

Mike Kennedy: So here we are with Rebecca Heineman and Jennell Jaquays. Now, I'll be honest with you guys. I'm more of a console guy. I know you guys did console. You guys have sort of done everything.

Rebecca Heineman: Yeah. That pretty much sums it up.

Mike Kennedy: Yeah. So it's hard to kind of figure out where to start. You actually started back in the D&D days.

Jennell Jaquays: I started in role-playing games.

Mike Kennedy: I know we have lots of people that are in that. I was kind of a D&D guy. He was a major D&D guy.

Scott Schreiber: I just bought a new book set.

Jennell Jaquays: Well that puts you one or two above me.

Mike Kennedy: So if you want to start maybe back there, just kind of how you've got involved with the whole D&D thing and maybe how that led into the video game thing.

Jennell Jaquays: Okay. I got started in role-playing games while I was in college. Dungeons & Dragons had been published for all of a year then. I found the game online. My brother read me a review of the games. The second audition of a magazine called "The Space Gamer," which is a really vintage role-playing game magazine now.

When I heard that, I knew I had found my place in life. It was one of those moments where you can almost feel your life direction changing. I started the playing the game, realized there wasn't anyone really publishing materials for it. I started my own fan magazine called the "Dungeoneer". I published that with college friends for about six issues, sold it to another small press publisher. Eventually, he ended up at Judges Guild and they brought me in as an artist and designer when I was done in college.

I worked for Judges Guild for a year and wrote a number of I guess seminal, game adventures called "Dark Tower, The Caverns of Thracia, and Book of Treasure Maps 1." These games are still being played today like 35 plus years later.

I was at a con recently and the guy next to me at the table running the game next to me, was running the first game adventure I ever wrote.

Mike Kennedy: Wow! Are they younger? Is it like older people that grew up on playing them or are they younger people now playing them again?

Jennell Jaquays: The convention I was at was a retro gaming convention, so the people there were mostly let's say, our age, they were mature. So that's how I got started in the industry. I started building my first reputation. I went freelance for a year, wrote a few things, and then ended up through a coincidence really at Coleco, working as a contract designer on toy projects.

My coconspirator that time, the guy who got the job was Michael Stackpole. He's another role-playing game designer who -- I stayed with Coleco and he went on and become a best-selling novelist. I think he's up in the 40s now for the number of books he has published.

So I worked with Coleco, stayed with Coleco, became a full-time employee. By the time the ColecoVision rolled around I had become Manager of Game Design there and built the first game design and art team for the ColecoVision project out of people who had never, ever worked on a video game in any way shape or form before.

So we had role-playing game designers as our designers and people with art talent as our artists doing our pixel art.

Mike Kennedy: There was lots of ports on the ColecoVision. Almost all ports, and we were talking to you guys as you were first sitting down, you're the first person -- did you work on ColecoVision ever?

Rebecca Heineman: I did some technical reverse engineering for Avalon Hill on it, but we never actually got to the point of doing a title.

Mike Kennedy: Okay. Because we don't see a lot of ColecoVision, but we were wondering who made these games.

Scott Schreiber: Yeah. And the legend being, literally, you know with Atari, we can walk over and tap David Crane and say, "Hey Dave, remember when you wrote this title?" Even back to the Atari days, in the pre-2600, just arcade days, all this stuff is so well-known. Coleco is just invisible. It was a huge well known system but none of the stories or legends, the people, it's just not. We speculate, did a company in Japan just contract, or Konami? It's so nice to finally talk to people who know what the hell happened.

Jennell Jaquays: We'll start with why they did all ports. Coleco's philosophy was that licensing was good, original design, not so much. They loved the idea that by taking a license they had a presold market, whether it was for toys or games or just about anything. By putting the license on it, they saw that somebody else had been paying for advertising already for this product.

Mike Kennedy: True.

Jennell Jaquays: That was that approach. The design approach, we had an internal staff. By the time the whole project including the ADAM computer and a lot of side products, we had a staff of about 140 people in West Harvard, Connecticut and that included the engineers, the artists, the writers, the designers, and programmers.

Most of our cartridges were programmed outside of house. We used subcontractors. Donkey Kong, the original was programmed in-house. There were a couple of others, the Smurf Game was programmed by an in-house team, but for the most part, we used outside engineering studios, all but a few in the United States.

They pulled on a lot of people who are vice presidents of design from our previous toy works. So there was a company we used up in Boston who did one project. I was mentioning it to Becky yesterday, there were several groups in Chicago that we worked with and another group out in Texas. Of course we work with the legendary Kitchen Brothers. They were our contractors for a lot of our Atari product. We worked with people, I can't even remember their names, who did a lot of Intellivision projects.

One of our best teams, was a group of guys up in Minnesota called "4D" who did a lot of our really challenging ColecoVision projects. They also go back, have a link back, two of their founders came out of the role-playing game industry. In fact, one of them David Wesley, probably is one of the unsung originators of the whole Dungeons & Dragons and role-playing industry.

Scott Schreiber: We do a lot of top tens and all of that. We just did one on software publishers for PCs. Some of my picks were stuff like SSI, Avallon Hill because I came out of stuff like Dawn Patrol and D&D.

So being a box and pencil and paper gamer, I kind of like the companies that evolved from that into video games. For me, it was a very natural transition. I certainly enjoy that theme.

Jennell Jaquays: It was a natural transition. We used a lot of role-playing games designers because they were writers, and we did our design documentation through writing. Every document we certainly just have like 20 to 100 page design document that analyzed arcades and broke it down into routines and structure that we then gave the programming team to make it happen.

Again, as designers, we weren't the producers on the project but we acted very similar to the way our modern producer was keeping track on the project, writing it through, making sure done QA. So every designer would be handling two to three

projects simultaneously, designing, managing at least one team outside or inside and then trying to get one finalized.

So we would have -- with the course of nine months, we might have several projects in parallel. With about 10 designers, we did well over 100 titles in the course of two or three years.

Scott Schreiber: I wanted to tell you, I guess I got kind of late to the party, I wanted an Atari and my parents bought us a ColecoVision and I had never heard of one, because it just came out. You know those words like where you would say, "Oh, I'm playing Atari." It didn't matter if you had a Fairchild, if you had a Coleco, if you had -- it was called "Playing Atari". Later on it became Nintendo. You've got PlayStation and you're playing Nintendo.

