DAN SANDIN

IP (Analog Image Processer), 1972

IT TOOK DAN Sandin to sober up those Vasulkas in their multikeyer euphoria. "You can not refer to image planes as in front of or behind, etc., that is just an illusory human perception. The Cathode Ray Tube knows nothing of this, I can prove it to you". Shortly thereafter we got a tape in the mail illustrating that what appeared as a circle in front of a square with a triangle behind the square, simultaneously showed the triangle in front of the circle.

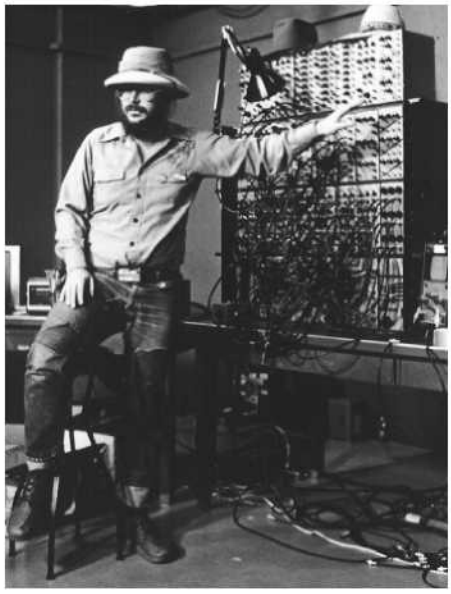
Dan is dyslexic, for him video was the liberation from the hegemony of the written text. His focus in artmaking is holograms and stereo - yet he is blind in one eye. His message was that the Vasulkas love affair with a multykeyer had better stop. It makes them obviously blind to the ethic of the medium and the streak of illusionist self-deception could become a cancer on the body of video. They are bringing back old problems of hierarchical Renaissance space, obscuring the area of true investigation, limiting the freedom of the medium so far untouched by a dogmatic doctrine and individualist claims. It is an outright lie to suggest that things on the CRT can possibly happen on different planes. Anyway it will take the next tool, the computer, to deal with that!

We did not develop any further dialog or other confrontations. The "Chicago School" was full of bright people and was the longest surviving. They went through long and effortless metamorphoses in the curriculum of the tools, styles and purpose. There was also this strange role reversals with the women as users and the men as providers.

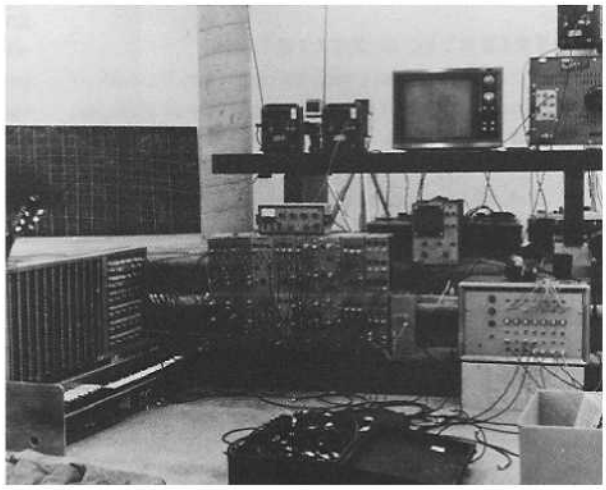
But I do not know enough about them to fully understand their inner dynamics. They always appeared self-satisfied, confident and full of rare knowledge. Their form of technological commune was the most refined, full of techno-sexual rituals, electro-erotic practises and secrets, which despite their obsession with the open dissemination of knowledge, have never been made public. —W.V.

DANIEL Sandin was born in 1942 in Rockford, Illinois. He received a BS in Physics in 1964 from Shimer College, Mount Carroll, Illinois and a MS in Physics in 1967 from the University of Wisconsin. In 1971 to 1974 he designed and built the Image Processor, an analog computer for video image processing. From 1972 to 1973 he developed a series of courses related to the expressive use of computers, video, and other new technologies. In 1974 he created special effects for a feature film: *U.F.O. — Target Earth.* He lives in Chicago, Illinois.

