HARDWARE: DESIGN AND CONSEQUENCES

applicationbulletin
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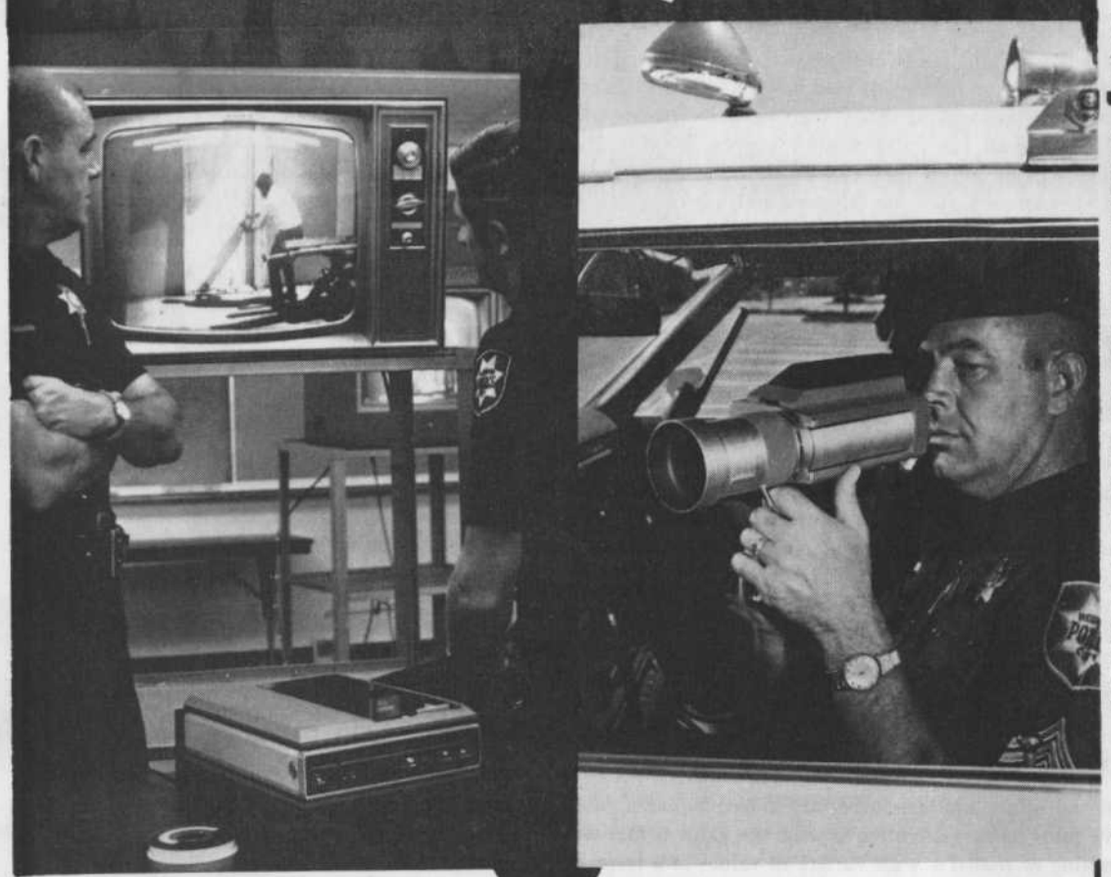
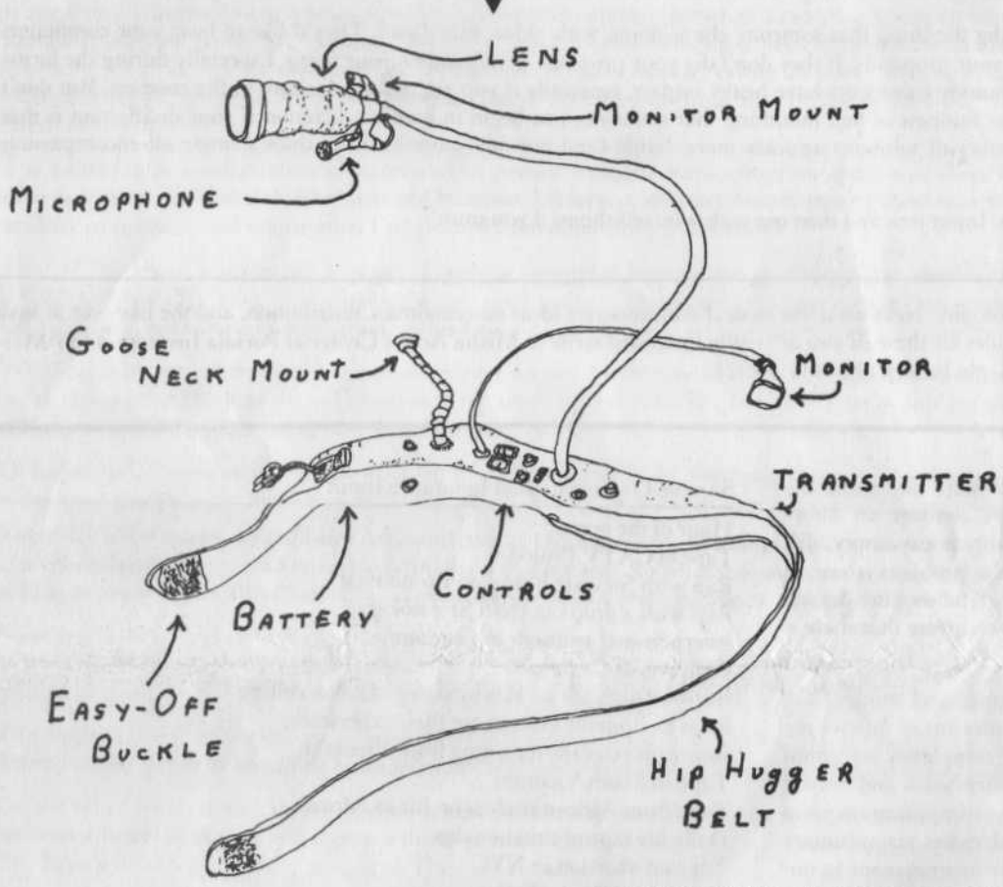


