Chapter Two

Interview with Dave Jones

Summer, 2005

DAVE JONES: I was born in Windsor, Ontario in 1953. My father worked for Ford Motor

Company there. When I was about 14 months old, we moved to Australia, then New Zealand,

Singapore, and then moved back to Canada up near Toronto. In 1961, Ford U.S. bought Ford of

Canada, and we moved down to a suburb of Detroit called Dearborn. And I pretty much grew up

there from when I was eight until I was eighteen. I moved to Europe ten days out of high school,

to get as far away from Detroit as I could go.

CAROLYN TENNANT: […] What are your memories are of education? How do you remember

science and art classes being taught; what you were most interested in as a student?

JONES: […] The Junior High school I went to had very strong art classes. They had separate

teachers for pottery, painting, and stuff like that. It was one of the nice things about being in this

town that was, pretty much, all Ford motor company. Because they paid huge amounts of taxes,

we had good schools with a lot of teachers. I remember being introduced to art fairly early in

school. Plus, my mother was always involved in various things relating to art in the community.

Even when I was a little kid, we would end up going down to the Detroit Institute of Art and

places like that, to see the latest exhibits.

I got into engineering on my own—it had nothing to do with school. My father was a mechanical

engineer, so he got me interested in that early. But when I was probably about nine, I started

veering off towards electronics. I went and bought an electronic kit with all the money I had saved up for about six months, doing chores and stuff. I started playing around with electronics, and it just grew from there. I was working with short wave radio by the time I was twelve, and by the time I was fourteen or fifteen, I was repairing amplifiers for local bands and building electronic kits from magazines. I took electronics in high school, but by the time I got to the class I already knew what they were teaching so I ended up as more of a teaching assistant than a student. After I got out of high school, I started pursuing electronics more and more. I got thrown into video when I went over Europe; I started learning the details and the technical side of it, and taught myself how to design electronics. […] I had been in a band when I was a kid. This was back in the late 60s early 70s so it was your average Rock and Roll, Rolling Stones stuff. So it was natural that when I was not such a great musician so I ended up being more the technician than the musician.

TENNANT: You mentioned that you came to technology on your own, working with radio. Can you describe what you were doing? Were you building your own radios?

JONES: It was a mixture of things. The first electronic thing I got was a little kit that was, theoretically, a computer: it was a series of Masonite disks with little copper contacts on the bottom and you would rotate the dials to make lights light up. It was very simplistic—it was a toy. But when I started getting interested in shortwave radio, I bought a used shortwave radio and started listening to radio from around the world. A friend and I both decided we wanted to build our own shortwave transmitters based on designs we saw in magazines. We built very simplistic little radios as experiments. We never got a license to actually transmit so we didn't use it a lot, because we could really get into trouble. It was just playing around in our basements, soldering a few parts onto a piece of wood and turning it on to see what happened.

TENNANT: The community of people in radio, and those working in that amateur way, is well documented. How would you describe that? Besides your friend, were you in communication with others over the radio?

JONES: Only to a small degree—the people that we'd talk to over the radio were mostly just radio users. There were other people in the neighborhood that had shortwave systems and we'd go see them to talk about technical stuff. We learned a lot from them because many had built up their own systems—maybe not actually building the radio, but buying various pieces, putting them together, and placing an antenna on their roof. We learned a lot from just talking to different people who were playing around with shortwave. [...] A lot of my learning about electronics came from finding somebody who was doing it and just picking their brains, asking them what they were doing and how did they do it. What gets plugged into what? What makes things work? Everyone was really nice about telling me everything they could about what they were doing. My parents knew different people who were involved with technology through the Ford Motor Company and through the community, so I met these people. Like a guy who built various computer equipment in his basement, he bought this massive mainframe computer used when a mainframe had been taken out of the big university. He had racks of electronic equipment in his basement, some of it working, most of it big piles of junk. He actually taught me some of the early ideas about how logic works, and the basics of digital—what an and-gate was and an or-gate. That was probably in the late '60s when I was still a teenager, so I didn't have any real use for it at that point, but later I did.

TENNANT: What did you want to be when you grew up?

JONES: I had no idea! (laughs) I was pretty sure I wanted to be in electronics in some way and I

figured I'd be an electronics engineer and go work for a company somewhere. But I had no idea what I'd actually do. I was thinking in terms of building systems or using electronics rather than designing them. In the beginning I didn't really see myself as an electronics designer. When I was in high school trying to imagine what I'd do, it wasn't a clear thing. I knew I liked electronics and I wanted to work with electronics.

TENNANT: We talked a bit about what you were listening to, but were there any books, TV shows, or movies that reinforced your interest in electronics?

JONES: I've definitely always been into Science Fiction and Fantasy, oddball kind of stuff like that. I read a lot of paperbacks when I was a teenager, science fiction and mystery books—just a wide range of different things. Ray Bradbury and those kinds of people. Later in the 70s when I was in my 20s, I was reading a lot of Himlin and Sci-Fi writers.

TENNANT: This is a question about your early memories of media. You were working with radio, but were there any Televisual memories: any influential shows that you remember drawing the family together, or any instances of American History that you remember on television?

JONES: When I was still living at home, television was not really a family event. The TV was down in the basement. It was something my parents didn't think would bring the family together. Occasionally there might be something where we'd all sit in front of the TV, but most of the time it was either something I found boring that my parents would watch, or it something that me and my brother thought was interesting that we'd watch. I remember watching all of the late night movies until I had to go to bed, but seeing a lot of movies from the '30s '40s and '50s—all of the B grade movies and stuff like that. But it wasn't really a family thing.

TENNANT: You mentioned leaving the States ten days after graduation?

JONES: So it was ten days after I got out of high school. Instead of going straight to college, I was going to take a year off and live in Germany to experience the world. My father had made a deal with the plant manager in Cologne for me to work for Ford Motor Company in Germany for a year. I got on a plane and flew over ten days after I finished high school. But when I got over there my working papers weren't ready and I had to wait outside of Germany because you couldn't be in Germany and receive the paper. The flight had been a low cost flight to Amsterdam, so I stayed there for a while. Through a twist of events I ended up going to this nightclub called the Milky Way. I wandered upstairs into this kind of theater, with a big cinemascope screen and some TV screens on the sides and underneath of it. I'm sitting there watching this old Fred McMurray movie, "The Easter Parade", and the Rolling Stones start to show up on the TV screens. I thought, "Wow! That's pretty cool. What's going on here?" I sat around for several hours, watching all kinds of Rock and Roll and theater on the TV screens, which were mixed with the movies. Some were straight movies, where they just showed the movies and others were more like light shows where they'd make abstract images by layering different kinds of film, or putting gels and running the film through the projector multiple times— stuff like that. I ended up meeting the guy who was running the show and he said his technician had just left that day and they didn't have anyone who knew how to hook the equipment up. I said I'm waiting for this paper to let me get into Germany so until that shows up I can help out. A couple weeks later I had totally forgotten about going to Germany. I was having the time of my life, living in the nightclub, listening to bands, playing with video and audio. Then finally Ford knocked on the door and said my papers had come through and why wasn't I in Germany? I ended up having to call my father, and explain to him why I had disappeared and went to Germany to fulfill my obligation. I got to Germany and spent about two weeks there, disassembling engines with a bunch of other people. This was just not what I wanted to do. I was

living in Amsterdam for two weeks and having a good time—screw this! So I gave my notice and moved back to Amsterdam.

I ended up living in Amsterdam and Arnhem, which was a smaller town for a year. I traveled around with this group of people and put on these kinds of shows that were kind of multimedia, film and video and audio and slides. They were kind of an improvisational thing and were different every time. Somebody would control the film projectors or the slide projectors while somebody else would control the video players, and they'd each pick and put things on, trying to compliment each other with the choices that they made. There would be different kinds of things shown depending on where we were, if it was in a bar or if we showed in a theater. …We were called the Video Heads. It was basically me, a guy named Jack Moore, and then there were other people who came and went. Jack would meet up with people and they'd work with us sometimes for a week or a month, and then they'd go away—it was a transient thing. Sometimes we'd travel from Amsterdam to somewhere else and they'd hitch a ride with us and help out while we were there, and other times people would show up and stay for months on end. There were probably about four or five other people that were pretty much there full time that were part of it towards the end.

TENNANT: It sounds as if the roles people took on were organic and of the moment, and less organized.

JONES: Right. This was not like a company, this was more like a group of people that would meet, hang out, and just work together. If somebody could do whatever needed to be done, that's what they'd do. I'd say, "We need the speakers over there" and they'd put carry them in, we'd run the wires to them, and I'd wire on the amplifier—stuff like that.

TENNANT: The extreme antithesis of the Ford Motor Company.

JONES: Oh, totally the opposite! This was free flowing. This was a bunch of hippies in a Volkswagen van, traveling Europe and putting on these big multimedia shows. We'd show up in a bar that normally had a rock band playing, and we'd set up film screens and TV sets to entertain them for six hours instead of a band entertaining them. We didn't actually work with bands. For the most part we were in place of the band, and were the show for that night. We had videotapes of bands, like the Rolling Stones and the Flying Burrito Brothers, and various tapes that people had made—improvisational theater and straight theater. We had films of architecture, which we'd run through the projectors and overlay on the screen to get these patterns as the camera panned across architecture. It was just all sorts of strange things. […] It was a mixture of video and film, 16mm film, some 8mm, and slides. We had liquid light projectors, which were slide projectors where the heat filter had been removed. We used inks that were designed for making stained glass windows that we'd put between thin layers of glass and then place in the slide projector; the heat from the bulb would heat up the inks and make them bubble between the layers of glass. You'd put four or five pieces of glass with colored ink between each one so as they bubbled, they'd reveal the other colors. It would start out as a dark mass and end up with these bubbles of different colors until the whole thing turned to a solid mass as the inks all dried up. So you had all these colored patterns happening on the sides, films projected in the middle, and then videotapes on monitors around the bottom and on the sides of the film screen.

TENNANT: This sounds like what many people refer to as expanded cinema, or intermedia. Were there any ways that you defined what you did as a group? Was it happenings?

JONES: No. It was just, "lets do a show." We weren't trying to analyze it or trying to define what we were doing or document what we were doing. We were just trying to do something. I

mean, after the fact you could look at it and say this was that genre, it was sort of like this, or similar to what those people were doing. We were just doing it. We weren't trying to figure out what other people were doing in that vein, because as far as we were concerned, no one else was doing it. It was a way of paying for the equipment to keeping it happening, and having all of these toys to play with—get out there and perform. It was sort of like improvisational performances in a way, except that instead of us being out there performing, we were performing with the images made by the equipment.

TENNANT: So you were also performing then with the technology.