"DURING THE CAMBODIAN crisis in 1969, the school was shut now. The arts faculty, because they trusted their students and worked with them, kept the art department open against the general trend. We were kind of a media center for a lot of movement stuff. We did posters, graphic art, utilitarian stuff for the great movement. One of the problems was that there were all these instantaneous courses and it was a real problem letting people know where they were. Someone suggested the idea of setting up a string of video monitors with a camera and a roller kind of thing to announce these meetings and have them run continuously. We set this up and in the process, borrowed some cheap Sony equipment: a single camera with a RF modulator strung to 6 RF monitors up the column where the elevator was which went to all the lounges. I became fascinated with the image. When the meet-



Left: Dan Sandin with the IP (Image Processor, 1972, Chicago.
Below†: Dan Sandin's IP in studio with other instruments.



ing was really crowded we put a camera and a mike in there to cablecast. I just became fascinated with the image on the screen, and I would sit by the screen and stroke it.

So we asked the question of what it would mean to do the visual equivalent of a Moog synthesizer. I didn't know it was going to be more trouble than that. I just went through all the Moog modules and said if you center their bandwidth to handle video and you do the right things with sync, what would they do? The step from that to the analog IP was a very small one in concept. So I had the idea long before I knew any technology to implement it. I got the Moog synthesizer plans and looked at them, understood how the circuits worked.

I thought I was going to knock out the IP in a couple of months so that fall I started to teach myself electronic design.

I'd been a radio amateur when I'd been a kid but I certainly didn't know how to design circuits. I could certainly copy things out of Popular Electronics. I was comfortable with it but I didn't know enough. So during that nine months I taught myself electronic design by getting photo boards and building circuits. It took me about a full year to build it before it was running even in black and white.

I met Steven Beck who had been at the University of Illinois and had done this thing which was based on oscillators and relays and stuff and Salvatore Martirano had this early version of the Sal-Mar Construction and was performing on it. Then that's when I met Phil Morton who was at the Art Institute and I saw him showing some tapes over in the corner.

Well, when it got its own color encoder it became a much different instrument. Paik/Abe is a beauti-

ful colorizer but it's traditional. You can't say, I'm going to get up this kind of key situation and put red here, for instance. You can't drive it, you can only ride it. The amplitude classifier and refinements came after that.

I had always the idea of giving it away and letting people copy it. Long before any building started, that was my own philosophy: to give it away and take this business about being paid by the state to develop and disseminate information very seriously.

—D.S.

DISTRIBUTION RELIGION

The Image Processor may be copied by individuals and not-for-profit institutions without charge, for-profit institutions will have to negotiate for permission to copy. I view my responsibility to the evolution of new consciousness higher than my responsibility to make profit; I think culture has to learn to use high-tek machines for personal aesthetic, religious, intuitive, comprehensive, exploratory growth. The development of machines like the Image Processor is part of this evolution. I am paid by the state, at least in part, to do and disseminate this information; so I do.

As I am sure you (who are you) understand, a work like developing and expanding the image Processor requires much money and time. The "U" does not have much money for evolutionary work and getting of grants is almost as much work as holding down a job. Therefore, I have the feeling that if considerable monies were to be made with a copy of the Image Processor, I would like some of it.

So, I am asking (not telling) that if considerable money were made by an individual with a copy of the Image Processor, or if a copy of the Image Processor were sold (to an individual or not-for-profit institution), I would like a 20% gross profit . . . ! Things like $100.00 honorariums should be ignored.

Of course enforcing such a request is too difficult to be bothered with. But let it be known that I consider it to be morally binding.

Much Love.
Daniel J. Sandin

IMAGE PROCESSOR (IP)

The Dan Sandin Image Processor or "IP" is an analog video processor with video signals sent through processing modules that route to an output color encoder.

The IP's most unique attribute is its non-commercial philosophy, emphasizing a public access to processing methods and the machines that assist in generating the images. The IP was Sandin's electronic expression for a culture that would "learn to use High-Tech machines for personal, aesthetic, religious, intuitive, comprehensive, and exploratory growth." This educational goal was supplemented with a "distribution religion" that enabled video artists, and not-for-profit groups, to "roll-your-own" video synthesizer for only the cost of parts and the sweat and labor it took to build it. It was the "Heathkit" of video art tools, with a full building plan spelled out, including electronic schematics and mechanical assembly information. Tips on soldering, procuring electronic parts and Printed Circuit boards, were also included in the documentation, increasing the chances of successfully building a working version of the video synthesizer.