So I've got this ColecoVision and I'm like, "This isn't Atari. What is this?" I had no idea. I plug in Donkey Kong and I'm like, "Wait! I'm used to Atari graphics at my friend's house. There's no blocks. There's no flashing. Wow! It's like the arcade."

Because that was the pack-in, which another top ten we did was pack-ins.

Mike Kennedy: Top ten pack-ins. I think it was number one.

Scott Schreiber: The best pack-in ever. We kids, were playing. Me and my brother and my sister were just sitting there playing Donkey Kong, Donkey Kong. And then the other game Sub-Roc and we were playing Sub-Roc.

Mike Kennedy: Now, what was it about Sub-Roc when we had mentioned it?

Jennell Jaquays: Sub-Roc, actually, we did the original cartridge. I'm trying to remember who did it. I think it was this 4D company who did the programming and we just did a basic, you know because of the way it worked. The 3D move forward but we ended up doing an expanded version. I don't think it was ever released for the digital data pack and it just had oodles and oodles more content.

Scott Schreiber: I'd love to see it, but when I went to bed that night -- this is like Christmas night. This is a Christmas present. I went to bed and closed my eyes and I would hear the -- and I could see the game still playing because we played from 06:00 a.m. until like 10:00 when our parents sent us to bed.

Jennell Jaquays: Oh my God.

Scott Schreiber: And I can still see the Donkey Kong maze and hear -- you know because that was like my first -- you know in-your-face home video game that wasn't just a friend's house for a couple hours or it wasn't the arcade and it just blew me away. And what I

later came to appreciate was all my friends had Atari but I had a next gen system. It was obviously a better graphics processor, better sound processor and so then Time Pilot came along.

I've been a huge aviation fan. I mean, I grew up with airplanes, you know flying since I was a kid. All of a sudden I've got this Time Pilot game and you get to go World War I and then World War II, here's these Corsairs and then the helicopters of Vietnam. Now, here comes the Heat Seekers and then the jets and the UFOs and that game completely blew me away, and my Atari friends would come over. I think at that point I've got the expansion modules, started getting Atari games which I love to, but my friends would come over and literally look at Time Pilot. It's almost, what I've always said about Coleco games is it's closer to first release NES games than it is to the predecessors.

Jennell Jaquays: Right.

Scott Schreiber: Wow! I mean, everyone was amazed just seeing that thing. So that was such a cool experience for me. What I first thought was like, "I've got an off-brand or something." was actually this amazing next-gen system. When you're a kid, you don't know this stuff, you don't know the release.

Jennell Jaquays: No, all your friends have Atari, I've got a what? What is this Black Box?

Scott Schreiber: Yeah and then they go over and look at the games and go, "Wait! Can I get that?" I'm like, "No you can't."

Mike Kennedy: So speaking of Donkey Kong, was Donkey Kong always going to be the Pack-in? Was there ever an option for something? Were you involved with any of the negotiations with Nintendo at the time?

Jennell Jaquays: No involvement.

Mike Kennedy: No involvement?

Jennell Jaquays: No, that was all done at the senior executive level. My manager, the vice president in charge of my group apparently had a good relationship with Japanese publishers and because that they also have this working in the play industry, they had a lot of involvement with the Far East and they understood working with companies on the other side of the Pacific. No, I think we were always intending to have Donkey Kong be our release title.

Scott Schreiber: Did you know it's going to be that big though?

Jennell Jaquays: No.

- Scott Schreiber: Literally, 30 years later, it was going to be remembered as the best Pack-in ever?
- Jennell Jaquays: No, no.
- Scott Schreiber: It's just a cool game?
- Jennell Jaquays: My involvement with Donkey Kong actually though preceded ColecoVision, because I don't know if you remember ColecoVision doing the tabletop arcade games. They were plastic, about this big, they look like the arcade.
- Mike Kennedy: Trisha got Pac-Man. She still has the Pac-Man.
- Scott Schreiber: I have them sitting in my arcade. I have a collection at home.
- Jennell Jaquays: Okay.
- Scott Schreiber: On top of each machine, I have the mini that Coleco did.
- Jennell Jaquays: Okay. Well, I worked on most of those.
- Scott Schreiber: Really?
- Jennell Jaquays: That's where before Coleco went into the arcade, the home arcade. We did these small, they were big into electronic games.
- Mike Kennedy: Right. Oh, Electronic Quarterback was my favorite.
- Jennell Jaquays: Electronic Quarterback, that was just before my time. My group worked on that but that was before my time. My first one was actually there was like an Alien Attack there. I did some play testing on it.
- Mike Kennedy: The red one or --?
- Jennell Jaquays: Yup.
- Mike Kennedy: The orange or red plastic?
- Jennell Jaquays: I did some play testing on that and then we started moving into the Pac-Man. Pac-Man was my first real original product that I worked on. I could really always say that I did a lot of play analysis of it. I did the first pass layout on how the board would translate back into fluorescent display which meant these three positions on the board.
- Mike Kennedy: Yeah.
- Jennell Jaquays: So we gave that persistence of vision look, so that you could imagine that it was moving. And then the Donkey Kong, I did

the same analytics. One of my co-workers, Jay Belsky and I, we played the living daylights out of the original arcade and then I actually designed the vacuum fluorescent tube and did the art form myself and did the full layout. I'm very proud of that project.

Scott Schreiber: Well, I'd be happy to tell you there's one sitting on top of my full size cab and I've shown several of my -- any of the Colecos I have collected -- he was at my house, he's out in California, I'm out of D.C. He was at my house three weeks ago or two weeks ago and remember you them sitting up there, you know?

Mike Kennedy: Yes.

Scott Schreiber: They were such amazing things because as kids, we cannot envision owning an arcade cab, right now we could. So we had an arcade cab.

Mike Kennedy: Tricia actually got the chickenpox horribly and that was the present her mom got her. The chickenpox, was that acne or the chickenpox?

Trisha Kennedy: Yeah. I had this chickenpox. Really horribly bad.

Mike Kennedy: We've got a picture of her playing it on the floor and she's just covered in chickenpox, but playing Coleco Pac-Man.

Mike Kennedy: That thing was loud though.

Scott Schreiber: Are you familiar with Italy at all?

Jennell Jaquays: Not a whole lot.

Scott Schreiber: Well, you know where Pisa is, right?