JONES: Right—we were playing the equipment. There were a few things that were interactive with the audience. We'd take a video camera and point it at a member of the audience, who was perhaps the most inebriated of the audience. and we'd record that on a reel to reel video recorder. This was back 1971 '72, so we'd record it on one video recorder and we'd take the reel of video tape and run it over to a second recorder next to it and it would play back on that second recorder, so we had a delay of about five to ten seconds from when the image actually got recorded on the first machine to when it played back on the second machine. We'd put that image up on the monitor in front of the person whom we had pointed the camera at. First they'd see themselves: they'd look and they'd recognize themselves and they'd point and laugh. But the image they saw on the screen didn't do that because that was ten seconds ago. It would just kind of look at them, and they would stop. What? And then the image on the monitor would point at them and laugh and then they'd react to that. This kind of time delay would totally through them off, especially if they were in an altered state. So it worked out really well! (laughs) The rest of the audience of course is roaring with laughter at this. Then we'd put on a tape of rock and roll, or theater, and continue the show. […]

TENNANT: So though you've said you were doing it just to do it and in that sense you worked in an isolated way, did you encounter other people working in video while you were in Europe?

JONES: Yeah, we did. And even some Americans who had traveled over to Europe. There were some people in Holland and Germany working in video. But we also met people that traveled over who would hear about us and seek us out. I remember meeting Eric Seagle that way. He was traveling over. In fact he had an Ampex 1/4 inch Portapak with him which I believe, at that point, was a prototype, It was before they actually tried making something like that. You used very thin tapes. At that point the normal machines used 1/2 inch for the low-end machines and 1" and 2" tape for the professional machines. So the idea that somebody would use something so small as a 1/4" and get an image just seemed ridiculous. But I remember him having the machine. And I remember meeting a couple people from the VideoFreex while I was there. At one point we had actually gone to teach at the University of Paris a two-week seminar on video. Jack had a friend who taught at the University of Paris at the English campus, so he made an arrangement with him that we would go and basically give an introductory course on what video is. While we were there, we met various people who were in Paris that were doing video—French video people— and a couple people from the VideoFreex. Perry Teasdale and Skip Blumberg had come over to visit them, so we ended up meeting them and then, when we went back to Amsterdam, Skip came and stopped by and saw us in Amsterdam. I think David Court might have been there at one point also during the same time. I believe that Skip showed up the day we put on a show at L'Ecole des Beaux Arts in Paris. It was right at the end of the two-week seminar that we'd been giving, and we wanted to put on one of our typical shows. We didn't have all of our equipment with us, but we had a box of videotapes and a large black and white monitor. We ended up setting up in this old part of L'Ecole des Beaux Arts, where it was really falling down and the floor was crumbling. It was not in very good condition. We set up in what was like a small classroom the monitors and the decks, and people started coming in. A local radio station had announced it and

said that all of these videotapes of bands were going to be shown at the school, so everybody should go there. Within probably the first half hour or 45 minutes, we had 100 people crammed into this little room. We quickly moved the equipment out into this big open space they had and within probably about two or three hours there were thousands of people there. It was insane! (laughs) It was this table at the end of this large open space—not as big as a football field but very large, open space—a little table at one end with a 26-inch black and white TV screen, and just a sea of people in front of it watching the Rolling Stones and all these different bands that were playing. We called up the people that were the French video artists whom we had met and they brought this black and white video projector they had, and set it up at the other end of the space and started showing their own videotapes. Because with that many people by the time you were at the back of the crowd you could barely make out this tiny little image on the monitor and at least this way there were images happening in more than one place. So it turned into a video event.

TENNANT: That brings up a good point about the difficulty or challenges of showing video at the time, and monitors versus projection.

JONES: Projection was very rare. We managed to get a hold of a little video projector at one point. It would do an image that was maybe three or four feet across, but you could only show it in a pitch-black room. It just wasn't bright. These French people had a projector that was a little more modern; it was a cylinder with a curved mirror in the back that shot out an image that was maybe four or five feet diagonal, and you could see it in a dim room instead of just a pitch black room. It was also black and white. There were no small color projectors at that point, but it didn't really matter because color just wasn't something we had much access to anyways. All of our cameras and recorders were black and white. We did get one color recorder towards the end of the time I was there, and recorded some television with it off of TV, but we didn't really have a

color camera because the color equipment was just too expensive. So the early part of video was just black and white, and was limited to how much equipment and technology you could get your hands on. The color equipment in the early '70s was something that TV studios had access to. We did get this color recorder, but the only source we had was off of television—with black and white projectors you didn't have much of a way to show color to begin with. Even large screen, color TVs were pretty expensive. Most of the monitors we had ranged from maybe six or eight inches, ten twelve. Then we had this one big converted television set that was 26 inches. And it was huge; it was massive compared to what was available at the time.

TENNANT: So it also became a question of lugging around heavy equipment.

JONES: We literally had a Volkswagen van that we would fill floor to ceiling, front to back, and you could fit two people up in front. And that was the equipment that we would travel with. It was a lot of junk! (laughs)

TENNANT: Do you think that the limitations of video equipment maybe one of the reasons why so much of the content of video is about documenting performances…

JONES: It varied a lot—it depended on who was doing it. One of the things that really struck me about some of the tapes I had seen of the VideoFreex was that they were actually going beyond just using a camera. They had gotten a hold of some mixing equipment, so they were blending images and using split screens and things like that, which was a matter of what kind of equipment could you get your hands on. The easiest would be to get a hold of a camera and recorder, and then beyond that, special effects equipment like mixers and faders, which were much harder to get your hands on. You may eventually be able to borrow one, but most of the equipment that people could get were cameras and recorders. So most of the tapes that were made involved what

you could do in front of a camera. It took a while before any type of special effects equipment was widely available for people to use. That was one of my interests: if I couldn't get it, I would try to make it. I began to learn how and did some experiments when I was in Europe, but most of those experiments were camera based.

TENNANT: Would you take apart cameras then?

JONES: Sure. I would buy a few parts and try experiments with the image, like solarizing—but not trying to work with more than one image at a time because synchronizing images wasn't easy. I'd just try to manipulate the waveforms coming out of the camera and do something simple to them. It was mostly little experiments. A lot of them didn't record very well because the quality wasn't that good. Most of it ended up being just misadjusted cameras.

TENNANT: You mentioned that there remains a huge archive; how many tons of equipment and tapes?

JONES: With the Videoheads, the stuff that we had kept growing. Jack was a packrat and so we had this VW van full of equipment, but that wasn't the end of it. He would keep trying to acquire equipment, and he would convince people, when they replaced their equipment to give him their old equipment. So that kept growing and growing. I was there for a year. I left in '72, and he was collecting ever since then. There are several tons of equipment that had filled a full sized tractor-trailer, which had been in storage, and that he managed to get back and is setting up in a facility in Amsterdam, once again. He hasn't been in Amsterdam for the last fifteen years or so. He was in Paris most of that time, so now he is finally moving back to Amsterdam and setting up Videoheads once again.

TENNANT: You mentioned you came back to the States in '72. What was the impetus for that move back?

JONES: I was deported—it was fairly straightforward. (laughs) Actually we had made a deal to perform twenty-one original theatre pieces at the Olympic games in Munich that summer of '72. They were going to be mixtures of theatrical performance and video. There was going to be a different one each day over the course of three weeks; we had rented a space, and talked to various people about doing some dancing and acting. We decided the equipment, which was fairly fragile, might break down, and so I needed to go to NY to take a one-week training course that Sony put on about how to repair video. Sony made most of the equipment we had. One person who was working with us had a round trip ticket in his name and he wasn't planning on going back. Theoretically it was a nontransferable airplane ticket, but I got all of the money that I had saved up to go to Sony school. He took my luggage, checked it onto the airplane, got the boarding pass, handed it to me and I got on the plane. Everything was fine and I was on my way to New York. Then something went wrong with the airplane and we made an emergency stop in London. They took us off the plane and put us on a different plane, but checked tickets and passports when they did. Mine had two names. So I was deported from London back to Amsterdam. When I got back there they said, "Ok you have a choice. You can either wait here or stay in jail for the weekend and then on Monday you'll go in front of a judge and he'll decide if you'll be deported back to New York—or you can just pay for a ticket right now and go to New York." I said, "I wanted to go to New York anyways so here's all of my money." I got on a plane and when I got to New York I had $1.40 left in my pocket when I got there. Which was not going to get me into Sony school. So I found the nearest phone. "MOM!!!" My parents paid for a ticket in Detroit and flew me back. It took me ten months to get out of Detroit again; by then the Olympic thing was long past and I had no way of getting back to Europe. I was pretty much stuck

13

in Detroit working as a cook and a dishwasher to raise money to go to Sony School, which I eventually did. I saved up all of my pennies and went to New York the following spring. I met up with the VideoFreex up in Lanesville. I stayed with them for a few weeks waiting for an opening to get into Sony School, and then went down to Long Island City where the school was. I took the one-week training course. A person that I met in Amsterdam who lived in NY worked in a video rental place so he offered me a job once I had gone to the Sony training school. I repaired video equipment at their facility, which was called CTL Electronics. I worked there for a while, and met my future ex-wife there and ended up leaving after a couple months to move back up to the Catskills where the VideoFreex were. I rented an apartment about a mile up the road from them and set up my first video related business called Silver Bullet Video. I basically repaired video equipment for the various people in the Catskill area who doing video. There were a number of small groups and individuals doing video in that area besides the Videofreex. I got a list of names in the state from Skip Blumberg, and I sent out a flier to hundreds of different places showing that I did modifications to video equipment, and was selling batteries for Portapaks. The only one who responded was Ralph Hocking from the Experimental Television Center. So I put a bunch of batteries together and drove to Binghamton and met Ralph and Sherry and sold them the batteries. I went back to the Catskills […] and a few weeks later they called up and said, "Hey how'd you like a job?" They offered me a job repairing their video equipment. Winter was coming on hard and fast, and I didn't have enough money to stay where I was and pay the rent, so I moved to Binghamton and started working for the TV Center on the first of January 1974. I had met them in November '73 and began work in January '74.

TENNANT: You mention the scene in Downstate, where people were doing video for a lot of different reasons. How would you describe the community?

