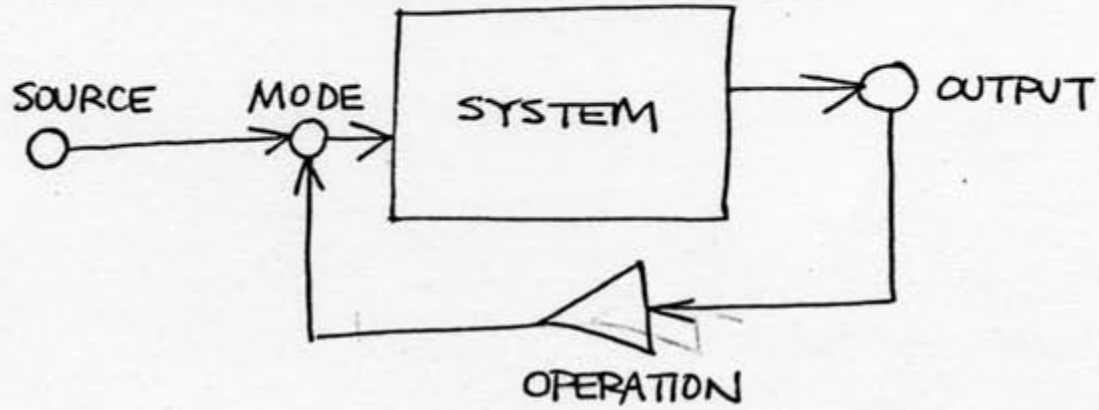


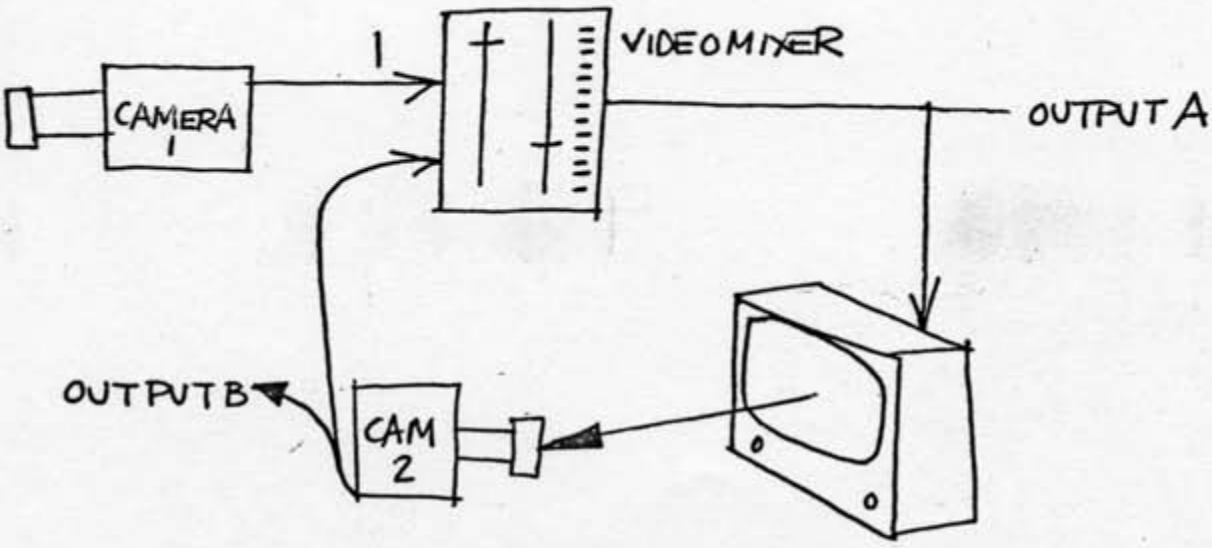
COMBINED EFFECTS OF DELAYS, BRIGHTNESS FOCUSING AND FRAMING → CAMERA PRODUCES AN OUTPUT WHEN MONITOR IS PRODUCING AN OUTPUT WITHIN A CERTAIN DISTANCE ΔX (WHICH DEPENDS) OF THE CAMERA SCANNING POINT.