Jennell Jaquays: Yeah.

Scott Schreiber: Then you go straight west to the ocean and there is an oceanfront town called "Viareggio". My wife grew up there, her parents owned a toy store. So when we got married, I inherited boxes of these gorgeous LCD games, the Game & Watches and some of the Colecos, because my wife's parents were just, "Oh here's the new one, here's the new one," because they sold them all in the store. So she had in the box originals of a lot of these things that she grew up and had and played. And because my wife is very meticulous, they all were -- the batteries were removed, they would put back in the box after she was through playing and they were all perfectly preserved now and they're mine.

Jennell Jaquays: Well, I wish I could say mine were perfect persevered. You're mentioning the annoying noise on the Pac-Man. At a later job, we had electronic tech in our office and I gave him the machine

to disable the piezo chip, so that I wouldn't be so driven insane by my little son playing it over and over.

Scott Schreiber: You mentioned you designed the VFD, I mean VFDs, they don't look like LCDs? They're brilliant. They're in-your-face. I've worked on like multi-functional displays for positioning and for determining systems that used you know VFD and all. You know of course the things I collect, I repair VFDs and you turn on a VFD, you know what you're looking at. They've lasted brilliantly over the decades. What was your design process for doing that VFD?

Jennell Jaquays: Generally, we made the wiring. We had to have what had to be discrete rows, it was basically rows and columns. You can boil it down to the rows and columns of dots and they start to shape there differently. And we just knew what we could do, turn on lights, what we used were I think two different phosphor colors, actually just two different phosphor colors. It was kind of a red and a --

Scott Schreiber: Greenish, bluish, purplish?

Jennell Jaquays: Yeah. And then we modified that to get the actual colors by putting gel overlays to get -- so that your score look different than your playing field. You know the Game Over might be a little different than something else. Just so you can give the image of four or five different colors on display instead of two.

Scott Schreiber: Did you draw the wire forms like all the little -- you know the metal grate, did you draw all that and then they had cut it or did they --? How was that process done?

Jennell Jaquays: The way I did it for the Donkey Kong was I did a piece of black and white art work that was as close to scale as we could possibly manage you know by hand drawn. When I say hand drawn, Coleco had a graphics department where I had access the photomechanical reproduction, so I could zoom the little Mario character once, stack him up a number of times and carefully position him in the grid so that he would be positioned correctly. And there is always let's say, if I remember, there was always one position down, one position up, one position down, one position up and set that up that way so as he moved across, he would appear either run or jump as he went across.

The flames were always in the same position. So it was just laying out the individual elements. Every element of the screens needed to have the same set of character; the flames, the barrels, the grid. That's how we set it up, we knew what had to be there and no space to draw it in.

Scott Schreiber: I was going to ask you, how tough were your space constraints to fit in -- I mean, first I'm going to guess, how many rows and columns or unique dots did you have and how tough was it to



jam that stuff in? Did you ever get to a point where you had to pick something to leave out?

Jennell Jaquays: Oh, yeah. Or you had to make something work out of elements that were already on the screen, or you might want to design the flames and the barrels to be discreet on each other. You'll realize that you had to do it by making one round with a flame cup on it, and run with it that way by having them both to be turned on at the same time.

I didn't have a whole lot of problem with that because part of my background before coming to Coleco was, I was a freelance illustrator, and I did a lot of graphic logo work, so doing very precise black and white shapes with something I was familiar with.

Scott Schreiber: Well Jennell I'm sure of something, we interview a lot of folks, and you're in really good company. I mean, all those guys we interview, and we have sat across from a lot of people that have done a lot of games. And I can tell you, it's really cool to sit here and talk to a person that had a hand in the game that blew me away as a kid, and the VFDs that made such an impression that we go to eBay and we pay far more than we ever should, so that we can have them again and put them on top of our cabs, and play them, it's just so cool to do that. I mean, it's so nice for you to come down, sit with us, and attend this conference, and be here for this.

Jennell Jaquays: I'm happy to be here. It's a lot of fun to be in touch with the past. Apparently, a lot of what I do now for cons is very retro. The last game con I was at was the North Texas role playing game con. It was about role playing games, the way they were played in the '70s and '80s so all I'm doing is shifting to the electronic games part of my career.

Scott Schreiber: Did you know that all this was really out here to the degree that it was?

Jennell Jaquays: I was aware of it. One of my co-workers at a more recent job, I used to work for Microsoft, Ensemble Studios. And one of my co-workers was a huge vintage game collector, and would come out to this and was heavily involved in the retro gaming. So yeah I was kind of aware it was out here. I just never had the opportunity to travel here.

Scott Schreiber: It's kind of cool to see it in person, huh? We got listeners sitting here watching you get interviewed. People walk around playing the games. Your games are here, still being bought, still being traded.

Jennell Jaquays: I was over there looking at the Coleco stuff and almost getting emotional about it.

Mike James: Are you still in contact with a lot people you worked with back then?

Jennell Jaquays: Yes, actually. A number of us, the design team are Facebook friends, I just recently got back in contact with one of the artists on the team. She was one of the later additions to the studio. So I don't remember exactly what she has in contributions to the games. But I just got back and contact with her again.

My design team, I stay in pretty close contact with two or three of them. It's like I saw one of them, Dennis Sustare in June in Texas where he lives now. And then, several of the guys, at least one of the guys is still active in doing design work on MMOs.

Mike Kennedy: Do you still own any of those original designs? You know you hear stories of Atari designs being found in filing cabinets that are being thrown away. Have you got any of the artwork that you did?

Jennell Jaquays: What we have, and we'll be donating some of it to the game museum. I have a large format drawing of Smurf Adventures in her Smurf: Rescue in Gargamel's Castle that was used as a - - I think it's the one that we used to create the screen image for the box. It was hand-drawn with markers on a special grid we'd created. And then at the end of the project, most everyone involved in the project signed the board. So, she's been on my case for about a year now to make sure it gets donated appropriately to us.

Scott Schreiber: You know, these guys are the guys to give it to, we've been working with them a long time. I mean, personally, we know how they take care of the stuff. We've travelled with them, and we've been to E3 with them, and then here.

I did a restoration for them in the museum of a video game. I know that when I put in my hours and my money to restore a game for them that it's going to be taken care of. I personally put time and money into the museum. Your stuff is in great hands. It is not going to get sent home and hidden away. It's going to be preserved as they promise they, will every time.