JONES: It was a scattered community, but everybody knew each other. They were all friends. They all had their reasons for doing what they were doing, and they did do different things. Some were doing straight documentaries. At this point there was still very little in the way of special effects equipment and things like that, so pretty much everything people were doing involved just what they could do with the camera and editing. There was editing equipment available at different places but it was mostly a matter of single camera and in some cases multi camera edited together. So a lot of it was documentary style, or there was image based things with some optical effects but was still based on what you could do in front of the camera rather than how you could modify the images electronically. It was like little collectives, little groups of people who had gotten together and lived in one town or another. A person who was working for a community college might have some video equipment, and then he'd use that to shoot his own video tapes. Every once in a while there'd be parties where people would get together at a restaurant or at somebody's house and show each other tapes, or just get together and visit. It was a really interesting community—there were a lot of hippy style gatherings. I remember at the VideoFreex house, Bart Friedman had a party that he called Bart's Do-It-In-The-Road Party. It was basically an invitation to anyone in the area who had video equipment to show up and go around for the day and shoot video out in the road, in the stream, in the fields—whatever, just shoot stuff. Then in the evening everyone would get together and watch tapes. It was just a big gathering. […] It was a great event.

TENNANT: How closely was this related to the rise of cable television, and the notion that communities could see themselves represented on television?

JONES: Cable was really only in the big cities at that point—nothing was really out in the smaller communities. We heard about cable in New York City, but up in the Catskills there was no cable anywhere. Not even the larger towns and cities. Binghamton had cable, but it was really

a minor amount of locations that had cable. The VideoFreeks, on the other hand, took it in a different direction and they transmitted TV once a week from their house. They had an antenna that they normally used to pick up TV to watch it, and they'd turn their amplifier in the other direction and send their own signal out of the antenna. It would go down the valley and hit the thirty or forty houses that were in the immediate area, so those people were able to see an hour or two of television once a week that came out of the VideoFreex house. It was called Lanesville TV: the Worlds Smallest Television Station. It was a lot of fun. They did some really great stuff. They'd go around town and shoot videotapes—or make up stories and stuff—and then they'd air the videotapes on the show. Or they'd interview local people, and bring the local person that was running the farm up the road over to their house on Friday night and talk to him. His neighbors would be sitting at their house watching him on TV. Or they'd do one of their art oriented tapes, and show that as a way of introducing or exposing those kind of images to a small rural community in the Catskills that had no exposure to the kind of art shown in larger cities. And at that point, video art was really not shown in museums or galleries—it was very rare. There were a few video specific venues back in the '70s that were in the City, that were more like clubs set up specifically to show video. But the majority of museums shied away from it; they didn't see video as art yet. There were a few museums. The Everson museum in Syracuse was one of the first in New York State to actually show video art and start collecting videotapes from artists. But those kinds of things were fairly rare. Video people would get exposure anyway they could, and for the most part, they had to make up their own ways to put on video shows. They would rent a space or convince a space to put on a video presentation for that night, and they'd show videotapes to anyone that would show up that night.

TENNANT: It's kind of nice to think that for early video, not only the producers but also those that would distribute and show video work were based in Upstate.

JONES: A lot of the video started in New York City and then spread out from there. The VideoFreex had been in New York City originally, but then wanted to get out and move upstate. There were other people who had been in New York City but moved to different parts of upstate, so it was really scattered. New York City had money, so there were a lot more things you could convince people to do down there. You could find a place and convince them to get equipment. If you didn't have equipment, there was the Manhattan Cable System, and they had equipment in a little studio where, if you could convince them, you could go and do stuff. […] Channel 13 in New York, and WGBH in Boston were both very interested in any kind of visual stuff, so they were doing experimental work with video artists and showing videotapes.

TENNANT: What are some of your early memories of what the Center's purpose was when you came in 1974? What was its mission? […]

JONES: Well the TV Center had two purposes around that time. It was an access center where people would borrow equipment to shoot their own video around town. People would shoot a local basketball game, or shoot their own documentaries, or maybe shoot something about their family. It also had a limited amount of special effects equipment. They had a Paik Abe Colorizer and a Paik Abe keyer. So some people would come in and use those to process video, to add colors to it, or superimpose titles or other images onto it. That stuff really interested me because that was stuff that I hadn't had any access to before. When I was down in NY [City] working at CTL, they had a little TV studio of their own. They had a guy working with them, George Brown, who made a Colorizer for them that would take a camera and divide it into eight shades of grey and allow you to adjust red green and blue knobs to place color bands, in stead of those shades of grey, in the image. So you could take an image and turn it into these bands of color. It was very interesting looking stuff. So I had talked to George a lot, and had picked his brain about how his thing worked, about how other types of things in electronics worked. When I got up to the TV

17

Center, I played with the Paik Abe Colorizer, which was a totally different type of machine where you could feed in several cameras. It made a rainbow of colors on the images, but it was very difficult to control those colors: basically you fed images into the channels, turned up the knob for that channel and got some colors, and then you'd turn another knob and all the colors would shift. You could get a lot of colors and a lot of interesting looking images, but it was very hard to come back and do the same thing a second time because every knob changed everything; you turned it until you got something you liked, and that was great, but it wasn't so easy to plan. It wasn't like "I want this part of the image to be red and this part to be yellow," it isn't that type of machine. At some point during that first year, they were applying for grants and Sherry asked me if there was anything that I could think of that I would like to apply for. I said yeah—I had played with Georges' Colorozier, and was playing with the Center's Paik Abe, and now I wanted to make my own that was somewhere in-between, something that was more controllable but that had multiple images mixed in. So she wrote up a proposal for it and we got a grant. Then I had to figure out how to actually do it.

At that point I was a repairperson who understood electronics, but I wasn't really a designer. I didn't know how to design electronics. The stuff that I had built myself was mostly looking in electronic magazines and seeing a schematic and then building that schematic. Or I would take an existing device and I would modify their circuit a little bit. But I had never really done anything by scratch—built the entire thing. Now that we had the money for the grant, I had to actually build this device that I had described, but had no idea how to build. So I sat down with a couple of books on primitive electronic circuitry and a bag full of parts and started building little simple circuits and playing with them and watching what they did on the oscilloscope, and in some cases watching what they did on the monitor when video was fed in. I'd blow up the transistor and fry the circuit, so I'd build another one and change a few parts but I'd start just short of where I ended before, and try changing a couple of other parts until I blew up another transistor. By the

time I got through half the bag of transistors, I'd stop blowing them up and I would have a rough understanding of how the circuitry worked and what the basic, primitive amplifiers and stuff were in electronics.

I started building a group of little circuits and mixing signals together. I didn't know how to make a color encoder, which was the basis of what was behind other types of Colorizers at that point, but I came up with a way of shifting the sub carrier that was in the color signal to make different colors just solid fields of color. I came up with the idea of making a red, green, and blue solid image, and then mixing that in to add color to the image, and that was the basis for the Colorizer that I came up with. It was basically a big mixer that mixed red green and blue together and mixed the video image into it. I had played around with modifying other circuitry and had made some simple keyer circuits to superimposing one image over another; I added a little keyer circuit into the Colorizer, which allowed me to turn part of the image black but keep the other part. I built several different channels of the same thing and blended the channels together, so that you could take a camera and run it into a channel tint the camera to a certain color, crop out a certain portion of that image, then mix it with an image from another camera and blend those together. I was originally going to make an eight-channel machine, but I ran out of parts and money, so it ended up being a four-channel version. And that was the [Jones] Colorizer that was at the TV Center for a number of years until the 80s when we got a grant to replace it with an updated design. So at that point we did a fancier version with six channels and that's still today at the TV Center. The original four-channel machine is out at Ralph's house, sitting on a rack in the barn, or in his studio somewhere. It was a kind of three dimensional sculpture of electronic parts—pieces of copper circuit board with parts soldered on, just stacked on top of each other, twisting and going in different directions. […] "Oh that doesn't work so I'll pull that one out and solder another one on here." Just experimenting, and then writing down what the circuit was once it was done. It wasn't design the circuit ahead of time, build it and then expect it to work; it was more

that it would grow into a circuit. That was the first real machine that I developed and the

beginning of my designing electronics.

TENNANT: What was the next tool that you developed?

JONES: Around the same time I'd been playing with keyers. I had actually started by modifying

the little mixer we had that was made by Sony. It was a fader and wipe generator. I can't

remember if it actually had a keyer in it that I took out and replaced, but I think it didn't have one.

I think it was basically for doing wipes, like a line across horizontally or vertically, and a way to

fade between different cameras. Since the circuit was already there to switch between the two

images in doing the wipe, it was fairly easy to come up with a circuit that went in front of that,

which looked at the shades of grey in the image. You could just amplified them to the point

where you'd pick a shade of grey, feed it into the switch that was in that SEG, and add a keyer to

that. I also modified it to feed in an oscillator, because we had a couple of big, old oscillators that

Ralph had bought surplus somewhere. I put a connector on where you could feed an oscillator in

and wiggle the wipe edge; because the wipe was a straight line, by moving the oscillator you

could move that line. I then started developing my own version of the keyer. I did some

experiments with making a keyer and a little edge generator that did a key edge, but instead of it

being solid black or white—or one image and the other image—it just followed that key edge

with a little highlighting an put an edge around part of the image. I would make version after

version of the keyer, each time coming up with ways of improving the quality. Around that time,

I met a guy who worked locally at Singer Link Aviation, which was a big industrial company in

the Binghamton area where they were working with high-end video equipment. They were doing

flight simulators, and as part of that, they had very detailed and precise video images in the

simulators. This guy was a designer who understood this high-end side of video, which was way

beyond the quality of normal broadcast television signals. It was a closed circuit, industrial video

signal. I picked his brain about how he designed circuits that met the specs for that quality level of signal, and I started applying those concepts to my designs to improve the quality level of the circuitry: raising the bandwidth; raising the quality, the sharpness, and detail of the keyers that I was building. I ended up making a keyer that was extremely sharp and clean, just by mixing the concepts that I'd been working on with these ideas of how to work with high-end video signals. That ended up being a keyer that was used at the Center for a number of years, and was replaced in the early 80s with the second generation that I came up with then.

Around that same time, probably in '75, I did some of my own experiments at home. I was taking part of the keyer concept, which was to create this edge where you would do the keying, but I built a circuit that had sixteen separate little key circuits in it that were each adjusted to basically divided the image into sixteen separate shades of grey. It was my first digital video circuit. It was an A to D and D to A. It converted the analog of the video into digital, and then immediately back into analog. So instead of it smoothly going through the shades of grey, it stepped through the shades so you had these bands in the image, and each band was one of the sixteen shades of grey. I started experimenting with a little memory chip, trying to store pieces of that image that had come out between the A to D and the D to A, cutting the circuit in-between and putting that information into a memory chip to hold it across the screen. I think I ended up dividing sixty-four points on a line, besides dividing it by shades of grey; it was sampling it as it went across the screen, and it would turn it into these little streaks, sixty-four columns on the screen. Then by putting it into the memory, I recorded the first line across and then played back for a few lines after that and made little blocks on the screen. It wasn't enough memory to hold the whole frame of video—it was just enough to hold that one line, repeat it for a few lines, and then grab a new line and then repeat that for a few lines. It pixilated the image and turned it into a grid of little boxes. As far as I remember, there was only one tape ever made with that device. I didn't make it. It was Walter Wright. Walter was an artist in residence at the TV Center back then. I brought this

thing from home into the studio, and hooked it up to the monitors and cameras there because I didn't have much equipment of my own. I hooked it up and was tweaking and playing with it, and while I was working with it, Walter hooked up the deck and started playing with his own images and running them through it. (I think he made a tape of a coke bottle that was digitized or something.) But that was an experimental circuit. I took it home and threw it in a pile and didn't think much about it for a while.

