SMITHSONIAN INSTITUTION

LEMELSON CENTER FOR THE STUDY OF INVENTION AND INNOVATION

Gilbert Hyatt

Transcript of an Interview

conducted by

Arthur Daemmrich and Sharon Klotz

on

12 December 2019

with subsequent additions and corrections

Copyright © 2021 Smithsonian Institution

All uses of this manuscript are covered by an Agreement between the Smithsonian Institution and Gilbert Hyatt.

This transcript is thereby made available for research purposes. All literary rights in the transcript, including the right to publish, are reserved to the Smithsonian Institution, except as provided for in the Agreement. Excerpts from this interview (up to 1,000 words) may be quoted for publication without seeking permission as long as the use is non-commercial and properly cited.

Abstract

Gilbert "Gil" Hyatt begins the oral history by discussing his family background and childhood in the Forest Hills community in Queens, New York. Next, he describes his introduction to electronics at Long Beach Polytechnic High School after the family moved to California. Hyatt attended the University of California, Berkeley as an undergraduate, where he majored in electrical engineering. After graduating, Hyatt's first job was at Boeing, working on guidance systems. His next position was with Hughes Aircraft, working on inertial navigation – during which time he earned a master's degree in computer engineering from the University of Southern California. He also describes his work on the Apollo mission while employed at North American Aviation. Hyatt next worked at Teledyne Systems Company as head of computer design in the Advance System Division. He covers his invention of a micro computer on a chip, the founding of his startup, Micro Computer, Inc., running the company, and the takeover by the venture capital backers. Hyatt then became an independent inventor, and he describes key breakthroughs in electronics, working on projects including spread spectrum communications, image recognition and processing, and numerous other areas. Throughout, Hyatt reflects on what motivates inventors, their beneficial impact on America and challenges with the patent system, especially for independent inventors.

About the Interviewers

Arthur Daemmrich is the director of the Lemelson Center for the Study of Invention and Innovation at the Smithsonian Institution. He has conducted over 50 oral history interviews at the Smithsonian, the Science History Institute and the University of Kansas Medical Center as well as research and publishing in the field of Science and Technology Studies. He holds a Ph.D. from Cornell University and a B.A. from the University of Pennsylvania.

Sharon Klotz is the head of Invention Education at the Lemelson Center for the Study of Invention and Innovation at the Smithsonian Institution. She previously held positions at the National Postal Museum, Alchemy Studio, the Brooklyn Children's Museum, and the Tech Museum of Innovation in San Jose. She holds a BSc in Physics from MIT.

Table of Contents

Lemelson Center for the Study of Invention and Innovation

Oral History Series

Interviewee: Gilbert Hyatt

Interviewers: Arthur Daemmrich
Sharon Klotz

Date: 12 December 2019

Location: Las Vegas, Nevada

Daemmrich: This is an oral history interview with Gil Hyatt on December 12, 2019, in Las Vegas, Nevada. Gil let's start. Tell me a bit about your father's background, your family.

Hyatt: My father came from White Russia at the turn of the century. Eastern Europe was in a very difficult place, in turmoil. America offered a really good place for my father and mother; they came separately to live and get away from the ethnic turmoil.

Daemmrich: Did they meet in the U.S.?

Hyatt: Yes, they met in the U.S.

Daemmrich: Did they come as children, then? Did their parents bring them?

Hyatt: They came as children, my father went to Cooper Union, became a civil engineer, and worked for the City of New York for 40 years until he retired. He was building the subways and bridges.

Daemmrich: That's great. And your mom?

Hyatt: She was a little girl and then a housewife and mother.

Daemmrich: You grew up in Forest Hills. Tell us about that.

Hyatt: I spent the first 16 years of my life in Forest Hills. Went to elementary school, junior high and high school there. Moved out to California in 1954. Very long time ago. Finished high school here, graduated, and went on to junior college and the University. I went to the University of California at Berkeley where I got my bachelor's degree in electrical engineering, I went into industry, worked for Hughes, and got a work study fellowship. I could work part time to support my family. I got a master's degree in electrical engineering with an emphasis on computer technology from the University of Southern California under the Hughes fellowship program.

Daemmrich: Let me slow you down a bit. Going back to your early schooling, when did you discover you had an aptitude for math and engineering?

Hyatt: In elementary school, I had an aptitude for science and math and things. My father was an engineer and he encouraged me. I took a sort of – a scientific program – they had a program where they advanced certain students out of turn. I graduated from elementary school a year early. New York had a real good school system and gave me a good background. Then California had a great university system. I went to Forest Hills High School in New York and in California for my last year, I went to Long Beach Polytechnic High School.

Daemmrich: You were in Forest Hills right after World War II.

Hyatt: Yes, I lived in in Forest Hills during and after World War II. In the early 1950s. The old stories are true. During the war, there was rationing, and submarine and aircraft scares. The Japanese were attacking. I was part of the generation, they called us the Silent Generation. I call it the Depression Generation. We were frugal. We worked very hard and complained very little.

Daemmrich: Did you celebrate any of the older Russian holidays, were there any mementoes around the house, any connection to that?