Jennell Jaquays: And I know that some of the things they have, I've got -- like they've got a boxed Adam computer expansion module. In my storage unit now out to Seattle, I have a boxed original Adam in the original box.

Mike Kennedy: That's not a small box.

Jennell Jaquays: The box is -- but it's in the original packaging.

Mike James: So the work you do now? Does that kind of evolve with you when you're designing things these days? Can you look at some of your old things that you're doing up now and think, "I would've done that differently?"

Jennell Jaquays: A lot of them, I don't even remember what I did back then.

Mike James: You don't remember doing them?

Jennell Jaquays: In some ways, I look at a lot of the work I did back then and say, "Wow! I did this?" It's been that long.

Scott Schreiber: Yeah, but the difference is we have the same problems. But like, if you go through our stuff, right, there's probably going to be nobody in the world that's going to go to Mike, "Hey, Mike! Remember that rack assembly, the automated track you've built?" It's not going to happen. No one's going to go to Mike James and say, "Hey, remember that time you set that server rack and had all those networks going?" Nobody's going to come to me and say, "Hey, remember that satellite that you launched and the shroud separated late?"

No, it's not going to happen. Nothing we do 20 years later is going to be on a table where people will say, "Oh, I'll buy that. How cool!" You might not remember everything you did, and you might know other things that you did, but your stuff is out there still being publicly traded and sought after. We don't get that experience. So, congratulations!

Jennell Jaquays: You're going to hate the answers. You get used to it.

Mike Kennedy: Right. So we're talking about last night. This sort of SOP, I mean, it's what you do.

Jennell Jaquays: I mean, this is then I guess the best way to put it. It's been my job since 1978. I haven't gotten excited.

Mike James: Yeah. This is what you do.

Jennell Jaquays: The way I'd like to say it is it's me having to work for a living, and that's not really fair because my -- I'd probably put in as many long hours as anyone else.

Scott Schreiber: Well, I would say if it ends up with end product that generates revenue. It fills the market then its work. You're just lucky to do what you enjoy doing. Hey, Rebecca, you've been awfully quiet.

Rebecca Heineman: Well, you've been talking about her and the Coleco.

Mike Kennedy: Yeah, let's cover the Atari now.

Mike James: You're surplus to requirements now.

Mike Kennedy: Now, you had mentioned Avalon Hill for Atari.

Rebecca Heineman: Yes.

Mike Kennedy: So, a third party developer for Atari, and again, I've not heard much from Avalon Hill. Did you do like that Death Trap?

Rebecca Heineman: I worked on --

Mike Kennedy: London Blitz?

Rebecca Heineman: London Blitz and Out of Control. Those are the two. But however, the reason that I was with Avalon Hill is because I was the one who taught them how to program the 2600. My story starts off in 1980 when I won the National Space Invaders Tournament and I got my 15 minutes of fame, started writing for Electronic Games Magazine, helped write two books on how to beat video games.

Mike Kennedy: You wrote for Electronic Games for a while?

Rebecca Heineman: Yes, I wrote for Electronic Games Magazine. But unbeknownst to the video game industry at the time, I had already been pirating Atari 2600 cartridges for about two years. Around 1978, I got an Apple II computer and an Atari 2600. But because I couldn't afford anything else, I spent every penny I had on just those. I reverse engineered the Atari 2600, built a device that allowed me to copy the cartridges, and was distributing them on the bulletin boards and so forth.

Scott Schreiber: Obviously it was just a specialized connector, EEPROM Reader Writer. Did you do the one that had the single-use cartridges?

Mike Kennedy: There was one that was made. They were selling them commercially.

Rebecca Heineman: I never did one that was commercially made. However, I did the schematics for several devices and uploaded them onto BBS's. I could have easily been the basis of a device like that because I figured out how the cartridges worked, the wiring and everything. Now, you have to remember, at this time, I was like a 14-year-old kid, and I figured all this out all by myself; electronics manuals, circuit diagrams, oscilloscopes, things like that at my high school, at the time I was just doing this.

Scott Schreiber: I'm right here with you man. I took electronics. I had an Apple II, hooked up to an EEPROM Reader. I would crack the cartridge, dump it, burn it, build the cartridge, sell it to a friend, trade it to a friend. And I ran a BBS. I had two Apple IIs, the Apple-CAT modem, and --

Rebecca Heineman: Yup, in the 1200 baud expansion, yup, I had that too.

- Scott Schreiber: Have you ever heard of a guy named Jason Scott?
- Rebecca Heineman: I've heard of him.
- Scott Schreiber: Yeah. He does a movie about BBS days.
- Rebecca Heineman: Oh, okay.
- Scott Schreiber: He also runs a website called textfiles. And you can go back through and your old texfiles may very well be live on the site
- Rebecca Heineman: It is probably there because my mine was Starbase74. That was my BBS, and I also hung out on a BBS called Devils Tower. But anyway, I was living out of Whittier, California. I was born and raised there. Of course, I was also doing hacking and phreaking and things like that. So, a lot of times, my origin of my transitions were unknown.
- Scott Schreiber: We've talked about this on the show. I have a friend, do you remember the Phone Losers of America, RedBox, ChiliPepper, all those guys?
- Rebecca Heineman: No, I don't.
- Scott Schreiber: Well, we're going to do a special on just phreaking. During junior high, I was known as Mr. One Box, Two Box, Red Box, Blue Box, and I would go to school, I would have pockets full of the old pocket dollars, that you would change to crystal to get the tones and all? I would carry all of it with me to school because I was bored shitless. I grew up in Mississippi, right? So, the bus would drop me off at junior high. I have like half an hour before classes. I would go to the nearest pay phone, pick it up, dial into the Chicago loop and all that. I loved it man, it was a way to live you know?
- Rebecca Heineman: I had several monickers back then because depending on what type of hacking I was doing, whether it was copy protection removal or copying cartridges or phreaking. I had a different monicker
- Scott Schreiber: What all did you go by? I'm curious to see if we ever crossed paths. I was Captain Caveman.
- Rebecca Heineman: I was Doctor Death and I also was Phone Phantom.
- Scott Schreiber: That, granted it's been a long time, but that sounds ...
- Rebecca Heineman: That should be familiar because I was responsible for quite a lot of stuff, stuff. I will just leave it at that.
- Mike James: That probably made the News I'm guessing.