(OF COURSE THE DISTANCE IS EQUIVALENT TO A TIME INTERVAL BETWEEN CAMERA AND MONITOR SCAN POINTS)

CIRCULAR MOTIFS OF FEEDBACK FORMS ACHEIVED WITH THIS TECHNIQUE

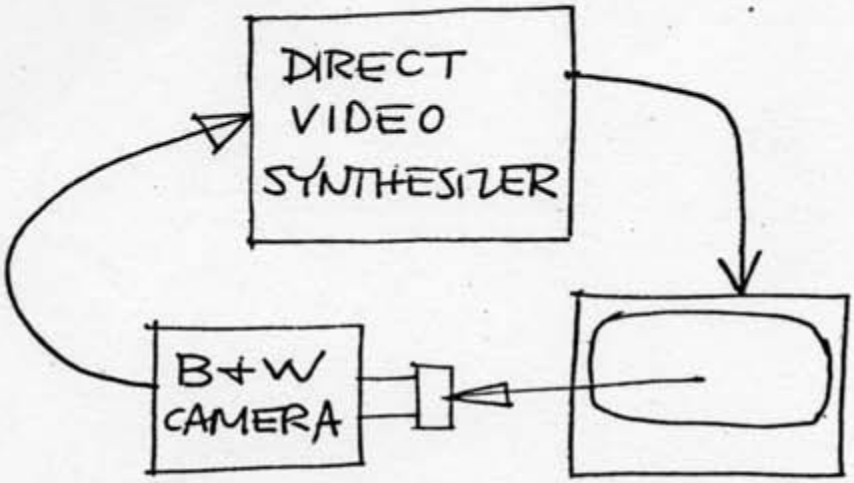
6 FEEDBACK SYSTEMS • seeding feedback WITH EXTERNAL INPUTS





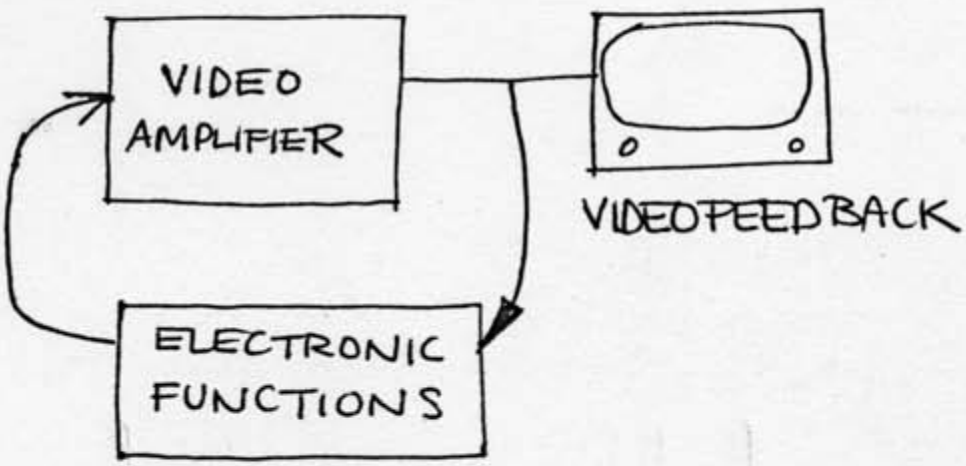
IMPUT FROM CAMERA 1 CAN ACT AS A TRIGGER TO THE FEEDBACK OBTAINED FROM CAMERA 2. THUS FEEDBACK FORMS MAY BE SELECTIVELY PLACED IN CERTAIN AREAS

7 FEEDBACK WITH ELECTRONIC SOURCE INPUT



ELABORATE NON LINEAR PROCESSING,
PRODUCTION OF FEEDBACK "MASKS"

8 FEEDBACK SYSTEMS - WITHOUT CAMERAS



VIDEOFEEDBACK

INPUT CONTROLS SYNTHESIZE
DIFFERENT FUNCTIONS, →
VARIOUS MODES