Hyatt: Not really. My folks had grown up in the U.S. They were very much Americanized. We had just the normal family life and youth.

Daemmrich: Did your grandparents speak Russian?

Hyatt: I didn't get to know them very well. I have only vague recollections of them.

Daemmrich: Any teachers in high school you remember?

Hyatt: Oh yes. It is strange that a guy of my age remembers it. Mr. Tracy taught physics at Long Beach Polytechnic High in the 1950s. I went up to him when he gave out the grades and said, thank you for the A but I didn't get any A's on the tests. He said, Gil, this is the advanced physics class. If you got B's on the tests, you get an A in the class. Why would anyone say you gave me too high a grade? But it's true. I took away from that a tremendous background in science and technology. Mr. Tracy was a great physics teacher and then I remember Mr. Dull, a great mathematics teacher. No pun intended.

Daemmrich: What a horrible name to have as a high school teacher.

Hyatt: He taught advanced math, and I took the advanced classes. I remember solid geometry and advanced algebra – other mathematical technology. I didn't get calculus in high school, but I did in college. Wait, I misspoke, that was part of the advanced mathematics class. I got a really good science and math background from Long Beach Poly High. I went on to junior college at Long Beach City College for two years. I was president of the electronics club; a member of Thane, the school service club; and the vice president of a fraternity.

Daemmrich: What were you tinkering with in the club? This was the early 1950s.

Hyatt: We had a six-foot transmitting tube from a radio station, and a quarter-inch transistor. They took a picture of me holding both of them and published it in the school paper. There were all kinds of interesting things that we had. We had speakers and tinkered with things. At that time, one of the gentlemen had a television repair shop. He gave me a part-time

job as a television repair technician. That was in the mid-1950s when there were vacuum tubes and soldered circuits, no transistors or integrated circuits at all.

Daemmrich: Were you taking apart and repairing them, replacing tubes or even resoldering some of them?

Hyatt: Much of it was pulling out the tubes and putting them in a tube tester. You had to resolder resistors and capacitors.

Daemmrich: Did you take toys apart as a child?

Hyatt: Yes, we built models and experimented with things. One interesting thing, we were sort of Huck Finn and Tom Sawyer. I reminded my friend, Bill Thompson, about that, we would get on our bikes with our fishing poles and go fishing in the park. He didn't like that analogy. But I thought it was cute.

Daemmrich: Which was which?

Hyatt: I never separated them.

Daemmrich: Huck was the more clever one, right?

Hyatt: This gentleman grew up to be a psychiatrist. A very accomplished one. I never would have thought that in his youth, he was sort of a wild kid.

Daemmrich: Did you have any history courses where you learned about inventors?

Hyatt: I learned a lot about technology and math, but not about inventors. That was something outside of my environment. I never planned on being an inventor, but when you are in technology and you come up with new and great ideas, you get pushed into patenting them and being characterized as an inventor.

Klotz: How did you get the job at the TV repair shop?

Hyatt: My fraternity was a college version of the American Association of Engineers (the AAE). I went to some of their meetings and became the vice president of the AAE college fraternity and met a gentleman at one of their meetings. I bluntly asked him for a job in his television repair business, and he said sure.

Daemmrich: I've met two or three other inventors who started with TV repair. It could lead to other things.

Hyatt: I went on to come up with innovations in televisions and the like. In fact, one of the important issues with the Patent Office is that some of my technology that would have revolutionized television if they had issued my patents 25 years ago, over 30 years ago, when I filed them. They are still pending in the Patent Office and they're still viable technology.

Daemmrich: The move to California – was that you on your own?

Hyatt: My older brother got a job in San Pedro. We decided to move out with him. My mother and I moved out first. My father sold our house back east. A year later he moved out with my younger brother. I have two brothers and a sister. My brother and sister were about 12 and 13 years older than me, and I have a younger brother, two years younger.

Daemmrich: When your father moved out, did he get a new job in California?

Hyatt: He was a civil engineer, and so he could get good consulting work. He was a licensed engineer. He would sign off on designs for buildings and other construction.

Daemmrich: What attracted you to Berkeley?

Hyatt: A friend was going there and said some things that were very interesting, so with no other options I applied and got accepted. It was a really great decision but for the wrong reasons. Maybe I was guided by a superior power to take that route.

Daemmrich: I think people spent less time shopping for colleges in the 1950s than they do today.

Hyatt: Back then, I would have to go to a library and plod through all these papers, very tedious. Today, I hit a couple of keys, I have the world's knowledge at my fingertips. Then I would go to the library, but now I hit a couple of keys on my personal computer and do my research and it is much easier. Innovation and technology is moving along very fast and a lot of it is due to that.

Daemmrich: When you got to Berkeley, what was the campus like? It was post-World War II. Was it right around Sputnik?

Hyatt: Sputnik was 1957. I had graduated from Junior College by that time. A few years later, I ended up working on spacecraft at Hughes, the Surveyor spacecraft, and at North American Aviation, the Apollo spacecraft. My BSEE degree was in 1959 from the University of California at Berkeley. I got a Hughes aircraft fellowship, and I got a master's degree MSEE in 1965 from the University of California.