I did a lot of modifications in those days. I modified the Paik/Abe Colorizer, adding switches to it, to route the video inputs to different colors. Instead of the first channel in always being the red versus the green, versus the blue, versus the magenta, you could turn a switch on the front and set which color each of the channels were. You had a little bit more control over what colors came out of that Colorizer. It was a lot of smaller types of circuits as opposed to larger machines.

TENNANT: Was that digital tool you just described the frame buffer?

JONES: No it wasn't, though it later became the front end for the buffer. But there wasn't enough memory to even hold one still frame, only enough memory to hold one line for a few scan lines, and then replace the information in that line with another line and repeat it for a few scan lines. So it was a line buffer, but it wasn't a frame buffer. It was just an effect.

[…] While I was still at the TV Center, this guy who had done some video in Woodstock came, named Gary Hill. He used our equipment to do some tapes, and he wanted me to build a keyer for him and a couple of other things. In '76 I was no longer really repairing video equipment at the Center, I was just interested in building equipment and modifying stuff. So the TV Center decided I was moving in a different direction than what they needed, which was somebody to keep the equipment working. We decided that I would go off on my own, instead of collecting a

salary from them doing whatever I wanted to do. Gary was living in the Catskills and said, "Well why don't you come up here? I'll put some money up, and you can build some of the equipment that you want to build." So I went up and we shared a house in Barrytown, near Rhinebeck, and he funded some circuit building that I did.

[…] Silver Bullet video had been located up the road from Lanesville, New York, which was where the Videofreex were. Gary was in Rhinebeck, New York, which is on the other side of the Hudson River but generally the same area—maybe thirty or forty miles away. The artist group that was a part of lost its funding within a month of my arriving. The whole thing fell apart and we all had to move out of the building they'd been in. Gary and I rented a house in a town near by called Barrytown. The landlord was in the process of starting a new art center in the area, so we ended up working with him. His name was George Quasha, and he was starting this thing in Rhinebeck called the Arnolfini Art Center. He found a person with a lot of money in New Jersey, and they bought an old church and rectory and were remodeling it. They turned it into a restaurant, a performance space, a gallery and a gift store for art objects. Then the rectory was actually turned into a publishing, promotion company and that helped fund some of the other stuff. It eventually grew into a book publishing company, but initially it was printing brochures and advertising stuff for local businesses. The art center itself had a performance space, and Gary and I were originally going to be making video for performances there. George's wife was into pottery and sculpture, so we were also working with her doing different kinds of things, doing some clay work and making masks. In the back of the house we rented we had a little studio that we set up. One by one, I experimented with circuits and built a whole new range of Colorizers, Keyers, edge generators, and different little image processing tools and built them all together in a big box.

[…] I built the first of my Frame Buffers up there. That was kind of a fluke. There was a big industrial electronic surplus company up there, which had pumps, motors, pipes, and all sorts of things. They had a box of integrated circuits on the counter, and you could pick out any chip that was in the box and pay them 50 cents or something. The chips all came from IBM, which had a facility near there. One day I was there and looked at this box of chips, wrote down some of the part numbers and looked them up; a number of those chips were memory chips. I went back and made them an offer and bought the whole box of parts for 40 dollars. When I took them home I pulled out the memory chips, which didn't have much memory in them—I think they were 1K and 4K memory chips. I soldered several of them, literally on top of each other with the pins sticking out sideways. I hooked up the A to D that I built in '75 to one end of the memory chip, and hooked the D to A to the other side of it. I made some little oscillators that drove the counter, the address on the memory chips, and made a buffer that held a still frame that was 64 by 64 pixels. Initially it was just that one frame. It could pass the video in that same 64 by 64 as a live image; you could hit a button and freeze it, so you could have things moving around and then just suddenly frozen. It was black and white, of course. Gary loved it. The first time I showed it to him, he wasn't home. I got it working and pointed a camera at my face, froze an image of me grinning and left it on the monitor, then went out. At some point while I was gone he came home and went in the back where we had our equipment set up, and there was my face frozen on the monitor. He thought that was great! (laughs) He played around with it. I built a couple more versions of it. Part of the deal was that I'd teach him to solder so he could build these circuits for himself. I would build one and he'd build two or three more, because he wanted to build up a big pile of equipment. I needed money, so I sold him my A to D that I'd built in '75 as part of this buffer. He then built some copies of that to have additional copies for himself. I eventually talked him into giving me the A to D back, but that was in the 90s. He had it for quite a while. I built a number of other very weird Colorizer type devices, and very simplistic circuits for him. We made a little patch bay that we'd bought at the surplus place together. Gary had been a welder for a long

time, so he welded a box together to hold the whole little system, with Colorizers, keyers, the frame buffer, little oscillators and other stuff. He had this special effects machine that he used for a number of years in different pieces.

[…] Gary did a lot of welding so he put together a frame; we bought a lot of the parts we needed through a surplus electronics store in the area including a little patch panel, which we could patch the different circuits together and create different combinations of effects. Gary already knew how to weld, but I taught him how to solder circuit boards. Once I finished one of the boards he would sit down and duplicate one or two copies, to add to the image-processing machine. It grew fairly quickly and had a lot of different, simple Colorziers and little effects: different ways of mixing and oscillators. Some of it's still in a warehouse of Gary's in Seattle, but most of it is in pieces at this point. The original digital circuit that I made in '75 became part of it at one point; I had needed money so I sold it to him for a couple bucks in '76 or '77. Eventually, in the mid '90s, I talked him into giving back that circuit, and it's in my storage room now.

This period went on for probably about two years, or a year and a half until the funding for fell apart—the organization had grown too larger. I went back to Lanesville and rented the back part of the building that the VideoFreex were living in, but that also turned out to be bad timing because they were in the process of breaking up. Within another three or four months the VideoFreex were no more, and everybody there had moved out. Eventually I moved back to Binghamton where it was low money and no work for a while—I was sleeping on the floor at the TV Center—until I finally got a job repairing audio equipment in Binghamton. Then the TV Center moved out to Owego, and so I moved too; that was summer of '79. Several other people moved out to Owego: Peer Bode, Neil Zusman, and some other people who were hanging out in Binghamton and would either work at the Center or were just part of the scene. For a while I didn't have a real job and I didn't have much of an income from building circuits, but I'd build

small circuits for people—fairly simple kinds of things. Eventually I got some industrial work in Binghamton building devices for a contract company that ultimately was selling them to the Air Force. These devices, in flight simulators, would convert video into film to use for recording flight. I did this for about six months and also did some consulting at GE Aerospace. They had built some video monitors to use in commercial aircraft cockpits but they didn't work right, so they hired me to come in and fix their circuit designs. I did that for probably eight months. Then I got a job at Cornell working at the High Energy Physics lab, building these mainframe clones and desktop versions of a mainframe computer. That brought me up to about 1984. I'd also been doing some consulting for a computer company in New Jersey for a video card. They had been working with slide projectors and computer controlled slide systems, and had wanted to do computer graphics. Another person developed a computer graphics card for them but they wanted to record the computer graphics and output it as real video. I developed an add-on circuit for them, which converted the digital computer graphics to analog signals that could be recorded so that the fancy computer generated graphics could go to video monitors and projectors.

[…] Eventually I left—that whole thing broke up, and I came back to Binghamton. Peer Bode was hanging out at the TV Center at that point. I'd met Peer before, but now he was doing work at the Center. We were sitting around talking about the frame buffer and he said, "Oh, well I want one!" So we sat down and I came up with circuits for the next generation. We wanted to do it so it could hold more than one frame of video, but I think the first one we soldered together was still just one frame. But I think the frame was 128 by 256, or 256 by 256, because we wanted to go beyond the resolution of the first one the 64 by 64. […] We put that together and then wanted to modify it a bit, to make it into four frames. Around that same, time the TV Center had moved out to Owego. Probably another year or two after that, Sherry decided to apply for a grant for a Frame Buffer. Another year or two after we eventually got the money, we put together a buffer that held 16 frames in it; we eventually added more memory, and the buffer at the Center now that has 32

frames is that buffer. It was repackaged at some point; the circuit boards were made earlier in an earlier box. I started making a few of those buffers and selling them to people. The box that I had picked out to build them in was something the Center wanted, so it got repackaged into the current bright red and blue box that it's in now. I sold maybe four or five of those frame buffers, not very many, to different people—a couple of schools, and individuals. Some people who were using the TV Center built their own.

[…] There was another grant from the NYSCA around that same time, to do a series of circuit boards for some basic image processing circuits, which I had done at the TV Center, but reworked and updated versions. We would be able to have these printed as circuit boards; all of the circuits up until that point had been hand wired; they were just parts pushed through holes on perforated boards with the wires soldered on the bottom. I had experimented with some of my own circuits and had printed circuit boards made, so the TV Center thought it would be great to have these types of image processing devices printed as boards. Then we could make multiple copies—the Center could have one, I could have one, and different artists who worked at the Center could build their own copies. That was what became know as the four-board project: a multi-channel Colorizer, a Keyer, an Oscillator and a Sequencer. I had built several different versions of the Sequencer at the TV Center during the '70s; the first one had four channels the next had eight. The machine was basically something that switched from one image to another in a sequence: it allowed you to put in four cameras and have one, then two, then three, then four, then one, then two, and so on. You could do this very quickly and create optical illusions, where you'd go so fast that you were dividing the image up into sections instead of just sequential images. The new sequencer had a lot of extra little features to provide manual control, to allow oscillators to independently control the levels of each of the signals. The Keyer in that project was the most refined version that I had made; it was crisp with sharp, clean edges, and had very smooth transitions from one image to another at the key edges. There was a lot of control over

each of the images and the brightness and contrast of the different images involved. And again, everything was voltage control. This was something I started doing in the 70s when I built some of the early circuits. We had a lot of surplus industrial oscillators to generate waveforms so I started adding inputs almost everywhere we had a knob we turned manually; that way we could plug in an oscillator and have the oscillator turn the knob for us. By feeding in a number of oscillators you could have a number of knobs being turned at the same time—more knobs than you had hands to turn. I kept that going with the four-board project and everything was voltage controllable. We built a bank of oscillators for the TV Center, which are also still there. In fact all of the things we built with the four-board project are in the studio and used everyday. The Colorizer was an updated version, which was a little fancier than the original one I had built in the mid 70s. This version had soft-edge keying; instead of just carving out the light parts or the dark parts of the image, you could do it gradually with feathered edges, so an image would fade in or fade out at a certain shade of grey. It also had positive and negative switches so that you could make soloraized images, or negatives of images. Again, everything on that was voltage controllable, and oscillators could adjust the color mix or brightness of a given channel. This Colorizer was six-channels, the original was four. […] These projects happened in the mid 80s.