Rebecca Heineman: I did stuff.

Mike Kennedy: Did you do cool hacker screens? That is what I remember from growing up, I remember so many cool, like the screens that would come up before the menus, the list of games. It was just incredible. Some of the best graphics you saw like in hacker screens, better than the games graphics. Like when you were little you didn't know and you thought this game was going to look sort of like that and then the game would kind of come on and be like ...

Rebecca Heineman: Yeah, I did many of those. I did many of those, because it was like a competition with the hackers, like we would try to outdo each other and see who could do the evilest mod. One of my favorites was on the Apple II figuring out how to do text on the top, low res graphics in the middle and then text on the bottom. When you look at it, it says, wait a minute. This isn't a video mode. How is this happening? I can go to real technical detail to how I did it.

Scott Schreiber: We have smart listeners, feel free.

Rebecca Heineman: Yeah. Well, it was basically when you read from a memory location that had nothing attached to it, like let's say, C080 which is a memory bank register. Since there's nothing attached to it for memory, the Apple II actually had a feature where it would put up whatever byte the video display chip was showing at that very moment in time. So, what I would do is I would fill the graphics screen with 80s, hex-80 is still black, but it's different from zero only because it's got that one bit set.

So, if I read that register, I could see they're at zero, meaning the scanline registers the lines with zeros on it. Or if I read 80s, it's on the scanline that has 80s on it. So what I would do is I would fill the top part of the low res screen with zeros, but then, I would fill it with another pattern that was still invisible but I could detect change. So then, that would write some text, tell the video screen to go on the text mode, display the text and then I would read from that register, and as soon as the register changed, I knew the display beam was at that line then it would switch to low res graphics, show the visuals I was drawing there, then as soon as it got to another line which had another thing I could detect, then it would switch back to text again.

And then, by the time it got off the bottom of the screen, I would then redraw the next frame and then do this loop again. So because I was polling and switching the video display modes at the right time, I was able to get video displays stable then people look like, "How is this happening? What the hell!" But this is because of the hardware.

Scott Schreiber: Now, it's interesting. You're a software and a hardware --

Rebecca Heineman: Yes. I'm a hardware engineer, as well as software.

Scott Schreiber: I was strictly hardware because I couldn't program my way of a paper bag. So, I really ran with the hardware. Now, do you remember Captain Midnight?

Rebecca Heineman: I've heard of him.

Scott Schreiber: He hijacked the HBO feed. He was sort of my mentor and his mentor was a guy that ran around in the desert with a buttpack and he would go out to find these very isolated phone switches, where basically you could see from miles if you saw a dust cloud and anybody coming at you.

Remember the legends of like -- when they first realized that we were just running rampant with the phone system, and we were, we were treating that thing like our own little playground.

Rebecca Heineman: Oh, yeah, I remember there was late nights, I was living in Baltimore because I was doing work for Avalon Hill. And I would go to some trunk lines and I would actually wrap a wire around several phone lines that I knew belonged to the phone company. And then I would wire it up to a cassette tape player, which would then activate if it got a signal and stay on for a little bit. Then what I would do is I'd leave. I'd come back a few days later, get the tape, play that in my Apple-CAT modem. Because the data was not encrypted, it would then play it on my Apple II, and I would see everything that the entire session was, which I got passwords and accounts, and then from that, I was able to log in to the phone system.

Scott Schreiber: My two co-hosts are looking at us like, "Really?" No. I swear, our ilk had more control with the phone system than the phone system people did.

Rebecca Heineman: Oh yeah.

Scott Schreiber: We ran rampant. I remember, one of my seminal moments when I really knew I had arrived was I was in the boy scouts, and the only reason I didn't drop out of the boy scouts earlier is because there was this trip scheduled to go see the phone central switch, and I wanted to get in there so bad just to see the place.

Rebecca Heineman: I actually had a private tour of the phone central switch in Towson, Maryland. From there, I made diagrams and so forth, so I knew every single line. I knew every little thing about it.

Scott Schreiber: Remember how they used to back up the building on the hard drives that had the external motor with the belt drive? So I'm standing there looking at this, and I'm like, "I've been there." And the guy giving the tour was like, "It's really cool." I was

like, "Yeah. I know. I never thought I'd see it in person." And meanwhile, we're siezing trunk lines, locking out recorders, silver box and then taking over, doing -- yeah, we just run rampant, but when they really started to try and stop us, the rumors started like when one guy finally got busted. It was the rumors of like, "Okay. Well, now they've got this program that can detect sequential dialing and all that."

So, that's when this one fellow packed up his shit in a VW bus and drove out in the desert. He would just go from big open port to big open port, doing his business without much fear of being caught, but those were the days. I mean, kids today don't get to do that. When was the last time a kid built a red box, you know?

Rebecca Heineman: That's true, and also it's like, some of those things are lost arts, like I remember that there was a time back when I was again living in Towson. We had BBS wars in which we would be uploading textfiles and stuff we figured out, but then, people would be rivaling each other and one of the things we would try how to do is hack each other's BBS's to take them down, mostly to screw them over.

Well, I remember there was one BBS that was really ticking me off. So, I used the 99e99 bug in there because they had theirs written in Applesoft.

Scott Schreiber: Which board platform wee they running?

Rebecca Heineman: They were running Applesoft on an Apple II. The Applesoft BASIC has a known bug that if you have an input line, you type in, "99e99" and hit "return", it would give you an overflow bug and puts you right into the prompt. The trouble is most BBS's, you actually have a "if error, go to this to trap that." This guy didn't. So I went there, trapped it. So I'm like, "Okay. I'm now at the prompt. I am God. What can I do?"

Okay, I am so taking this person down and I'm making sure that they're not going know it's me. So, I went in there got into the Assembler. I said, "Okay. This bitch is mine." At that point, I then hand wrote in hex bytes, a piece of code, the A930, 20 in 6502 because I knew 6502 at the byte level. So I actually wrote in hex, a little piece of software that what it would do is it would write zeros in every single sector of the floppy disks, except track 11, which is the track that has the catalog in it.

So if you type in "CAT" for the directory, it would show you that all the files are there, but all the other tracks, I blank them out completely. After I was all done, I then ran the program, tested it. Yes, it worked. Okay, it will read the sector, yup, I got it. Okay. Then I went ahead and typed in "New", zeroed out memory, so that their software in memory was cleared out.