Daemmrich: At Berkeley, they were building new physics buildings and such; was that visible?

Hyatt: I spent most of my time in Corey Hall, the electrical engineering building, that was already constructed. I would walk past the Lawrence cyclotron. It was in operation. I would hear, ding, ding, every few seconds as they had a sub-atomic collision in the cyclotron. I was disappointed recently when I went back there, and all they had left of the cyclotron was a plaque. It was a different age. Now we are working on super-magnets for hydrogen fusion. Hopefully within the next 30 years we will see a totally new society based on unlimited energy.

Daemmrich: What was the atmosphere like, your typical day?

Hyatt: There was an awful lot of studying and classroom work. Some really great professors, and they were strict. In addition, I was the operations officer for the Flying Club, and the only one around with a pilot's license, so I got that by default. I took care of the planes. I was a day captain in the Sailing Club. I was in charge of the boats for one day each week.

Daemmrich: Flying isn't something your average undergraduate has done.

Hyatt: I had friends who were pilots during my work at junior college. They got me into flying. I got my pilot license before going to UC Berkeley.

Daemmrich: Did you live on campus?

Hyatt: I lived in sort of a dormitory. They put me in the Smyth mansion temporarily with some other guys because they didn't have room in the dorms. The guys didn't want to leave the Smyth mansion. The two years I spent at Berkeley, I really lived in the Smyth mansion. Beautiful place. Panoramic view of the Bay Area. Me and a current friend of mine had the master bedroom for all that time. It was luxurious.

Daemmrich: It is quite striking that you're moving to UC Berkeley the same year as the founding of Fairchild. Was there any sense when you arrived there that this is the place to be, California is changing everything, a new world of electronics?

Hyatt: I was very alert to those things. I believe that Fairchild Semiconductor, [which started as a] camera company existed beforehand. Two great gentlemen left Shockley Semiconductor to form Fairchild Semiconductor. And then on to Intel and then investing in Micro Computer Inc., my company. The rest is history.

Daemmrich: As undergraduates, were there seminars where you would meet people from Silicon Valley?

Hyatt: No, we were real serious students, other than those activities. But there was another very interesting thing. I had picked up social dancing as a pastime previously, so I applied for a job as TA in the social dance class. In the women's phys[ical] ed[ucation] department. I would get my paychecks from the women's phys ed department. My friends would make jokes about that.

Daemmrich: Say a little about the electrical engineering curriculum. Was it distinct from computer science?

Hyatt: It was very traditional, nothing digital, mostly circuit design. We had laboratories, hands-on experience. I was lucky enough to get an advanced class in digital design, taught by Mr. Hurley, who wrote the book on digital circuitry. He got me interested in computers. But I didn't get into that until my graduate work at USC, where I took computer engineering courses. And then I learned how to design computers and program them.

Daemmrich: So you weren't really interacting with mainframes or learning machine language or anything in the EE major?

Hyatt: We were building a transistorized computer at UC Berkeley and that was pretty advanced, at the time. Transistors had just come into being in the late 1940s. I had a transistor that had a long string of semiconductor names and it only cost a dollar at the time. I thought the name alone was worth more than that.

Daemmrich: Each computer today would be $10 million, with the microchip. In building the transistorized computer, were you making transistors yourself?

Hyatt: No. I was just associated with the computer, but not part of that transistor program.

Daemmrich: You mentioned Professor Hurley.

Hyatt: I think he was from industry, teaching an advanced class in digital circuits.

Daemmrich: Were there others you remember?

Hyatt: My memory fails me there.

Daemmrich: You later went to Boeing.

Hyatt: I worked on the Bomarc missile, a ground-to-air missile to take out Soviet bombers if they attacked. I interviewed with the Boeing rep on campus; they came down and interviewed graduating students at UC Berkeley. I got a really good offer from Boing. In Seattle. It was cold, I loved the

snow. A really nice place. I got married just before I went up there. It was a honeymoon trip. I met my wife at Berkeley, she was in the Fernwald dorms that were associated with the Smyth dorms where I stayed. We had recreational activities together.

Klotz: Do you think being a pilot made you attractive to Boeing?

Hyatt: Yes. In the interview, the interviewer was an old, frustrated pilot and we talked all about flying throughout the interview. Not about my capabilities. He came back with one of the highest salary offers that any of my colleagues got.

Daemmrich: Was this proximity fuse type work, was it about doing navigation pre-programmed?

Hyatt: I was mostly involved in the guidance systems for the Bomarc missile. Three of them. A programmed launch system, and then a command cruise mode, and then at the end a target-seeker that was a radar system.

Daemmrich: The command flight, was someone steering it?

Hyatt: From the ground, yes. There were computers focusing it in on the bomber. If there was a bomber, which there never was.

Daemmrich: Was the concept that you would spot the bomber, calculated its trajectory, and you input that to the missile?

Hyatt: Yes, but it would be done by a computer command system so it would be continually commanded. Tracking the missile with radar, tracking the bomber, and trying to bring the missile into proximity with the bomber so the target-seeker could take over. I was being trained in the guidance system so I could help the Air Force install the missiles and maintain them.

Klotz: What was the system of the day that calculated the trajectories?