A HUMAN DESIGN FOR A PORTA-PAK



Design Inputs: Paul Ryan, Ira Schneider, Dean Evenson

Sony helps create 'super' salesmen

HARDWARE RAP

In January Ampex showed off its new Porta-Pak (Instavideo, see centerfold state-of-the-art report) and by chance a lot of alternate video people ended up at the demonstration in a hotel meeting room.

While a lot of straight dealers sat on folding chairs and the rest of us laid out on the floor, one of Ampex's engineers read a rap from a script and every now and then held up cue cards to emphasize what he was saying.

After that Videofreex asked him a lot of technical questions which was a turn on because it was obvious they knew as much, if not more, than your average Ampex dealer.

While the machine itself promises to be a whole new generation of portables, and the Ampex engineer was very gracious and friendly towards us, it became obvious that the people who most understand technology are the last ones to be consulted on design decisions.

As the excerpts from these *Sony Applications Bulletins* and the picture of cops using the Ampex machine show, hardware designers are strictly oriented towards the markets they know.

There is no design constituency among alternate video people equivalent to institutions and government. Yet our numbers and purchases (including school media money) are probably increasing rapidly. Nonetheless, none of us get consulted on the consequences of video technology until after the fact.

There are many, many things wrong with video equipment, most basically the entire design of the portable which imitates film technology. The eyepiece, for example, still sets between your eye and the lens even though, as a tiny video screen, it could be positioned elsewhere with say a lens in your hand and a monitor cantilevered off your chest.

Moreover, the recording deck is cumbersome and poorly weighted. And internal controls are minimized so the hardware directs you rather than vice versa.

What can be done? How can we form an alternate design constituency?

If somebody could pinpoint all the alternate video money being spent the manufacturers might become hip to a new market. Or you can simply write the maker of your equipment and tell them what pisses you off. They do respond.