Besides building these tools for the Center, I was also interested in selling them commercially to other people, to artists. I took these same designs and built my own versions of them in boxes that I designed, and sold a few versions of them to different artists who were working in video. I only sold maybe two copies of the Colorizer, maybe four or five copies of the Frame Buffer, and possibly one box that had a pair of Keyers and a Sequencer in it. I think the only person I did that for was Kjell Bjørgeengen in Norway. I built a PAL version of these devices, which were normally done in NTSC for American video and he eventually ended up with a Frame Buffer and oscillators and Colorizer. He basically has his own little ETC in his basement in Norway! (laughs) I was building those kinds of circuits most of the way through the late '80s, but it was

not very profitable for me. I was hiring Rich Brewster to do some of the wiring, other people to do some of the drilling, and a company nearby to paint the boxes. In the long run, I ended up basically paying them most of what I had charged for the machines. I didn't really make much money off of them, and I was broke through most of the late '80s. I'd designed a few other devices along the way, but never had enough money to turn them into products. I designed a video switching matrix but it sat on my computer—it never actually got built. I designed a couple of other simple image processing devices, a MIDI interface and a control voltage interface, but I didn't have the money to turn them into products. Then, in 1991, Gary Hill called me up. He said he was doing something at the Whitney Biennial and he needed some kind of video switching circuit for it. I had a video switcher designed on the computer, so I said, "Great, you have any money?" He said he did, so I etched all the boards and built a video switcher for him to use in that piece, and also wrote some software that allowed him to control the switcher frame by frame throughout the installation. He built a piece called "Between Cinema and a Hard Place", which I believe was three channels of video that were fed out to 23 channels of monitors, and had some very fast sequences of images going out to the monitors. There were eight monitors of one size in a row, and an image would just flash its way down the row of monitors; in another section, there would be three monitors where the image was flickering on each monitor—it was a different image, but all three of them came from the same video tape. It was all tightly edited on the tape, and then the programming of the switcher made it so that you could put the first two frames of the tape on one monitor, the next two frames on the next monitor, the next two frames on the third monitor, and then repeat it so it looked like three separate images. I continued to work with Gary during the '90s, building other circuits like that one and also doing some simpler types. He then did a piece that involved a number of different laser discs and he wanted them all to start at the same time. In '92 he had an idea for an installation that involved interaction, in which people would walk down a hallway and trigger different images to appear in the hallway. They were images of people sitting or standing in the distance, who would walk towards you as you were in

the hallway. We did some experiments in Seattle with foot switches, and then I came up with software that would control the laser disks; it sensed when someone was standing on one of those places on the floor, and it would play a different sequence of images off the laser disc based on their position. This was something we set up in '92 at Documenta in Germany. The piece was called "Tall Ships". At that same exhibition, in the room next door to us, there was another video artist who was trying to control two video images on laser disks; he had one image projected on one side of a thick screen, and another image projected on the other side. But he didn't realize that if you just start the laser disk and let them play they drift and each time they loop and start over again, they're off a little bit further. These images were not synchronized to each other and they were constantly drifting further apart as the day went on. So Documenta paid me to write some software for him to control the two laser disk players and start them at the same time, to keep them synchronized while the piece was playing and when it was done, to go back from the beginning and do it over again. That was the beginning of my work in synchronized playback. The following year, Gary was interested in doing a piece with seven different laser disks that were synchronized. He asked me if I could rewrite that software and make it work with those laser disks. I thought about it and decided it would make more sense if I came up with circuitry that didn't require the computer; they were little stand-alone circuits that each controlled the laser disks. That was the beginning of my building hardware laser disk synchronizer, which turned out to be the bread and butter product that I had through a lot of the '90s. I made the first one for Gary's piece called "Cut Pipe", which was seven pieces of pipe with monitors in them that were arranged on the floor in a specific pattern; I believe this was shown in the Netherlands. From there I further developed the software and once I got it really accurate and working well, I started building these circuits for other artists. Eventually in the late '90s, the early 21st century, I started doing this for DVDs, probably around 1999, 2000. And that has taken off like crazy. A lot of people had been using Laser Disks, but when DVD came out, people were much more interested in doing multi-channel DVDs. For the past five years, pretty much everything that I've been

making is related to DVD synchronization. Synchronizing multiple channels—any where from two up to eighty channels. There are a lot of people now creating two, three, four channel video installations with multiple monitors and projectors. Some of them have had thirty channels of video. There is one pair of artists in Houston called The Art Guys [Michael Galbreth and Jack Massing] who did an installation at the Houston Airport, which is a permanent exhibition with eighty channels: eighty DVD players going into eighty monitors, all synchronized exactly to the frame. Each of the DVD players is set to start three frames after the one before it. The monitors are in a big oval that goes around one part of the Houston airport, so when you walk under it, these images slowly fly around over your head in this oval. The DVD synchronizer is still the number one thing that I am building and selling to this day. In fact it got so popular that in 2001 I couldn't keep up with the demand so I hired a couple people to help build them because. I hired an office assistant to basically handle the phones, bookkeeping and stuff, and a workbench assistant who would solder the circuit boards and eventually took over drilling and assembling the boxes. Now I'm more into designing new products, sitting back and letting these other people take the orders and build the machines. Things have evolved and changed very quickly with the DVD. […]

TENNANT: You mentioned Gary working along side you, building at the same time, and the cooperative structures you were working within. We talked about the Ford assembly line versus these other alternative working models. Can you comment on what it was like making tools in this way?

JONES: Actually, within that same vein, there was a community of people who were building tools in the '70s. While I was doing stuff at the TV Center at the same time there was Chuck Kennedy at the Videofreex who was building things. There was Carl Geiger at Synapse who was building machines, Chuck Hoyer up in Rochester's Portable Channel; there was an engineer at

WNET Ch 13 building stuff and there were other people down in the New York City area building things. We were all coming up with stuff on our own, until Parry Teasdale got us together. About once a month we had a conference call; he would call us and we'd all talk on the phone about what we were working on, sharing ideas about different processes. That went on for about a year. We had ten or twelve of those calls, describing to each other the kinds of things we were interested in and working on. We had one gathering at Lanesville where we sat around for a weekend talking and sharing stuff. That was a community of designers not so much copying each others exact circuitry,, but sharing design ideas with each other. It was concepts of "if you take a keyer and do this to it, or run that into that, and wiggle this around"[…] It was more general, conceptual conversations. "Have you heard about this integrated circuit? Have you heard of this part?" –things like that. It was an entire side community in the video art world. I think all of the people involved were somehow connected to not-for-profit media arts centers.

[…] Also, in the early 80s, there were a number of people who were either a part of the TV Center, or were in the area and used the TV Center. I had moved to a house with a lot of empty space in it, so every Tuesday those people would come over. Each person had a different thing they wanted to do; since they knew about the equipment at the Center, they wanted a keyer or a Colorizer—they'd have a piece of equipment in mind, or an effect they wanted. Or I'd have a new idea and say, "Well I've been thinking about this or that," and someone would say, "Yeah! I want to try that." So I would write up the schematics. A couple of them needed to be thought how to solder, so that was part of it, while others had done soldering so it was more advanced: "Put this here and connect that there. Once that's working I'll hook it up to the oscilloscope." So three or four people would sit around building circuits for themselves, slowly trying to build their own image processing systems; meanwhile I was getting to try new things out. They had to buy the parts for whatever it was they were building. At one point I think I was getting ten dollars a piece from them as a fee for them being there all day, so it was also a way of me making money to pay

the rent. But it was definitely a way of trying out new ideas, experimenting and fine-tuning

concepts, or trying a new approach to something that had already been done. It was a mixture of

things: them learning and getting a circuit in the end, and me getting them to try out new ideas

and building them for me while making another 30 or 40 dollars for the day. I think we met every

Tuesday for a few months.

TENNANT: Were there any models that you were using as inspiration, or did this just happen

naturally as the right people at the right time?

JONES: Yeah, it was just a group of friends who all hung around or were part of the TV Center.

Mimi Martin was a person who lived south of here, maybe a half an hour away, who came to the

Center regularly. Peer Bode was part of it. I think Neil Zusman did it for a while. Matthew

Schlanger was part of it. I think Barbara Buckner might have done some work at one point. It

wasn't very many people it was three or four people, so it was a small gathering. […]

TENNANT: What about the atmosphere for the computer programming… there is mention in the

archives of similar development sessions.

JONES: The computer stuff at the Center evolved over a number of years. The first computer at

the Center was a kind of industrial computer that was modified to be able to out put and take in

voltages. Functionally, it was a very difficult computer to use; it was not easy to program and it

was not something with a lot of capability. A guy who was doing computer stuff at the University

where Ralph worked named Paul Davis had been coming to hanging out at the TV Center and

was interested in what was going on there. Walter Wright, who was artist in residence for a

number of years at the TV Center, and Paul put together the idea of getting this computer, in

order to hook it up to the equipment we had, and basically have it turn knobs and do some of the

33

simple stuff that computers were capable of then. Computers were not really capable of generating images in real time, or manipulating images beyond putting out some control voltages to turn knobs or throw switches. So they put together the proposal and got a grant to buy and build up the computer. There really wasn't any software to do much with it. I wrote a couple of little software pieces that would record some voltages and play them back, but it was hardly ever used. The computer was only used a little bit because it really didn't have a lot of power. Then probably in the early '80s, Ralph went to Paul and said "Ok. Things have changed with computers. Now there are personal computers." There were a number of different things that Paul had been playing with at the school, setting up labs, so Ralph charged him with the task of finding a computer that we could do things with. So Paul put together a computer and we started playing with it. Because it took a while to write software for it, Ralph would invite us out on Sunday afternoon to write a program, make a modification, or add some new boards to the computer. It became a regular thing. Paul and I would get together and spend the afternoon trying to add some program to do new features. They'd found a graphics card from a company in California that was capable of putting out video, initially a very low-res graphics card; we did some interesting little things with it, but they were just big blocks of color. Then they found this Frame Buffer card from this company that could actually capture full frames of video, make different scales of images, or manipulate an image and do something to it with software. A lot of the Sundays were spent trying to get that to work, and then writing programs to grab and manipulate images. Sometimes it was Ralph saying, "Oh I like this, but can't we do something in this direction that's a bit different?" And sometimes it was me or Paul saying, "You know, I had this idea last week that if I did this maybe we could write something to do this." So we'd have an idea of things or interfaces to add that we'd throw out, and Ralph would respond. It was back and forth between me, Paul and Ralph, playing around and trying to give the computer some features and character. Then at some point that computer went down to the TV Center and Ralph got another computer for himself, so the stuff that we developed was then usable for the artists at the Center's studio.