Hyatt: The Air Force had central centers with computers, they got the information from long-range radar systems. It was pretty complex. Those were very complex missile systems. Not like today where they're little more than toy drones. In fact, when I worked at North American, I was working on the Hound Dog (GAM 77) missile. The forerunner of the cruise missiles, air to ground missiles.

Daemmrich: Did you go out to any of the testing while you were with Boeing?

Hyatt: I was stationed at some of the Air Force bases and got involved with the B-52s, which carried the Hound Dog missiles. We would do ground tests on them. Qualified for flying in the B-52s at high altitudes.

Daemmrich: Did you feel like what you had learned in EE, you were using it at Boeing, or was Boeing an additional set of training?

Hyatt: A combination of both. I was using the education I had and applying it to that system. It was very complex, the guidance system. You needed a solid engineering background to understand it.

Daemmrich: From there, it is the Hughes fellowship?

Hyatt: I went to Hughes and worked there and then got the fellowship later. It was like going back to the area I knew well, since I had gone to school in the area Hughes was in. It was in Southern California, it was out towards the west of where I had gone to school. I wanted to get more into design things; at Boeing it was more about maintaining the guidance system and helping the Air Force.

Daemmrich: Tell us about the projects at Hughes.

Hyatt: I started working on inertial navigation systems and the Surveyor spacecraft. Moved up to a staff position, the laboratory manager's staff. I worked on new technologies. Hughes was in the old electro-mechanical servos for fire control systems. They had to get into digital technology. I had just gotten my training in computer systems, and I worked on proposals for new digital systems for the government. The transition from electro-mechanical servos to digital computers was underway. Part

of that, we couldn't afford to put digital computers into fire control systems at that time, so I developed what I called incremental processors, which are special purpose processors, but they operate very fast and are relatively cheap. That led me into some of my greatest inventions that I still have pending in patent applications, using incremental processing to supplement general-purpose digital computers.

Daemmrich: Describe that again in slightly more lay language. What is an incremental processor?

Hyatt: An incremental processor is one that works on changes rather than absolute numbers. It turns out that many things are just little changes rather whole new computations. In my display systems, to transform an image with a million pixels you have to do a million transforms. That requires a lot of computer power. I don't think that is necessary. You're wasting a lot of computing power by recomputing every pixel from scratch. I worked up an incremental processor, I testified about it in court in a patent litigation. After generating one transform for initial conditions, all the other pixels are just incremental steps. It takes little more than a simple counter, which is almost a trivial integrated circuit or trivial computer program computations. It goes step, step, step and very simply implements very complex transforms.

Klotz: Almost like the classic Turing machine?

Hyatt: Turing was a very great man, but this is more like an old digital differential analyzer, one of the forerunners. It was a great start, but a very primitive machine. It did differential equations. I have developed incremental processing in lots of applications where it doesn't do differential equations, just incremental processing. You start with the initial conditions, and then you incrementally run it out. You can use it in all kinds of fields, from navigation to image processing to many other things. I have a patent on an incremental fast-Fourier transform (US patent No. 4,486,850 issued on December 4, 1984). The fast-Fourier transform is one of the most valuable mathematical transforms but it takes a lot of computational power. I then came up with the incremental fast-Fourier transform, which runs at microwave speeds with very small amounts of circuitry or computations. It added a thousand-fold increase

in speed for less cost than the conventional FFTs. That would let us do all kinds of exotic processing of radar signals, for example.

Daemmrich: Dealing with missiles, you want to be able to do those calculations at incredible speed.

Hyatt: Yes. The radar signals are coming in at microwave speed. It doesn't make sense to send them back [to the computer center] and then two hours later getting a transform. Everything is finished by that time. You've got to do it online as the microwave signals are coming in. That is one of my talents, to come up with simpler ways to do complex things.

The patent system is based on complex solutions, which is what impresses patent examiners. I come out with a simple solution to a complex problem, and they say, that's obvious. In the venture capital field, I was trying to get capital to market one of my technologies. And the venture capitalist said, that's impossible, show me how. I showed him how and he said, that is obvious. So it went from impossible to obvious.

Daemmrich: Once it's described, it's no longer novel.

Hyatt: Exactly. That is one of the problems with the Patent Office. They have delayed my patents for, in one case, 40 years. In most cases, 25 years. The patent examiners today have grown up with cell phones and the millennial generation, with super-computers. It is hard for them to visualize the novelty of these technologies back then, which is what patents are based on [and determine] whether it was novel at the time; if there was prior work as of that time.

Daemmrich: At Hughes you thought of yourself as helping lead the company from an analog to a digital world. What kind of team was it?

Hyatt: There were other parts of the company also working on computers. I wasn't at the pinnacle. I was in the guidance and control lab. Working on bringing them up to the digital technology. It was an important area. My guess is there were a couple of hundred people in my group. Hughes had a numerical control division for machine tools and commercial manufacturing. They came to the guidance and control lab to build

integrated circuit numerical control systems. I developed that and actually built it up, got it working. I believe the numerical control division actually marketed the product. When I formed Micro Computer, Inc., numerical systems for machine tools was the initial application. I didn't believe micro computer chips were a [suitable] product in themselves. I didn't want to be in the computer chip market, I was a system guy. I applied the computer chips to systems.