But probably the best thing to do is mutate your own hardware. Buy their basic units and reconfigure them for your own needs. Then patent it. This gives you the right to give away your designs to whomever you want, while protecting yourself from being ripped off.

Here in New York City, Shirley Clarke has scored a grant which will be used to design a portable video camera that will embody human, rather than marketing intelligence. It will not, she says, be like a gun with a trigger for "shooting" people. Instead of a weapon which hides your face it will include a lens as part of the wrist for inobtrusive taping and relating. If you've got practical designs, pass them on and we'll print them.

Sony improves driver education Sony's job in the Navy Sony contributes to mental health

Sony helps settle Hurricane Camille claims Sony bridges sales information gap at SONY ...the better one

Sony helps stop dropouts Sony helps boost patient Sony helps Tinnerman Products in sales, training, production Sony aids crime

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Sony: self-trainer for computer salesmen Sony VTR Army develops film strip with Sony VTR Sony at Menninger: mirroring the mind at Rodale Sony trains real

Sony Stops So for enforcement agencies Sony CCTV: New technological 'weapon' spies Sony sparks sales training at Rodale Sony aids

EQUIPMENT STANDARDS

by Eric Siegel

PART I—Sony the First and Worst

In the last issue of this publication I advised people to switch over to the new Sony standard. I told you we were up against the wall, as far as equipment goes—and at that time Sony had the only back pack available. The Sony back pack camera is the worst piece of engineering I have ever seen in my life. If you want half of your video tape chewed up and your pictures to be totally inaccurate electronically, then get it. It is bound to give you more trouble than anything else...Now, I can advise you of a piece of equipment I really believe in, so much so that I am buying it for myself. It is the Ampex Instavision back pack camera. The camera *has* DC restoration, and the pack records color. It has still frame and two sound channels for stereo sound. It uses a modified reel which Ampex calls a cartridge and threads itself automatically. It is cheaper than the Sony and is built strong . . . Sounds nice so far . . . now the only catch . . . you will most likely have to wait until winter '71. However let me make it clear that I have not used this piece of equipment and it is only speculation on my part. So, as far as it goes, all that I emphasize is that at this time all this equipment is a gamble.

PART II—The Global Video Standard

I should think we are all agreed that the reason we are engaged in this work is to achieve a unified planetary consciousness utilizing the videotape medium (for now). If those of you in England, Holland, Germany, France, Italy, Sweden, Denmark, Norway, Russia, etc., all use the video standard of your own country (usually 625 lines, 50 fields per second) then you will be defeating the very aim of your existence: that is, to change the state of our planet using the most effective electronic mind altering device developed in the history of our species . . . TELEVISION. Does the mind of America need to change the world or does the world need to change the American way of thinking. In either case a communications network must be set up between the USA and the rest of the planet. The alternetwork must adhere to the same technical standards if this project is to have a real impact. I shall now give my reasons why I think everyone should adopt the American 525 line 60 field per second system:

1. The alternetwork is already developed and going on in America;
2. more American 1/2" new standard equipment is in operation now than any other standard;
3. few people have bought equipment in Europe so far and those of you who have can use them to transfer your pre-existing tapes onto the American Standard AV system;
4. any tapes you make will have to undergo scan conversion before your local TV station can play them;
5. the American standard is just as clear as the European 625 line standard except there are 100 less scanning lines. This difference is very small. The American Standard has the advantage of no perceivable flicker on the picture tube because of the faster field and frame rate.
6. You could use European standard monitors by making a simple modification of the vertical oscillator and deflection circuit. This could be on a switch;
7. this would enable tape transferring between all countries with no technical hassle;
8. income can be made by selling your software to American cable television companies. They would be very interested in VIDEO FREE EUROPE.