There was also a short lived project, I think it lasted one semester, when some of Paul's students at the school came and wrote programs for the TV Center's computer, to add a few extra features. They'd throw their own twists onto things that we hadn't thought of, or things that we'd thought of but hadn't tried to implement. Using that early computer, we ended up with probably half a dozen small programs from them, and then the dozen programs that Paul and I had written up to manipulate images. The whole thing faded out at some point. It ended up either taking many weeks in a row to get one thing to work, or there'd be some major piece of hardware needed to make something happen. In the early days of doing the Computer Sundays we were doing simplistic things took an hour or two to get things working. But as it evolved the projects became larger and larger and much more difficult to do in an afternoon. So I don't know the whole thing kind of slowly faded out at that point.

TENNANT: Like the politics we were talking about, this is an interesting exchange of ideas. Within the laboratory where experimentation happens, oftentimes there's not that kind of dialog or that kind of exchange.

JONES: It definitely was a back and forth. Whatever we worked on would either be based on Ralph's comments about something he wanted to do, or something we'd already done that he tried to use but wasn't happy with, and other times […] we would have some other idea that none of us had tried before and so the next week maybe Ralph would be reacting to that. "Oh can you do this?" "Well, not quite. But we can do this instead." Ideas came out of this back and forth, between what he wanted, what we saw possible, and then the results of when we tried to do it. And it didn't always come out the same way, anyways.

TENNANT: The fruitfulness of the "failure".

JONES: We're trying to do this but it's much too difficult to do; that's not working but we could do this instead. So some things ended up as modified version of what we'd set out to do. […]

TENNANT: Last time I was here you showed me some of the tape ups and I haven't been able to get them out of my head—schematics and the tape ups as art objects in their own. As you have become much more familiar with the engineering behind the circuits, how has it changed over times? When you create schematics now, how have your ideas about form and function changed, as far as the liberties you may have taken at that point to make the schematics more playful?

JONES: In the early days I didn't document anything. I would basically build as I went. I would solder parts together, get part of the circuit working, and at some point I'd plan ahead for the next small part—maybe five percent of the circuit. I'd add parts, build that, and once it was done it would work, or I would go in to tweak and modify a few parts and then it was done. Ralph yelled at me for not documenting any of it, so I had to back track by actually sitting down and looking at what I had built in order to figure out what the actual schematic was. Because I didn't even know at that point, I had built it as a continuous flow of work, and. But later I had to sit down and document the thing to figure out what I'd actually ended up with on the board. As I got to know circuitry better I would plan things ahead of time, write up a schematic and design a circuit first. Before it was build it first and document it later, but it became design and document it, then build it. In most cases it would work from the initial design, and sometimes I'd have to pull a section out and replace it with a different design because that section didn't do what I expected in combination with whatever else was in the design. Everything at that point was perf-board, pieces of fiberglass with holes in a grid; you'd stick the parts through the holes and bend the bottom part, solder them to each other and solder a little wire from one piece on the board to another. Then I believe it was around 1981, I talked with Peer's father, who had been building electronics

for a long time. Harold Bode was a master in audio processing equipment and had designed a number of modules that were in the Moog synthesizer. He had his own company building equipment, and had told me about this place near him that etched circuit boards for him. I though this was a much more sensible way to go, especially for something that was going to be built more than once, instead of wiring it up by hand. You would design a pattern and they put circuits into it. I worked with a couple little kits where you'd etch your own circuits, did experiments with some simple circuits that way, and had been doing it for five or six years—but they were all very simple, nothing complete or large. Harold Bode told me about using sheets of Mylar, and this black tape to design the pattern for the circuit board on the Mylar. Then you'd take it to a photographer and have that image shrunk down and turned into a negative, which you'd send to this place near Buffalo where they'd etch it into a fiberglass and copper circuit board. So I tried my first one of those in '81; I got this black tape and started taping up the pattern. I'd first design the pattern on a piece of graph paper, and then I'd tape it up onto the Mylar. I might add a few extra little flares in the pattern while I was doing that, because it was boring otherwise. "The lines here connect that and that, but I've got all this other space so let's put a few extra lines in there, what the heck!" They wouldn't necessarily do anything, but they would just be there. I sent it off to get photographed, and then shipped it to the place and got ten of them back. And when I put the parts in, it worked! It was great; I had a working circuit. That first one was the output amplifier, which was a device I had come up with for taking any kind of garbage video or electronic signal and putting synch on it to make it recordable. It didn't mater what you started with—whether it was video or oscillators or just noise from the air—you could turn it into a recordable video signal. Shortly afterwards I did a synch generator, also because those were the two key components needed to make the image processing tools I was building back then. I saved up my money, sent them off to that place and got the circuit boards etched on my own, but as the TV Center wanted some of their designs built that we had gotten grants for, we decided they should be etching boards too, and there shouldn't be just one hand wired board. We did the

same kind of thing, with sheets of Mylar and black tape. While we were working on one of the projects, I was working at Alfred University helping a guy build some circuits for a Sandin Image Processor that he was building. While I was there I visited the technical university that was there. They were drawing pictures of bridges and mechanical constructions with this big pen blotter, and I figured, "Ok. I can draw my printed circuit boards on this plotter instead of drawing it out with the Mylar, and then have that photographed." I hung out there everyday for a couple of weeks, designing every little pad and shape and drawing the lines between everything. It was very tedious. It probably took three times as much time as it would to tape-up the Mylar. But the final result was gorgeous: very clean lines and shapes, which we photographed and sent off to be etched. And my very first computer plotted circuit board was done that way. It wasn't practical to do it again, because it used this big computer at Alfred, and they are several hours away. This was in the summer when nobody was using their equipment so it was easy enough for me to get access to it and use it while it was sitting there dormant. But I decided that was definitely the right approach. In 1985 I bought my first IBM PC clone, an IBM look-alike. I also bought a program called AutoCAD, which was brand new at the time; it was designed to do drafting, and I did the same thing on that as I'd done with the other—I designed my own little shapes and drew circuit boards with it. I borrowed a plotter originally to print out the patterns, and then eventually bought my own plotter, but it would only do plots the size of a regular sheet of paper, 8 1/2" by 11. Most of the circuit boards had to be small, or I could do them one to one rather than double size and shrink them down, which is the way we normally did it with the Mylar. The Mylars were fairly big and I didn't have any way of plotting something that big. The pen plotter I had was fairly sharp, so if I was careful, I was able to actually draw things with it. […] That was when I began using computers to design circuit boards. Now I have software that does it all. I start with a schematic, and it can figure out different ways of routing the traces on the board. It makes sure that I didn't leave any parts out. I can make a change and it will echo throughout the design. It's much more automated software designed for doing circuit boards rather than taking some

mechanical drafting program and using it to do circuit boards. The technology that is available today for the PC is phenomenal. It is well beyond what used to be on mainframes, and it keeps getting better and faster.

TENNANT: Do you miss the craft?

JONES: The hands on? To some degree, but I still do that with prototypes. A lot of times, unless I'm building something really complicated, I'll hand wire it to begin with. I'll build one that's hand wired and try it out, or I'll build one half or a quarter of it and try it out. When I'm happy I'll finalize the design, and go on the computer and etch boards for it. I don't do that on some things, when the design is really complicated. There were things that I designed, like stacks of circuit boards with hundreds of parts, and there was no way I would hand wire all of that stuff just to see if it would work. I'd rather design it, etch it, and if I have to, take a razor blade and cut some of the traces and add little wires to the printed boards to get it to work. It's a lot faster and simpler. I still have a soldering iron and solder up little wired things. Often it's simpler to etch a circuit board and stick parts into it, especially now some of the parts are so tiny. Some of my designs now are surface mount parts, and the parts are like grains of sand. They are getting so tiny you actually have to use a microscope to position the parts to solder them. I have this binocular/magnifier hat, which I wear so I can sit there and work on things; then we have a stereomicroscope for working on some of the smaller parts. You can fit a lot of things into a small space and make very complicated circuits. Electronics tends to work better when the wires and lines are shorter, so you get all those parts close together and it still works better than using larger parts that are more spread out. The results are pretty good—it's just a bit of a pain getting there (laughs) […]

TENNANT: Yesterday you mentioned this new requirement on the part of the European Union...

JONES: Right. ROHS.

TENNANT: It got me thinking about this preservation project that the Center is undertaking, and what it means to preserve tools or to constantly work to keep up with evolving technologies. […]

JONES: It has been a constant evolution in video. Originally we had the reel-to-reel videotapes, then we had 3/4 inch video, then there was VHS, then Hi-8—it keeps on going. The same happened with Video Disks. There were the Laser Disks, two different kinds originally and one very quickly won out over the other. For a number of years, anything that was going into a museum to be kept around was done on laser disks because it would last much longer than videotape. But today you cant have a laser disk made and you just can't buy a new Laser Disk player anymore. They are obsolete! So those pieces must now be converted to DVD. But who knows how long DVD will be around? There's already a replacement that's coming out for DVD, called Blue Ray, and it may completely replace DVDs within a few years. We recently went through all of this with a piece of Gary Hill, which was originally done on laser disk but is now being converted to DVD. The different pieces of equipment had to be replaced; the Laser Disk players had to be replaced with DVD players; the synchronizer, which was designed for laser disks, had to be replaced with one for DVDs; the software, which runs on a PC computer, had to have a number of things changed to compensate for the difference between the DVD and the laser disk, and the timing and control of the players. But now that piece is converted and is up and running on DVDs, although even that was an issue just to make the DVDs: having to either find old tapes to use as masters, or to take the laser disks themselves and copy them onto DVD. It was a whole process, and that may have to be done again in another five years to whatever comes next, just to keep that piece running. The concept behind the piece is the images and the way they are displayed, but the technology that is used to do that isn't stagnant. It's not a constant. It

changes. Even the monitors that are used in that piece, at some point you may not be able to buy

CRT monitors that are that size or shape; they may eventually have to be replaced with LCD

monitors, which would completely change the way the piece looks. Or maybe there will have to

be some kind of imitation CRT that has a little projector inside it to make it look like a CRT. Who

knows, that may happen at some point in the future.