Daemmrich: This was when hardware and software were separating from each other? In the mid-1960s, people are beginning to code without working on building the computer, right?

Hyatt: Definitively. We called them "logic designers." The circuitry for computers was "logic" circuitry. There are the "logic" designers and there are the programmers, and they use different technologies. I was a multi-discipline guy. In truth, to design a computer, you have to know programming. Otherwise, you design a piece of equipment that no one wants to use. We used to program computers in assembly code. For that, you have to know the computer [architecture] because you are programming the registers and data transfers and such. You don't have the compilers to isolate you from the physical environment.

Daemmrich: That is a totally different programming style. Later, it was more natural language, not machine language. How did you learn machine language?

Hyatt: I got my start at USC in computer engineering, we learned machine language programming in those classes. That is part of the logical design of the computer. The thing I am thrilled with, I have a knack for these things. Ideas flood into my mind, and I am one step ahead of it, when somebody mentions these problems. Some people I have worked with who have real intuitive insight, really great people, have that talent. You know more about it than is told to you, you can figure it out intuitively.

Daemmrich: When did you get your master's degree?

Hyatt: In 1965 when I worked at Hughes Aircraft. They actually gave me flexible time, so I went to day classes and then put in time at Hughes in the evenings and weekends.

Daemmrich: When did you move to Southern California?

Hyatt: I initially worked at Hughes Culver City. They had me working at a different facility. It was all in Southern California. The details evade me right now. Much of the work was in Culver City.

Daemmrich: That makes sense. Did you meet Howard Hughes?

Hyatt: No. I am a fan of his. He had his own group, his special people. They didn't interact with us engineers. It was a normal aerospace type company. There are the good stories about landing Surveyor on the moon, and the bad stories about cheating the government. It was a regular aerospace company at that time. He was totally out of the company at that time. Mostly defense contracts but then I got special design jobs like the numerical control system for commercial manufacturing uses.

Daemmrich: Was Hughes making aircraft or just parts and systems?

Hyatt: They had a numerical control division that was selling transistorized machine-control systems. I was upgrading it from transistorized to integrated circuits. The buildings were enormous, old hangars that were rebuilt as office buildings and such. It was not a lavish environment, it was kind of an old drudgery environment, but adequate.

Daemmrich: Did you hang out with other engineers after work?

Hyatt: I was a young married man with young kids. After work, and I would work late hours, I would go home to my family. Not much social life. I had bought a house in Westchester, up on a hill behind Hughes Aircraft.

Daemmrich: It must have been booming, with the defense spending and the space program.

Hyatt: Very active. Tremendous demand for engineers, and in aerospace it was hard to get promoted within the company, so they almost forced you to switch between companies. When the contracts changed, the company

that lost the contract would also lose its best people. The companies who got the contracts would go on a hiring spree.

Daemmrich: That's an interesting system. Did it seem odd to have no job stability?

Hyatt: I didn't have a problem because I could always find a better place. The people who didn't have good educations tried to stick it out. There would be a base of old timers who would last because they couldn't go anywhere. They would be the managers [when the company won new contracts].

Daemmrich: And were you as engineers talking behind their backs, saying they don't know how to do this new form of computer-based calculation?

Hyatt: No, because they [the old timers] moved up into management and management doesn't have to know a thing as long as they let us do our jobs. It worked out pretty good.

Daemmrich: When did you move to North American Aviation?

Hyatt: I went from Boeing to North American and then to Hughes. North American was also in Southern California, in Downey. That's where I worked on the Hound Dog missile and the Apollo spacecraft.[1]

Daemmrich: Tell me about the Apollo work.

Hyatt: I was brought in to learn the guidance and control system and train the other people. MIT was doing the design of the guidance system and North American was doing the systems integration and maintenance. North American was the system integrator and testing the systems, making sure they worked properly.

Daemmrich: But the Apollo famously, it didn't have a lot of computer boards. Wasn't it just tons of actual wiring?

---

[1] The North American Aviation AGM-28 Hound Dog missile was a subsonic, turbojet-propelled, air-launched cruise missile developed in 1959 for the United States Air Force.

Hyatt: Yes, the computer had a memory that had wires running through the little cores. Let's see, yes, it was a very primitive computer by modern standards, but it got the job done. The reliability was very poor because wires and transistors have a high failure rate compared to integrated circuits.

Daemmrich: How long were you at North American?

Hyatt: [I was employed at North American for several years.] I had a good opportunity at Hughes. The potential of the fellowship was very important. With a family, I couldn't take off and go to school.

Daemmrich: Was the master's about gaining skills, or having the certification?

Hyatt: It was a chance to learn more. I was already pretty well paid.

Daemmrich: In 1968, you go to Teledyne.