I have given you all the reasons I can think of—the main one being so we can exchange information. The rest is up to you to decide. This paper Radical Software *shows we are doing our part.*

Cathode-Ray Tube Videotronics

Excerpted from *Expanded Cinema* by Gene Youngblood, Copyright 1970

The underlying principle in creative use of videotronic hardware might be called "video synthesizing," just as we speak of sound synthesizing in the Moog process. There are no special restrictions inherent in the video signal as opposed to the audio signal. Anything that can be done with sound can be done with video if the proper hardware is available. The basic ingredient of alternating current is identical in both processes, and represents potential for as many variations as the equipment will allow. Just as the new filmmaker seeks to synthesize all the elements of his technology, so the video artist attempts to synthesize the possibilities of his medium in the creation of electron synaesthetics.

Since present television studio equipment was not made for the purpose of aesthetic experimentation, artists have been forced to work within parameters that amount to video imitation of cinematic techniques: electronic equivalents of cinematic wipes, fades, superimpositions, and traveling mattes. There are, however, certain advantages in working with video systems to achieve variations of these effects quite unlike their cinematic counterparts, and with considerably less expenditure of time and effort.

The Television Camera

In standard photography a photosensitive emulsion on a strip of acetate is exposed to lens-focused rays of light that form an image in the emulsion. A similar principle is involved in television except that the image is translated into coded electronic-signal information and is then "erased" to make way for another image. Inside every TV camera, instead of film, is a photoconductive camera tube. These tubes are called variously Image Orthicon, Vidicon, Staticon, and Plumbicon, depending on the chemical makeup of the tube's photosensitive surface, which is called the photocathode screen. For many years the Image Orthicon was the standard camera tube. Recently, however, the Plumbicon, whose photosensitive surface is composed of lead oxide, has become the popular camera tube.

According to how much light is focused onto the surface of the photocathode screen, each tiny photosensitive element becomes electrically charged, building up a "charge pattern" across the screen proportional to the lights and darks of the televised scene. This charge pattern is swept across, or "read," by a beam of electrons emitted from a cathode gun in the camera tube. The beam neutralizes each picture element on the photocathode screen as it sweeps across, producing a varying electric current that corresponds to the pattern of light and shade in the televised scene.

As each photoconductive element on the screen is scanned by the electron beam and relinquishes its information, it is said to be "wiped clean" and can therefore respond to any new light image it may receive through the camera lens. This charge-forming and systematic "reading" is a rapid, continuous process with the entire photocathode screen being charged, scanned, and recharged thirty times per second to produce a constant scan-line pattern of 525 lines resolution, the standard in the United States.[6]

The Television Receiver

The video picture signal thus produced is subsequently amplified and cabled through a video switcher/mixer console in the studio control room where it is transformed back into a picture on monitors that operate like home television receivers. Cathode-ray tubes in television receivers are called "kinescopes." In them, a cathode gun like the one in the camera tube sprays the phosphor-coated screen with a beam of electrons synchronized with the exploratory beam in the studio camera. The phosphor coating glows in the path of the beam as it scans the picture tube. Horizontal and vertical "sync pulses" keep the two beams in step.

A beam of constant strength would produce a white rectangle of fine horizontal lines, which is called a "raster" and is the basic field of the picture. But if the beam's strength is varied, the trace-point brightness is varied also. When the video signal is made to regulate the picture tube's beam, a pattern of light and shade can be built up on the screen's phosphor corresponding to the distribution of lights and darks focused through the camera lens—thus a duplication of the televised scene. This picture fades and is continually replenished by the rapidly-scanning beam so that we see a clear, complete image. In relatively low-resolution systems such as the 525-line U.S. standard, a so-called rolling effect of the scan-lines can be detected on the picture tube. In high-resolution systems of 1,000 to 5,000 lines, however, the resulting image is unflickering and extremely clear.

The same principles are involved in color television except that four camera tubes are incorporated inside each camera: one each for the basic colors red, blue, and green, and one black-and-white tube for use in aligning and resolving the three colors. In color television receivers, three cathode guns instead of one are used to scan the phosphor screen, electronically "mixing" the palette according to the distribution of hues in the televised scene.

[6] Gerald Millerson, *The Technique of Television Production* (New York: Hastings House, 1961) and Howard A. Chinn, *Television Broadcasting* (New York: McGraw-Hill, 1953).