TENNANT: We always attempt to document the intention of the artist. Like you said, these

changes might alter the way a piece looks. It seems that designing these tools also has something

to do with your intent as a designer. Is it too late to look back on the tools from the '70s and '80s?

Does it even matter?

JONES: Well at this point, the tools that were developed back in the '70s and '80s are still

useable and still relate. But that may not go on indefinitely. The equipment that we designed was

based on processing the waveform of a composite video image. Composite video is something

that has a limited life span at this ; it's being replaced by digital video or it's being replaced by

other forms of analog, like component, when people are going for the higher quality and

resolution. When they go over to HDTV, some of the circuitry may still work and some of it may

not. At this point, cameras like the one you are using and others that are common or fairly cheap

are now Firewire, which is completely digital signal, and the circuitry in that image processing

equipment doesn't work with it. You have to convert the Firewire video to the old-fashioned

composite video, run that through those types of machines, and then from that back to the

Firewire. Those machines are completely analog—they are not digital. The recording medium is

all becoming digital, and the sensing units are all digital. Even the old cameras had very analog

sensors for picking up the signals, where as now the sensors are all digital based right from where

the light hits the device. There are different types of tools that can be done digitally and even an

emulation of some of the older processes can be done digitally. So its not like the concepts have

to go away with the new technology. But the methods of how it is done will be completely different when it is done with the new technology.

TENNANT: Certainly there is emulation—which is a real buzzword in preservation. Does it mean as much to preserve a performance videotape, or does it mean more to re-perform, or reenact that performance in order to maintain the intimacy or the spontaneity of it? Since there are these software tools that digitally emulate your hardware, what is your impression of this new generation of artists who recognize their value, but still come back to you because they want to build their own tools?

JONES: There is a difference with the original tools versus trying to do it with emulation. And in some cases, emulation is a little too perfect. Part of the reality of the tools was those imperfections in the machines and in the video itself, little distortions that happen to video that created an additional look and feel to the image. If you emulate what the device was intended to do, you get the majority of the effect but you don't get those subtle things that happen, which weren't necessarily intentional but that came along with the fact that you built it and it was in an analog world. All sorts of different things that would happen, maybe there were color artifacts or little distortions to the image, like changes in the linearity of the grey scale—a certain kind … noise, which gave character to the image processing. In some cases, the emulation is too smooth. It is too perfect and it isn't right; it just doesn't have the same look. As emulation and the digital tools get better and better, you can probably start emulating the distortions and problems, and get even closer to what some of the original results were. This would be going beyond what the concept of the original machine was by trying to actually mimic the reality of the original machine. But at this point, that is still in the future. It's hard enough to even emulate the basic concepts of what the machine was trying to do, let alone emulate the reality of the small artifacts it had. It's the same with audio synthesis, that digital can do a lot of the simulations and come up

with a lot of the sounds that some of the original audio synthesizers had, but people still like the original ones because there are sounds and distortions that they can create that the digital ones just wont do. It would probably be too complicated to simulate every original aspect of these analog devices. People will make a digital device that simulates the way certain things looked in general, or in some cases, their interpretation of the way something looked. It might be somebody who has only seen videotapes and never turned a knob on one of the original machines. They might say, "Well that thing made it red, green and orange, so here is this software that makes it red, green and orange." But that may not be what the original machine could really do. Plus a lot of the digital equipment doesn't have that physical feeling of a bank of knobs, or the real time interaction of turn a knob and watching what's happening. Even the digital knobs available through MIDI and stuff like that, they don't have the same level of sensitivity as the real analog knobs. Even though you feel like you're turning something, you may be turning something with a couple hundred or maybe a thousand steps to it, whereas the original knob might have tens of thousands of steps because it was smooth analog. You'd get to the point where you could tap the knob and it subtly changed the way it looked. And you cant really simulate feeding in oscillators and things like that in quite the same way, because they were free running and they didn't have any relation to a specific master clock like computer generated stuff; there was a certain looseness in the way that oscillators controlled things, and the artifacts that they created. Little edges or speckles or different things that would happen in images that added greatly to what you saw.

TENNANT: Not to make too much of a distinction between analog versus digital, because the Center does provide both, but these interfaces of the analog synthesizers promotes spontaneity, chance. This idea of glitch is also interesting, and has much to do with Cage's notions of Chance Operations. This glitch is often interpreted as failure. Sherry often talks about how the Center is not based on a mode of production that is driven by a final product or end results, so the process is liberated and you are free to "fail".

JONES: Sure. In fact while I was doing the designing of image processing equipment in the '70s, some of the best effects I came up with were accidents. They were mistakes. I was trying to do one thing and the circuitry ended up looking a different way. "Oh! I like that. Forget that machine, I'm making this now because this is what that looks like." Often it was experiment and see what would happen instead of purposely saying, "I'm going to put this into that and I'm going to get this". It was, "What's going to happen if I put this into that and turn this? Oh look at that! That's interesting." A lot of it was experimenting and finding the things that didn't work right but looked good.

TENNANT: So the Center is as much about artists coming in to experiment, as it was for you to experiment with designing and invention.

JONES: Oh yeah! In the early days when I worked at the Center in the same room as the studio, I'd put together some experiment, take it over and hook it up. Whatever artist was hanging around would comment on it and I'd get their opinions. If there was something that I wasn't sure of, but that they really liked, I would end up incorporating it into the design because it was obviously something that was useful to them and a tool that they'd like. There was a certain kind of back and forth. I'd have one way of looking at it and they had a different way. But I got used to them liking the things that were wrong and distorted. These distorted images were useful because they were something different that we hadn't seen before, so we'd amplify the distortion and play with it. They would come in, not understanding the technology or how something worked; they'd patch it differently from the way it was designed, and they'd create something new out of it. It worked in both directions. A lot of times it was about experimenting, even patching things together or patching things wrong. I learned early on in my designing that I had to make machines that could withstand being used wrong—to put up with it and basically sit there.

Somebody would patch an output to an output or an input to an input. The first circuits I built didn't survive that very well; you're not supposed to connect an output to an output and when you do it blows the output. But when I realized people were doing it anyways, I had to design it so that it would survive. This worked out pretty well, because a lot of people actually found effects by connecting outputs to outputs, or feeding an output back to an input and causing feedback inside the electronic circuit—not just visual feedback, but electronic feedback that caused fine lines, moray patterns and things in the images. At times we even had problems at the Center where the patch bay wasn't working right and you'd just tap on it and fine edges would appear on images; but when people started to use those like it was a new effect it was added on. We changed the patch bay and the effect went away. Nobody really missed it, but while it was there—if there was some glitch or problem with the circuitry or with the patching equipment—people would use it with their images. It was all just style and effect. You can use whatever you've got.

TENNANT: We were talking about the chance operations of the interfaces but how did you go about approaching the design of interfaces? I'm curious about that process and how the architecture of the space unfolded. I know there was a big distinction between how interfaces were designed for artists at the Center, versus other people who worked with arts and technology but were not as concerned with creating intuitive designs.

JONES: As far as the interfaces on the machines is concerned, it was about expanding what was possible to adjust. It started out with modifying circuits, trying to add more controls or features to something. Like the simple Sony special effects generator that we modified in the early days, which had a certain amount of controls to do things but the circuitry had more capability. It was a matter of lets add a knob here and take this thing that's preset and allow us to adjust it. So a lot of the early modifications were about extending controls, which had been trimming controls

45

internally, and developing them to where people could actually turn them themselves. Or it was adding a new control to adjust something that had been fixed in the original circuits. As I was designing my own stuff, it became important to provide as much control as possible. Early on, the idea was that the professional equipment available was designed in a way to limit the features, to give people only specific types of control, and to give them certain preset types of effects. I was more interested in expanding the controls to make virtually anything possible, depending on what combination of knobs were turned. Not necessarily every combination of knobs would give you something usable: you might turn a knob and it would make the image too bright, or too dark to see anything. But by having more and more knobs you could try different combinations, and each person could get something different out of the same the machine. Instead of the machine having a specific, pre-canned type of effect, and instead of everybody getting the same effects, the idea was to bring out more controls so that each person could tweak the tools and essentially have a different machine for what they were using. Basically, how big was the box and how many knobs and switches could we fit? It was more a matter of designing the box big enough to fit the controls, than limiting the controls based on what the space was. If we needed more controls, we'd get a bigger box; we didn't cut off controls because they didn't fit. Sometimes there were little knobs and things in the corners, just to try to fit them in. It was about adding more power and controllability, to control every aspect of the machine and of the process.

TENNANT: You mention that the industry devices only had a certain number of preset effects possible. Certainly it was critical to create new ways to develop tools for artists, outside of that industry framework, in order to aid in experimentation. One thing that is interesting is the working relationships that developed at the TV labs, like WNET [New York City], WGBH [Boston], and KQED [San Francisco]. There were people at these facilities that had to negotiate between the artists and the engineers, because of various concerns, many of which were around labor issues because these places were unionized. Apparently, when the Paik Abe Colorizer was

46

installed it drew some criticism from engineers, and he is quoted as saying that the tool "It was sloppy, like me". I'm curious, to what extent did these concerns come up during your design work.

JONES: It wasn't something that happened at all at the Center, because I was the engineer and I was the one who was trying to add more features and more controls. But it was definitely an issue with other spaces. At some places where people were building machines, they'd be integrated and did have to fight with the engineers. In fact there was a place up in Syracuse, Synapse, where people were experimenting. Carl Geiger was designing and building circuits up there. Newhouse was the part of the University that taught Video Production; they had broadcast engineers who worked there, and who were very resistant to the experimental circuits being brought in and hooked up to their fancy equipment. It was to the point that one engineer there wouldn't allow people to point a camera at a monitor and get feedback, because he was convinced that it was going to ruin the camera and damage its circuitry. The feedback might get carried away and hurt the cameras. It was a constant struggle back in the '70s. A lot of engineers in the serious, "professional" business had very conservative views of equipment and technology. They learned how things were supposed to work, and if things didn't meet that stereotype they were used to, they figured it either wasn't possible or it was bad for the equipment. It was just something they weren't willing to deal with. This eventually changed over time, as people that grew up in that experimenting age became the new engineers at those places. But in the early days it was definitely a struggle to convince the original television engineers that this new kind of processing and this new video equipment was legitimate, and had a place in those types of facilities.

TENNANT: Since you were the engineer dealing primarily with design, it still must have encroached on your designs. Though the Center doesn't facilitate distribution as an organization,

many artists in residence at the Center hope or expect to walk away with images that can be eventually aired. How did broadcast standards influenced your designs?