Hyatt: That was a very big step up. The Teledyne marketing people came to Hughes trying to sell Hughes on their systems. I made friends with a vice president of Teledyne, and he had made me an offer I couldn't refuse. His name was Earl Cantor. Great mentor of mine. The company was a spinoff of Litton, which was one of the conglomerates and Dr. Singleton made a lot of money at Litton and formed Teledyne and built it into a conglomerate. He had all these different companies, I worked for Teledyne Systems Company, the aerospace arm of Teledyne. I worked for the Advanced Systems Division. Teledyne was strictly a financial system type thing that – if you could get a price-earnings ratio higher than the other companies, then you can acquire the other companies for stock with lower price-earnings ratio, gain more value because it now becomes your higher price-earnings ratio. It is sort of inflating the companies you can acquire, and you can afford to pay them more money and build your conglomerate. You're then a growth company and growing at a tremendous rate, and you get a higher price-earnings ratio. He did a marvelous job on it. Acquired all of these different types of companies, made everyone much richer.

Daemmrich: So the employees were not getting stock options?

Hyatt: They may have at the initial phase, but when they hired me, they were already pretty well established. I was the head of computer design for the Advanced Systems Division. We were coming up with all new concepts. For instance, the government came out with a need for a type of ballistic missile launch that you could program and then launch it. It needed to be insensitive to electromagnetic pulses. I came up with what I called a write-once read-only memory. I got a patent on it. Teledyne applied for a patent and got it issued. I don't know whatever became of it. It was one of 1,000 little problems that were put on my desk to solve.

Daemmrich: Tell me how that process would work.

Hyatt: The marketing people, who also worked for the Advanced Systems Division, would travel around, talk with the government, promote Teledyne's capability, find out what problems the government wanted to solve. Or the government would come out with requests for proposals, next generation systems, and it would be tossed on my desk. I had to come up with new ideas to win the contract. Teledyne had a box they were manufacturing. For one of the proposals, I used the box but I modified it conceptually on paper because it was very inefficiently done. They reengineered it to put my redesign into it and Teledyne patented it. There were a lot of internal things like that.

Daemmrich: You mentioned getting the patent on read-only memory. Was that your first application?

Hyatt: There were three patent applications that issued when I was at Teledyne. It was one of the first three. The other one was on an incremental processor, the digital differential analyzer. It solved differential equations and was very limited in scope. Only for those mathematical lab-type computations. We build an integrator element, and based on that, interconnecting multiple ones in different ways [with software] solved different types of equations. They got a bunch of integrators, and [with software] patch panels – softwired patch panels – we interconnected them in different ways to solve different problems.

Daemmrich: How flexible was that?

Hyatt: The softwired patch panel lets you program different hookups which gave you different types of equations that you'd solve. Digitally speaking, you can code it because this code can be as minute as you want. You can say that an increment is an inch or a micro-inch or a nano-inch. It is a matter of scaling.

Klotz: What was the limiting factor at the time?

Hyatt: The least significant bit and how many bits you have. For instance, if you have 16 bits, that gives you one in 65,000. If you have 20 bits, that gives one part in a million. That is one of the great things about digital computers. Computationally speaking, you can have almost any type of resolution. Whether you can implement it in the real world is uncertain.

Daemmrich: Do you remember when you got your first patent?

Hyatt: I don't recall, it wasn't particularly important to me. It was assigned to Teledyne. It issued years later, and I had already left Teledyne. It probably was well after I had formed Micro Computer, Inc. I was so enthralled with the potential of the micro computer, all the rest of the stuff was inconsequential.

Daemmrich: If you are working for Teledyne, and they submit a patent, it is assigned to the company. If you have left the company, who is the patent issued to?

Hyatt: You usually assign it when you file it. The paperwork is when you sign the declaration that goes with the patent application. One great thing about Micro Computer, Inc. is that I licensed the company with the patents, I didn't assign them.

Daemmrich: Was Teledyne similar to Hughes in terms of company culture and interactions with colleagues?

Hyatt: Totally different. I worked at a big hangar that was renovated into offices at Hughes. At Teledyne, they had new facilities built, a beautiful facility in an orange orchard. I was working on a vice president's staff; I had a really

good title and office. I was able to move through the company and get the help I needed on the advance developments. I made a lot of good friends there. Some of my colleagues from Teledyne joined me at Micro Computer, Inc. when I got some financing to form the company.

Klotz: Can you say something about the moon landing?

Hyatt: I was thrilled with it. Really proud to have played a part in it, a very small part. Even before the manned landing, there were the unmanned lunar missions, the Surveyor program. There were seven of them. The first landing was a hard landing, a crash landing. I came in for the [Surveyor] missions after that.

Daemmrich: The whole aerospace community grew fast, and many contributed. Did you all get together to watch the moon landing?

Hyatt: I probably got it on the television set, I don't have a specific recollection. Some of my colleagues were down in Cape Canaveral.

Daemmrich: I wanted to ask about Earl Cantor.

Hyatt: He made me an offer I couldn't refuse, to join Teledyne. He gave me a great position at Teledyne. A lot of responsibilities. Didn't bother me, let me take care of my work. He was always very nice to me. He took good care of me. They gave me a hiring raise readjustment.

Daemmrich: Teledyne had VCs visiting. Did you meet them? When you launched Micro Computer, Inc. was that a whole separate process, getting to know the venture community?