Then I wrote, "You've been hacked by the phone fucker." And then go to 20, hit "Return", it started printing it out. And then, I logged off. And then I heard later on it was like, "Somebody hacked -- all my files are there but they're all gone. They're all empty. What happened?" I was like, "Yes!"

Scott Schreiber: Do you remember World War IV to BBS platform?

Rebecca Heineman: No, I don't remember that one.

Scott Schreiber: That one was so solid. I was running that, and all of my other compatriots were running PCBoard. I'm like, "Why are you running World War IV? We're on PCBoard." Remember the first VGA Graphics where you could draw?

Rebecca Heineman: Oh yes! I remember the text graphics.

Scott Schreiber: You don't have that. Your BBS is going to fall behind and then meanwhile, I knew all the exploits for PCBoard. I was like, "No, I'm running World War IV because it's safe." You're going to get screwed. So the same thing, now this is where I was not a novel programmer because I'm not a programmer at all. I was a script kiddy at that point I would go find in a text file, someone else did the code and then enter what they had done and then crash PC board profoundly.

Now, what was funny about this is during a lot of this, I was actually in the army. I'm in the army in Germany and it's like, "Sergeant Schreiber go inspect all of your people in the barracks," right? And I felt like, "No, that's their home." No one barges into my home and checks my trashcan or my dresser for dust. I'm not going to intrude on people. I'm going down to the phone closet and I'm hooking up my pack. So, at that time, we have to pay for like AT&T long distance and all so I will just go in there in the phone closet and click, click, click, "Hey! How are you doing?" I remember that. Even though it had been a couple years since I was really active, just to go back and dial into some of the old loops and then run into people like Captain Crunch.

Rebecca Heineman: I know Captain Crunch.

Scott Schreiber: You know Captain?

Rebecca Heineman: Yes, I know Captain Crunch.

Scott Schreiber: Guess what, he started calling me Captain Caveman because he said -- we met in this one place and he goes, "You're a fuzzy fucker, aren't you Captain Caveman?" I was like, "Well at least Captain Crunch called me captain something." So, that's where I got my Captain Caveman from. It was just great. We're going to do a whole retrospective on this in an upcoming show

and do you mind if we call you up to jump in on that with Skype?

Rebecca Heineman: Sure, no problem at all.

Scott Schreiber: That would be great to have another one of our ilk involved.

Rebecca Heineman: I was a very bad girl.

Mike James: It sounds like it.

Mike Kennedy: Don't get on your bad side.

Scott Schreiber: We didn't destroy -- okay, we did a little. So, maybe a few people couldn't call grandma because we were busy screwing with the phone system. But in the end, we were self-taught technical people that later became programmers, technicians, engineers and contribute things to other places. It was a place to hone our skills and learn things because there wasn't really anything out there to teach us. We had to teach each other.

Rebecca Heineman: It was, but also one thing is funny is that it taught me a lot of skills about how to think outside the box. I mean like who would have taught reading from a register that would allow you to read the video display would actually work? It takes a lot of creativity and I've done things in the Super Nintendo that are comparable of that. I remember writing a piece of code in which I put it in DMA registers because it ran faster there. So, I put my critical functions in there which allowed me to save money on using a slower cartridge. I mean who would think of something like that except someone whose skills are honed in this type of field?

Scott Schreiber: I wish I had known that you had that background because I have still got a red box that I would have brought for you to sign.

Rebecca Heineman: Oh God! He has those things.

Scott Schreiber: I don't know why I keep some of the stuff because copper phones are dead. I never ever have a need for a lineman's handset in my life again but when I first got one, which I borrowed from a parked telephone truck, and as I'm absconding with this thing down the road ...

Scott Schreiber: If you ever see that truck again you will return it.

Scott Schreiber: Yeah, absolutely. We would pay the Mini Mart back.

Rebecca Heineman: Yeah, I always have a back-up phone. I always have like a Skype line or some sort of voice over IP line as a back up because if the cellphone towers ever taken down, your cellphone isn't going to be worth much.

Scott Schreiber: No, no. We Skype a lot for this, but that memory, I think I was like 13 and here I am with a lineman's handset and it was like whatever Holy Grail you can imagine in your life that is now in your hands. For now, it could be a sack of money. It could be the keys to a car, whatever item you have absconded with. For me at 13, it was a lineman's handset. I am literally pulling the thing out before the guy comes down from the pole and I'm looking down at the clips. I'm like, "I got a lineman's handset. I'm going to have so much fun with this thing." I added in the red box to it and a blue box and a silver box. So, I had all the toggle switches on the back and the buttons. So, I couldn't whistle.

Rebecca Heineman: Yeah, 2600 hertz.

Scott Schreiber: We'll play it back and hack a phone. Yeah, we'll technically test that and see how it works, but that was so great just absconding with this device and go, "I have this." We were sitting there in my bedroom, my parents are out there talking and watching TV, whatever. My little brother is playing the TV, I remember like my mom said, "What are you doing?" I'm like, "I'm just fixing this thing for a friend." They had no clue.

Rebecca Heineman: Yes, it needs to be overclock. It needs to be modified.

Scott Schreiber: And I loved every moment of it. You guys got anything else?

Mike Kennedy: Go back to the games real quick.

Scott Schreiber: Yeah.

Rebecca Heineman: It just gives you an idea of my background and doing reverse engineering and so forth. Well after I won a tournament and so forth, I had a conversation with Arnie Katz and Arnie was just saying, "How do you know so well about the games?" I said, "Because I've hacked them and I know how the software works." He was like, "Do you know how to program, the 2600?" "Yeah, I've been programming it now and doing little demos on it like about a year and a half now." He was like, "Oh! Let me introduce you to you to Jack and Eric Dott and they were the owners of the Avalon Hill Game Company. They then called me up and literally hired me right on that phone call.

The next day, I had an overnights plane ticket one-way to Towson, Maryland or actually Baltimore, Maryland. So I went over to a K-mart got this big steamer trunk put everything I owned in it and I was very strained with my family already. So, I just simply told my mom bye, got to a super shuttle, and went to the airport. I just turned 17, I flew over to Towson, Maryland and started work at Avalon Hill and my job was to make more dev kits because I had already built a dev kit. It

was just a ROM emulator for the Apple II. So I made a whole bunch more of them, gave them to all the engineers at Avalon Hill, instructed them on the register set, how the Atari 2600 works, gave them the copies of my demos, and then from that, all the other engineers started making the games for the Atari 2600. So, I am the person who is responsible for teaching Avalon Hill and that's why those five games exist from Avalon Hill.