JONES: That was a big issue. A lot of the early experiments generated videotapes that were not particularly stable when taken someplace else. One of the things I developed early on was a circuit, which is kind of hidden in the system. It's not really an image processing device in the classic sense, in that it doesn't modify your image. I called it an A. It's a device that takes what ever you feed it, whatever kind of video garbage signal you feed it, and it turns it into a proper, standard video signal. It has all of the requirements needed to take that image to a broadcast studio, or anywhere else. It also allows you to record it on a tape and get a clean recording. The Paik/Abe Colorizer's out put when you recorded—if you turned certain knobs too far it looked great on the monitor—but what you ended up with, as a recording, did not look the same at all. The recorder would totally distort the results, or it wouldn't lock up to the video, or the color would get lost, or it would end up with moray patterns. Because it processed the signal and created all of these changes in the waveforms, but it didn't take into consideration limiting those waveforms to fit within a properly formatted video signal. My Output Amp was something that kept the whites from going beyond the actual limit of whites in a video signal, kept the blacks from going any darker and interfering with the sync signals; it inserted a clean sync signal and color burst signal onto whatever you had. You could take virtually anything, whether it was audio, video, noise, or video that was distorted beyond recognition, and by the time it went through the Output Amp, that recording was still real video that could be played at any TV station, broadcast or whatever. That tool has been a key part of the TV Center's system since the mid '70s, because it means we can experiment with processes in whatever way we want and the final result is still a good quality recording.

TENNANT: We have spoken about the labor issues at these facilities, but there are also labor issues as far as certain designers insisting on ownership of their design and not sharing that knowledge. This is one thing that Pamela really encourages with the students, that the Center is an environment where people must share in order to survive. There are instances of people in arts and technology who have created machines, but which only they could touch. They'd not even work along side other artist because only they could create work with their own tools. I'm curious what your thoughts are on the politics of sharing ideas, sharing knowledge. You mentioned your contact with other artists, to whom you'd show the design as they were built, and how sometimes their input would be something counter to what you'd initially conceived, maybe because they liked the glitchy-ness.

JONES: It was a learning curve for everyone involved. I was learning about making the stuff while I was making it, and at the same time I was learning about what people wanted to do with it. I also had my own concepts of how I wanted to do it. Originally I wanted to build that kind of equipment for my own use, to make tapes myself. But I ended up spending more time building the equipment than making tapes. I have virtually no tapes that I made back in those days because my art eventually became the machines, rather than the video that was made from the machines. Because of that, I guess I went in the direction of trying to make the machines as useful to as many different people as I could. The machine became kind of a sculptural object that I created. And then they created art using that device. There have been periods when I tried not to let the secrets out of how I made the thing work, because I kept hoping I could turn it into a way to pay my rent. But that never really worked out well. For the most part, when anybody asked me how something worked I'd tell them exactly how I had done it. After the original set of image processing things I did for Gary in the '70s, during the '80s he'd call up every six months or so with some new art project he was working on—I'd end up designing a circuit in my head and describing it over the phone. "Put a transistor here and now draw it this way, put a resistor down

here, hook it up to there." I'd just kind of make up a circuit on the fly, which he'd write down and then go solder up a circuit, hook it up to whatever he'd been playing with, and then that would be his new work, his new installation. I've always been glad to get that information out. I kind of held a lot of the circuit diagrams back from just publishing them. But public monies funded other things, so those schematics were available to anyone who wanted them. We had artists who used the TV Center that took the schematics and built their own copies of those machines from the projects that were funded in the 80s. It wasn't a great number, but there were a couple of different people who used the Center who then had their own Buffer, their own Colorizer, and their own Keyers built from those circuit board schematics. Recently we have been going through a documentation process. I'm pulling out all of these old diagrams and drawings and stuff, and creating PDF files of them, which we'll publish up on the website and make available to anyone who wants them. So that's an ongoing archival project on the history of some of those machines. […]

The whole thing happened over several decades. There were changes in the way things were done, changes in my mind set about what I thought I might be able to turn into commercial products versus what people were using and making for themselves. Plus, during many of m broke periods, I was trying to come up with a couple of hundred dollars here and there so I'd build things for people that were unique one of kind devices. But the purpose of the stuff that I made at the Center was to make things to build up the studio, that people continue to use today. Along the way, separate from the Center, were a number of different projects with people like Gary, building them a series of machines that were then specific to them. A lot of people wanted versions of the types of things that were at the Center, so that instead of going to the Center one or two weeks out of the year, they could have their own studio with those kind of processing machines at home. I had fantasies in the '70s of starting a big company building Colorizers, finding all these people that would want it and making a living doing that. But I knew nothing

about business. I am not a businessperson. I've failed miserably at most of my attempts at being a businessperson. But I didn't know that at the time. So I'd try and then fail, try and fail. And then I would end up back at the Center to do some more things for them and I'd do some things for individual artists.

[…]

TENNANT: I'm interested in ideas about self-definition. We've talked about your relationship with business, as both an entrepreneur but also the different systems of working that you've been engaged with—from the Ford Motor Company, to these Computer Sundays where it was a dialog, to this sort of enterprise of your own. It seems to me that you work within multiple disciplines: business, to art, to technology. I'm curious if you've had frustrations over the last thirty-plus years, trying to define what it is that you do in the context of these categories. How do you define what it is you do, or what it is you've done? And do you have concerns with that process of defining yourself?

JONES: For the most part I don't. I just do it. I don't really think about it philosophically. I don't look at it and think, "Oh well I want to be a business man." Or, "I want to be an engineer." "I wanna be an artist." It's, "What do I need to do today to get through today?" I have this strong curiosity about technology. I could spend all my time just sitting and experimenting, never making any products and anything as a business, never making any money—even not making anything for anyone else. I could just sit all day in front of an oscilloscope and a monitor, and play with circuit boards and have lots of fun. In my late teens somebody told me, "If you're going to get a job get a job that you're going to enjoy." So I'm more interested in doing what I want and doing what I enjoy. For the most part, the business side of it is more out of necessity to pay the bills. If I could get paid to sit around and play all day I would do that. I think that most of us would like to do that. I've been more interested in having that ability to play, to do the things that I want to rather than to getting really serious about making money. I think a lot of people who

developed circuitry and did the engineering side of video processing back in the '70s ended up

going off into industry somewhere to make a living. I pretty much stayed in the art world because

it was more interesting to me, and as long as I could make enough money to pay the bills, that

was good enough. I didn't need to get rich from it, I didn't need to go out and get the big fancy

house and other things that people have. I basically wanted to pay my rent and have food, and

money left over to buy parts to experiment and have fun with. The last couple of years, the

business side of what I've been doing has actually been semi-successful, but it's not because of

anything I'm doing to make it successful—it's just a fluke. I ended up developing the right

product. People want multi channeled DVD synchronizers, and that turned out to be the one thing

that I've actually been able to make money on. It isn't what I would have guessed. I would have

thought Colorizers or Keyers or some other more fun type of devices but you know, whatever, it

works. I'd say my engineering side is based on curiosity and my business side on necessity. I

need to know enough business to keep things floating, to pay the rent next month. Beyond that, I

want to spend my time engineering and experimenting, or making images. […] The description of

what it is that I do has kind of changed from time to time, but in general, it has been roughly the

same all along: I design machines and build machines that artists and other people use to do what

they do. My father finally stopped asking me when I was going to get a real job when I took him

to the library and opened up the Collier's Academic American Encyclopedia and my name was

there in the Video Art section. […]

TENNANT: Video is situated at that crossroads, and computer and electronic art are also at the

cross roads of lot of disciplines—this intersection of art and science. And sometimes with

science, those who may be in the engineering side of it but who haven't been indoctrinated in this

system of clean versus sloppy engineering are forced to be defensive, like Nam June Paik says

things like, "It's sloppy like me."

52

JONES: In the early days, those who did it considered it art, but it wasn't considered art by the rest of the art world. There were very few museums and galleries in the early '70s that considered video art to be a real art form. There were only a couple of spaces that would show videotapes or video installations; it slowly grew, but at some point it suddenly exploded and every museum had to show video and it became some kind of new accepted art. But in the early days only some curators and museums actually saw video as being a real art. There was a large group of people who were doing it, who didn't care if the art world accepted it—they just wanted to do it. So they'd find different venues and ways to get their stuff shown independently from the major art world that was snubbing them. Now it is a very widely accepted art that is shown in museums everywhere around the world, and written about in art books and magazines everywhere. It is acceptable to say you are a video artist. In the early '70s that was fine among other video artists, but in the "standard art world" they just saw that as somebody making a claim to something they didn't think existed. They also had this warped idea of what video art was, that it was only a certain level of showing videotapes or documentaries. It took a while to include video's sculptural element, but it was probably the sculptural side of video that first pushed it into the commercial art world; once they saw it as sculpture, they saw it translate into something they considered art. They saw a video monitor t as television, not art; but once they saw a television with an image on it mounted inside a sculptural object, they saw it as sculpture, which was something they dealt with their whole lives. Then they could relate it to art.

TENNANT: Based on the politics of the situation and the cultural wars that were happening all over, a lot of other people who worked with video and who came from other art backgrounds were resistant to being embraced by the art world. They wanted to be aligned with the counter cultural as activist producers. It sounds like in the beginning, there weren't as many divisions and categorizations of how video was used—whether it was for activist purposes, political change and documentary, or for playing with perception and dealing with the aesthetics of the image. It

seems as though those borders came up when it was finally accepted within the institutions, industry, and so

JONES: In the early days it wasn't really accepted by television, and it wasn't really accepted by the commercial art world—it was just an entity of its own. People in all different disciplines within it were just comrades who got together and showed their stuff to each other. Some people were doing documentary, some people were doing effect typed stuff. I felt the more interesting works were the ones about perception and misperception. A lot of it was playing with the video image as part of the overall image: the video image was a piece of what you saw, and there was also a misperception of what you saw.   Some of the interesting types of things that the Videofreex, Fitzgerald or Sanborn did was playing around with layers of images, or images happening beyond a monitor if there was an image happening on a monitor. In those days people really didn't define the different genres. They could see the differences between what each other was doing but they were still working together in the video world, because these other major classifications in the world wouldn't accept video into them. Later, when it became acceptable to have video art on television or in museums, it increasingly became about narrowing down and classifying the types of video and separating them out.

TENNANT: How would you define what the Center is?

JONES: The Center to me is family. The people that have been there the longest—Ralph and Sherry, they are my family. Directly. And the people that I've worked with over the years like Peer and Hank, they are too. The Center is a big part of my life. The people who show up, whether it's for a week or if they come back year after year, they are friends that are part of hanging out there. But the core of the Center itself is home, and family. The people involved are the family. The Center is home.