Hyatt: That wasn't my skill level, I was technically oriented. I had a colleague who was more of a promoter, a wealthy guy. He had sold a company and made a lot of money. He provided the seed money for Micro Computer, Inc. Through his contacts, we got Hambrecht and Quist, a large San Francisco VC to take the lead in funding Micro Computer, Inc. They brought in some of the Intel people, TI [Texas Instruments] as well. The idea was that Intel was important to Micro Computer, Inc. because they'd be the foundry for the micro computer chips.

Daemmrich: For your move from Teledyne – what made you say, here is this opportunity, I am going to leap into the unknown and do this?

Hyatt: It didn't appear to be the unknown. I had a lot of confidence. I had asked my colleagues at Teledyne if they would give me a release, and they said sure. They were very supportive. I had saved money, so I was investing my savings. I had been building the micro computer in the evenings.

Daemmrich: Tell us about the origins of your micro computer concept.

Hyatt: Well, [as the cliché goes,] necessity is the mother of invention. Having an impossible problem to solve is a real challenge and that is what is the best driving function [for innovation]. My problem was that I needed a computer that could do very little and would cost very little. I saw the multitudes of applications being trivial. I took a reverse direction from what others were using. They were using large-scale integration to build bigger computers. Digital Equipment Corp. could now use integrated circuits and compete with middle-scale computers. I went in the opposite direction.

I had techniques that let me get it, not more powerful, but simpler so it would fit on a single chip. For example, I used serial logic rather than parallel buses that caused a lot of complexity with lots of connections on the chip that took up a lot of topology. My serial computer just used a single line to communicate, rather than 16 [lines on a computer bus]. Also, you had to take the signals off the chip. We used what we called pins, and that took a lot of space. With serial IO, I had one wire that gave me a serial signal rather than 16 wires for a parallel bus.

Another aspect was the clock pulses. The common knowledge was, "don't use gated clock pulses." They were right, the way they were doing it. I invented a safe way to use gated clock pulses. By gating the clock pulses, I didn't need all this combinational logic. I was shooting for a different market. What the other people did, they wanted calculator chips. Intel and TI and the rest. The four-bit bus-oriented chips without memory or IO on the chip. I wanted a 16-bit computer, so I had a real computer, not a calculator chip like the other guys had. It is serial so it

runs a little slower, but it had 16-bit calculations so it can do any complex computation. I make up for the speed by having the 16-bit [word length]. There are a whole bunch of features like that, they gave me good computational ability but also were saving a tremendous amount of circuitry. I used micro-operations to implement the instructions. These guys would come up with parallel logic to minimize the number of micro-operations.

Daemmrich: Trying to solve for speed?

Hyatt: They had three micro-operations per instruction, but I had more than that. I strung out my micro-operations and saved a lot of logic but slowed down the computer. I ended up with a 16-bit computer that cost almost nothing but could do a fair amount of work, [for example] controlling machine tools in real time.

Klotz: Can you say more about the innovation of having memory in the system architecture? That decision.

Hyatt: Here is an example. My chip design had the logic which was very small because of all of the simplifications I mentioned. I had a big scratch pad memory and an even bigger read-only memory, which was 4K bytes. A fair amount of memory. All of that would fit on a quarter of an inch chip, which would give us good yield in that 1970 timeframe. That was using 1970s design rules, the way you lay out the chip. We could get all of that 16-bit power and 8k bytes of main memory on a quarter of an inch chip.

Daemmrich: You're doing this at home with pad and pen, sketching what the electron flow was going to be?

Hyatt: I'm not a chip designer, I'm a logic designer and circuit designer. The way we did it in the old days, you build a "breadboard" with wires and wire wrapping, you work out the bugs. You get that working. Then you say, this is what I want for a chip, and you give it to a chip designer who lays it out. Many chip designers weren't even engineers. Just people with a good sense of how to interconnect things in an efficient way with minimum crossovers. That was a ministerial-type thing. The breadboarding of the design and the computer was the key, and then you

turn it over to a chip designer [to lay out the chip] and to a foundry [to build the chip].

Daemmrich: Right. With the founding of Micro Computer, Inc. you are moving from doing this on your own to setting up a company.

Hyatt: Yes, but it was in parallel. I had put together a team of people helping me. One guy was designing my power supply, another was a guy who built his own memory company. I needed the breadboard to be programmable, then I would cast it into read-only memory for the productions systems. You need both. You need an alterable memory [in place of the read-only memory] to check out the system and then cast it into concrete with the read-only memory.

Daemmrich: Did you rent an office? How did you launch the company? How big were you thinking it would get?

Hyatt: It went in stages. The first stage was my lab, which was in my back bedroom in Northridge. A ten by fifteen-foot lab. The second one, when I got the seed money, we rented a facility that had about, I guess, five offices and a lab, we hired a key team of people. Then after we got our greater VC funding, we had a facility built for us. We didn't build it, but my colleague had connections who built it and leased it to us. That was a big facility. We had probably about 30 employees, with numerical control systems for lathes and milling machines and photo plotters and all kinds of equipment. We were proposing bowling scorekeepers that never went into production. Lots of other applications. When you have a cheaper computer, you can use it in places computers haven't been used before, so there's not much competition.