Mike Kennedy: Some of them are still pretty expensive.

Rebecca Heineman: Well, they are expensive because they're so rare, Avalon Hill themselves, they weren't really exactly rich and I know because they paid me shit, but it was fun there.

Mike Kennedy: And what did you do to them after you left? Anything?

Rebecca Heineman: I didn't do anything to them at all.

Mike James: Just took the phones down that's all.

Rebecca Heineman: No no no, I was recruited by Time Warner of all people. I was there at Avalon Hill for about nine months and then I get a phone call from Time Warner saying, "We've been noticing you and blah, blah, blah. We'd like you to work on our Play Cable system". So, I went there and I worked on a system that had a Z80 microprocessor, 64k of RAM, I did a demo of Tempest and I did a demo a Basic on it, in which I was using actual vector line drawings on this thing just to show the power of this piece of hardware. I then stayed in Broten Harbour, Connecticut for a month working for a company called L Electronics finishing up the hardware and we had a prototype, we went back to Time Warner and they said, "You know what? We think the market is dying, cancel." And they said, "Well you could work at the Time Warner, HBO office software programming for their boxes." I'm like, "No, I'm going to go home."

So, I went back to Whittier, California where I got a job at Boone Corporation and continued my career from there, but that's why I got my start.

Mike Kennedy: Then you did Bard's Tale III.

Rebecca Heineman: Yes.

Mike Kennedy: And what I really like with Battle Chess, what was your involvement with Battle Chess?

Rebecca Heineman: I did a bunch of ports and I built some of the code for the optimization, so how to figure out how to get the graphics shoved in the small spaces. I did a lot of code optimizations back then so for Battle Chess, that's a lot of the stuff I did and I've been maintaining a lot of ports and just a lot of tech

design. At that time, I think my lead project was Neuromancer for the Apple II, that's one I was doing. I was doing many, many projects at that time because the first years of Interplay, I was the sole programmer on games like Mindshadow, Tracer Sanction, Borrowed Time, Taz Times in Tonetown. Then I did a lot of graphic work for things like Wasteland like I did with the - - the actual code that does the animation of the monsters and stuff like that and a lot of graphic tools like I did a tool called Quick Draw which was an art program originally designed for Mindshadow but then it became more to like a full on art program and Interplay used it for everything. I mean every game from Interplay used that thing. And we even made it to a commercial product something like around '87, '88 called Quick Drive and I have a boxed copy of it at home, but then with Bard's Tale I and II, I did all the ports and I did a lot of the graphic routines and so forth.

Mike Kennedy: So you knew it well, those back stories and everything else.

Rebecca Heineman: And I knew there was issues with the programmer.

Scott Schreiber: Which ones did you port? Bard's Tale?

Rebecca Heineman: Oh the 2GS, the C64. There were just a bunch of ports that I did.

Scott Schreiber: Because I played the C64 Bard's Tale and the PC version.

Rebecca Heineman: Yeah.

Scott Schreiber: That was a genre of game I just always enjoyed because it didn't try and overuse the system. Me being a pencil and paper D&D gamer, you have that in the Monster Compendium or the Monster Manual you have that picture and that was your imagination. So here, you have an animated picture that conveyed everything you needed to know.

Rebecca Heineman: Well, that was one of my biggest claims to fame was the animation. One of the things that we wanted to do was that the animation was static, not static, but repetitive. So, you have a wizard and the arm goes out and in and out and in and I came up with a technique in which I actually ran four animations concurrently and they all were totally different timings. So you would have the wizard holding his hand up with a little squirly magic ball that just ran like 3,4,4 frames and constantly but then the hand, the other hand, would have a completely different animation which would slowly go out and slowly come back in and then his eyes would blink at a different rate and then his hair would blow at another rate. So when you look at the animation it's not repeating and that was my biggest claim, my biggest contribution to the graphics both in Wasteland and in Bard's Tale. I was the one responsible for all of that.

Scott Schreiber: Now I do remember with Bard's Tale, when I bought it, and we did another special on this on our show, about presentation, box items, today, there's just no effort applied. It's a CD of a partially finished game which you have to download the patches that they're working on while the game is shipping.

Rebecca Heineman: Yeah.

Scott Schreiber: Now back then, you would open up that box and inside was a silk map and then the coin and all of that and it was all these neat artifacts that came with the game.

Mike Kennedy: That was so awesome back then.

Rebecca Heineman: As you'll see with Lord British, Ultima, because I know Richard Garriott was very, very hip on items inside there and also Infocom.

Mike Kennedy: Infocom, they're the ones, when I think of that, they really knocked it out of the ball Park.

Rebecca Heineman: They did.

Mike Kennedy: And they just don't do that today.

Rebecca Heineman: Yeah, but the trouble is that right now today the big focus is on to download digital content. So therefore, they want to sell games in which you just download the game and then you're done which means that there's no cost of goods. While it's really nice getting a box all of these little wonderful things, that costs money and right now publishers are trying to squeeze profits out of everything they can. They don't want to spend the money on that.

Mike Kennedy: Yeah, yeah.

Scott Schreiber: But you've got to wonder are they making less because there aren't those items in the beautiful package, I for one would rather buy something that has the full feature, you know?

Rebecca Heineman: My opinion is really not that they're making less because the items are missing, my problem is that they're shipping games that are not finished. That to me is the biggest negative. I buy a game and it's not even full, you have to get a patch or even worse, you have to pay for what's considered downloadable content.

Mike Kennedy: It ends up. They've always sold it to the public that it costs less and we're going to sell --

Scott Schreiber: Then the prices don't drop.

