Harrison 3/2/92

We started out by developing what later became ANIMAC. At first we called our machine "The Bone Generator" because it made sections of straight lines that could be hooked together and could be individually animated or moved in three dimensional space. To determine what a bone was you had to determine where it was to start in X, Y, Z space, in which direction it went from there, and for how long in order to determine its length. The parameters that determined which direction it was going in also determined the actual length projected onto the face of the tube. If you saw a bone from the side you saw its full length but if it were pointing toward you, you saw only a portion of it. A bone was composed of a bi-stable multi-vibrator or a flip-flop. To start it was to essentially put a signal on a line that governed the opening of a lot of sampling gates. The inputs to the gates were the parameters that governed the position and some of the qualities and characteristics of that bone. To program it we had a patch panel.

We always had a navel point on our figures and we'd always flip back to the navel point. We'd go up and out an arm and go back to the navel point, go up and out another arm and back to the navel, go up and out to the head. Those were all fly-back bones and we would fly-back by just collapsing the information that was contained on a capacitor.

In order to determine the length of a bone we used time as the basis. We'd start drawing in a certain direction determined by the specific parameters and we'd go in that direction until we'd turned that bone off and then essentially we'd wait there until we drew another bone. The length was determined by plugging a timing circuit into a place which was reset after each bone. When you started a bone you also started that counter and that flip-flop was plugged into the counter that would turn that bone off. It was pretty much all digital. The next bone would be plugged into another count and so forth and you varied the counts depending. A count represented some number of high frequency units that was part of the clock network of the whole machine.

The patch panel was color-coded and it was a big patch panel we got out of the junkyard someplace. If you understood the code you could actually see the bones on this patch panel. There would be a certain color like green and the output might be a blue. If you were going to bone number one, you brought a start pulse that was located somewhere and you'd plug into the first bone and then you'd plug from the output of the first bone into the second bone and so forth. The inputs to the parameter gates were not located on that panel. They were located down a little lower on the face of the Animac and there were hundreds of them. You had all of these hundreds of inputs required to make the thing happen and to change it over time. After this, the main thrust of our development was to make things change over time which eventually culminated in what we called key frame programming where we would turn knobs until we got what we wanted.

Harrison Bio

Lee Harrison Born 1929 in St. Louis, Missouri. Studied at the School of Fine Arts, Washington University, St. Louis. 1953 U. S. Coast Guard Officer Training, New London, Connecticut: stationed in Long Beach, California, and the Philippines. 1955 Technical illustrator, McDonald Aircraft, St. Louis. 1956-59 Engineering School, Washington University, St. Louis. 1959-65 Engineer at Philco Corporation, Philadelphia. 1965 Bio-cybernetic Engineer at the Denver Research Institute, University of Denver. 1967-68 President, Chairman of the Board, & CEO of Lee Harrison Associates. 1969 Founder & CEO of Computer Imaging Corporation. 1971-86 President until it closes. Lives Denver, Colorado.

April 22, 1974

Daniel Sandine	Office	(312) 996-8689
Assistant Professor of Art	Lab	996-2312
University of Illinois at		
Chicago Circle		996-3000
Thomas DeFanti		996-4621
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Dan Sandine returned my call. He is involved in both video simulation and computer animation.

His most personal project is an "Image Processor". It is a versatile and powerful colorizer that operates only on the video signal, not on the raster. It is an analog device that is patch board programmable. He has worked on it by himself with no funding for about 3 years. It has been operating for 1 1/2 years in a B&W mode and for 1/2 year in a color mode. There are 7 copies of it now in existence or being built. Several of these are at the University; OIR, Chemistry Computing Center; others around Chicago at the Art Institute of Chicago, something called Videopolis and several other groups associated with video.

He now has a research partner named Thomas DeFanti who used to be at the Ohio State University working for Charles Csuri. Tom has a system utilizing a PDP 11/45 computer with a Vector General display that can produce 3-D type pictures. They claim to have a powerful language that is improving - Tom's dissertation was on the habitability of an animation language - so that one does not need to be a computer programmer to use the system. They have a point display that can be converted to TV format by pointing a camera at a monitor. They hope to use a Hughes scan converter along with a special tape recorder to produce images straight from a computer to video tape. They also plan to achieve shaded images. They have an agreement with Prof. Csuri that he can have any improved programming they develop if he so desires.

Mr. Sandine has prepared a paper on Computer Animation that will be ready in the summer. He agreed to send me an early copy if he can find one. He and Mr. DeFanti are presenting the paper at the "Conference on Computer Graphics and Interactive Techniques" to be held in Boulder from July 15 to July 17. Invited them to visit us then. He invited me to visit Tom's lab during the '74 National Computer Conference to be in Chicago May 6-10 as they'll then have an open house.

He did not mention anything that would indicate prior art to the Scanimate System.

EJT-amh

File: Cat. Har

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