The processing modules are mechanically housed in a set of rectangular aluminum boxes with holes drilled for BNC connectors and knobs. The modules are stacked into an array or "wall-of-modules." The signal routing between modules is patched with BNC coax cables plugged into the front panel of each module. Each box front panel has a unique layout of connectors and knobs, prompting many users to omit the labeling of connectors and knobs, relying solely on the "knowledge" of the machine gleaned from its construction. The number of processing modules was optional, but the "Classic IP" is formed with a "wall of modules", often stacked 3 high by 8 wide, filling a table top.

An NTSC Color sync generator, analog processing modules and an NTSC Color encoder built around a Sony color camera encoder board, forms the "IP." The analog modules are:

1) A Camera Processor/Sync Stripper which takes a black and white video signal, DC restores it and outputs an amplified version without sync.

2) Adder / Multiplier which allows the combination, inversion mixing and keying of multiple image sources. The adder section can superimpose or invert the image polarity of multiple sets of incoming

signals. The multiplier takes the two summed video sources and forms a linear mix between them. The mix or "key" control signal is externally supplied. A fast changing control acts as a gate or "key control." A slower changing control input causes a soft mixing of the video inputs. A static control signal turns the multiplier into a "fader" unit, fading between the two sets of inputs.

3) Comparator - two inputs A and B are sent to a *high gain video amplifier*. This "discrete digital" output is developed if A is greater than B and runs at video speeds. With the *comparator* output sent to the control gate of the Adder/Multiplier, a hard-edge keyer is formed.

4) Amplitude Classifier - A string of comparators is assembled to compare an input video signal against a ladder of brightness levels. The output of the classifier is 8 discrete "digital" channels, forming a set of intensity bands, corresponding to 8 contiguous grey levels evenly spaced from black to white.

5) Differentiator - this module generates an output signal based on the rate of change of the input signal. Six inputs with progressively larger time constants, respond to the edge rates of the input source. The shorter time constants respond to sharp horizontal edges, the larger time constants respond to softer edges.

6) Function Generator - a non-linear amplifier with an effect "more complex and controllable than photographic solarization." Adjustments for negative, positive and near zero signals are possible through knob controls on the front panel

7) Reference Module - a collection of 9 potentiometers with nine corresponding output jacks. The potentiometers dialed control voltages needed to drive other analog processing modules.

8) Oscillator - a voltage controlled oscillator with sine, square and triangle outputs made available. The oscillator can be externally triggered to lock the oscillator phase to horizontal or vertical sync.

9) Color Encoder - an RGB to NTSC encoder, used as the final output stage, and constructed from a Sony DXC500B color camera encoder PC board. Two outputs are present: a monochrome output from the summed Red, Green and Blue inputs, and a color NTSC video signal formed from the RGB inputs. Wiring from the Amplitude Classifier through the adder/mixers to the color encoder results in a "threshold based colorizer." When driven from multiple Adder/Multipliers, a combination of monochrome and color images can be formed from oscillator waveforms and camera based sources.

10) NTSC Color Sync Generator - a stand alone NTSC color sync generator develops all needed synchronizing or sync signals to run the IP. Composite sync, slanking, surst-slag and subcarrier form the set of timings needed by the Color Encoder module. Horizontal and Vertical Drive signals are also generated to drive the timing of external black and white camera sources.

11) Power Supply - supplied all necessary power voltages to run the processing modules. +12, -12, +5, -5, and +14 were developed and run out on a "power bus" connecting the modules together.

Partly due to it's low cost and the free dissemination of information, the Image Processor's educational success can be found in its numbers. More IP's were built in its time than any other commercial "video-art" synthesizer. —J.S.


INFO frame 29309 to 33633


NANO A frame 30201 to 41222


NANO A frame 23266 to 30200