- Mike Kennedy: A lot of games are the same price.
- Rebecca Heineman: Yeah, they're still 60 bucks.
- Mike Kennedy: They're still 60 bucks, that's what I don't understand as a gamer. You know what I mean?
- Rebecca Heineman: Yeah.
- Mike Kennedy: What do you guys think about like the Kickstarter thing now, and do you guys have any projects, any Kickstarter projects?
- Rebecca Heineman: Oh, we have a project coming. You want to talk about it or shall I?
- Jennell Jaquays: About late March, Becky and I started a new corporation with two other women called "Old School".
- Mike Kennedy: I like it so far.
- Jennell Jaquays: We have an unusual spelling of the name so that we can eventually get websites for it and the other so we could eventually trademark it, but our intent is to make games that play in that old vintage style where the player brings more of him or herself to the game. It relies more strongly on their imagination but we're going to use more modern graphic approaches so that old-style play or vintage play - modern visuals, and we do have a project in the works. Do you want to share the name right now?
- Rebecca Heineman: Yeah. Well the game is called The Rip and it's going to be basically a spiritual successor to Bard's Tale III. I mean, the name doesn't belong to us but however though it's beginning to play like it and we got a really intricate story that we came up with that we're going to be doing a Kickstarter for it soon and with the people on board, Jennell doing the design, I'm doing the programming. We have Susan Manley doing project management, Maurine Starkey doing art direction as well as Kurt Heiden who's the original musician for Bard's Tale III. He's going to be doing the theme song and we've got a lot of other people lined up that we will be announcing once we announce for Kickstarter. So it's an all-star cast.
- Mike Kennedy: We would love to help you guys promote that, over and above this.
- Rebecca Heineman: Please.
- Mike Kennedy: So when it happens, we'll make sure you know how to get a hold of us and let us know.
- Jennell Jaquays: We'll let you know.

Rebecca Heineman: We will and it will be very soon actually.

Scott Schreiber: What platform?

Rebecca Heineman: We're going to be doing Mac and PC initially. If we get enough contributions we'll do iOS. It's really a matter of how much are we getting from Kickstarter because ...

Mike Kennedy: You'll never know.

Rebecca Heineman: Yeah. And of course the more money we put into it, it's like if we just get the minimum, it's just going to be a standard 2 1/2D like we did with the original Bard's Tale III but if we'll get more money, then we're going to go for more 3D graphics, 3D animations, just go and build on to it.

Mike James: Well hopefully it will work out, I mean your names carry some weight, don't they?

Rebecca Heineman: Yeah, when I bumped in to Kurt and we talked about it, he's just like, "I want to do the music. Let me do the music, please." He didn't even know his name was in the Smithsonian. There's a thing called the "Art of Video Games" in the Smithsonian right now.

Scott Schreiber: We consulted on that.

Rebecca Heineman: Bard's Tale III, the Thief of Fate is on there and my name and Kurt's name is on it because we're the ones who did that game. Now we did a contributing work with Michael Stackpole, Bruce Schlickbernd, and Todd Camasta. We did a lot of work on that, and also it's funny is when I did Bard's Tale III, some of the things I did with that game that few people who seem to realizes that things like I added two voice sound on the Apple II. I tripled the amount of maps with only adding one disc. I added female characters because something that the original designer, I told them from the day one, from the first Bard's Tale "Where are our female characters?" He's like, "Girls don't play games like that." And I'm like, "If you only know about me." As soon as I took over Bard's Tale III, I said, "First things in - girl characters." It had auto mapping in Bard's Tale III you can hit just toggle, you could see the map of the world and what most people don't even know if you hit Control P, it prints it to your printer.

Scott Schreiber: Really?

Rebecca Heineman: I mean I put in all these features and stuff like that and of course I'm planning on having -- and then of course afterwards, I then did a game called Dragon Wars which was technically going to be Bard's Tale IV, but it had to be renamed because Electronic Arts owned the rights to do Bard's Tale IV but it too had bigger graphics, I had seasons, I had all these different



plot twists. Again, the game was even four times bigger than Bard's III and I didn't add a disc. It was a huge technological leap as well as it still kept the same game play and talking about Bard's Tale IV --

Jennell Jaquays: I was the last designer on Bard's Tale IV. I worked as a contractor for EA at the time and I did a lot of design work. In fact, she recently got to see my design docs. It was kind of sitting in there just going -- and kind of geeking out on it a bit.

Rebecca Heineman: Yeah. I said, "You know what? I could implement this."

Jennell Jaquays: But I actually worked on Bard's Tale IV for Electronic Arts right up until they decided that the project was hemorrhaging money and they shut it down.

Mike James: You were too expensive then.

Scott Schreiber: So while she got paid shit, you made bank.

Jennell Jaquays: Yeah.

Mike James: So we can take it the new project is having female characters, can we?

Rebecca Heineman: Oh Yeah. Well I think more hilarious is that when after Bard's Tale III was done, I immediately started work on Bard's Tale IV at Interplay but after I worked on it for like a couple of months, then it was told to me that we don't have the name so we're going to have to change the name. We didn't really know that EA was working on a Bard's Tale IV of their own, and then when I shipped Dragon Wars, from what I understand your team saw the game and went like, "Oh shit!"

Jennell Jaquays: I don't know, that was before me, I was like the third designer to be brought in on the project. The idea, I was going to be the script doctor and just fix everything that everyone else had written. So it really didn't work out that way and they were just way over budget and they had code that wasn't working yet.

Rebecca Heineman: Yeah, and I wrote Dragon Wars all by myself in nine months.

Jennell Jaquays: Oh, bite me.

Scott Schreiber: Cheeky.

Rebecca Heineman: The gauntlet has been thrown. Pwned!!

Mike Kennedy: Do you know Phil Adam?

Rebecca Heineman: I know Phil.

Mike Kennedy: Was he running Interplay at that time?

Rebecca Heineman: He was the operations man, he was the VP in charge of Business Development and he did all the day-to-day operations.

Mike Kennedy: Yeah, he's a personal friend of mine.

Rebecca Heineman: He's a great guy.

Mike Kennedy: Yeah, we actually interviewed Phil on our very first show.

Scott Schreiber: Phil was our first guest on the show.

Mike Kennedy: Four and half years ago.

Rebecca Heineman: If you see Phil again, tell him I said hi.

Scott Schreiber: We will. We just saw him at E3 and all of that, we frequently bump into him.

Thanks for coming by and talking to us. Our next interview is right over our shoulders. We are so jam packed with our schedule that it is just awesome that you guys could come down here and make a whole hour for us.

Rebecca Heineman: Well, you know where to find us.

Scott Schreiber: We do.

Mike Kennedy: We'll let you know when we run it and any additional information you guys have on your Kickstarter program, we would love to help you.