Daemmrich: Were you trying to get into building or creating these new machine tool control systems with the computer embedded?

Hyatt: We were going to manufacture the systems. The conventional numerical control systems were made by General Electric and sold to machine tool manufacturers like Werner. We were going into competition with General Electric. They had hard-wired type controls and couldn't do many of the things we could do in terms of computations. There was really no

competition because we had a computerized system in competition with the non-computerized ones that were out there.

Daemmrich: What was your role in the company? You're the founder, CEO?

Hyatt: I turned over the presidency to Irv Hirsch, who had a lot of experience in running companies and he was wealthy, he provided the seed money. He took over the administrative tasks and I proceeded to build the engineering, programming, and manufacturing areas.

Daemmrich: Did you and Irv talk about what kind of workplace you wanted it to be, or was it intuitive?

Hyatt: We were thrilled with the idea of revolutionizing different types of product lines with a computer that would cost almost nothing. Rather than corporate culture, we were just moving very fast and trying to keep our head above water to meet our contracts.

Daemmrich: Irv provided money, and then you got venture backing. Hambrecht and Quist, Hale Brothers?

Hyatt: It was a single round of funding. Hambrecht and Quist were the venture managers, and they brought on lots of other people who were following their lead, including the TI [Texas Instruments] guy and the Intel people. I remember Bob Noyce definitely; he was supposed to get us a foundry at Intel to build our computer chips.

Daemmrich: The concept was you breadboard it, then you send it to a designer, right? Were they in the U.S. or Taiwan?

Hyatt: We hadn't selected a chip designer as yet. There were many options, one was if the foundry had the capability, it might make sense to use them. It was a standard procedure to get a chip designer and build your system.

Daemmrich: So, Intel was making chips for lots of different companies?

Hyatt: There were foundries. I don't know if Intel was a foundry for anyone else. We were told they would be our foundry. The TI [Texas Instruments] guy was very interested in that too.

Daemmrich: Were you working on your own or were there chances to meet and talk to other people?

Hyatt: I kept my nose to the grindstone and left that to the promoters. I didn't give presentations to the venture capitalists, I documented things and the documents were turned over. I had a policy – rather than go around telling everyone what they should do, you document it and set up procedures and have people follow procedures so everyone knows what they should be doing. The process works automatically. I documented things and the promoters used my documentation where needed. One venture capital consultant, Dr. John Salzer, invested in the company, and he wrote the document on what Micro Computer, Inc. was planning on doing.

Daemmrich: Were you also looking at military contracts?

Hyatt: We were still a small company, struggling to meet our applications. We didn't have the resources or the interest to go up into government contracting proposals.

Daemmrich: They were looking for bigger companies?

Hyatt: Yeah. The problem was we interest them in it, and then they do their usual, give the contract to a big company with all of your trade secrets.

Daemmrich: In December 1970, you submit the patent application for the single-chip microprocessor.

Hyatt: Yes, but the courts decided there wasn't enough description in the patent application. I don't have the single chip adequately described as of that date. I have put it into other patent applications with more detail, and those are passing muster.

Daemmrich: Did you write it yourself?

Hyatt: An outside patent attorney wrote that earliest microcomputer patent application. I later developed the skills myself, became a registered patent agent, and wrote most of my subsequent patent applications. After the VCs took over Micro Computer, Inc., I had time, so I was doing my inventing, breadboarding in my home lab, writing my patent applications, and trying to get my products to market.

Daemmrich: Tell us about the wind-down. How did you learn it was ending?

Hyatt: It was painful, the worst thing was after they shut it down, within a very short period of time, Intel introduced their version of the micro computer. I saw what I believe is my technology taking over in the years to come and I was being totally frozen out.

Daemmrich: Walk us through it; did you get a phone call?

Hyatt: The investors were supposed to give us our next round of financing. They said, “sure,” but when it finally came to putting up the money, they said, we will only do that if we can replace Irv Hirsch. They froze him out of the company, put in a caretaker named Dutch Gage. He proceeded to wind down the company and to get the technology put together so that when the VCs closed it down, I later learned, he would have the technology together.

Daemmrich: How obvious was it to you what was happening?

Hyatt: They did that in a pretext. They told me that Irv wasn’t skilled enough to carry the company forward. Dutch would be able to do that. When he replaced Irv, they would put in the money. But they closed down the company rather than fund it.

Daemmrich: What time period did that take?

Hyatt: It happened over a six-month period.

Daemmrich: What was that experience like?

Hyatt: I wasn't frustrated because it was – Irv still had his stock, and they were promising to refinance the company. The financing they had promised. It wasn't apparent until late in the game that they had no intention of funding the company. They put in the initial funding in the way of loans and then used that as a vehicle to take possession of everything.

Daemmrich: How much was the initial round of funding?

Hyatt: We were very frugal. The seed money was – I really don't recall, but it wasn't very much. We were working long hours with a short staff. We were quite efficient in use of funds. I don't recall the numbers.

Daemmrich: You also had founders' stock.

Hyatt: And it became worthless when the company was gone.

Klotz: Shifting a little bit, I was curious about the technical through line. Did the write-once read-only memory follow through to the micro computers?

Hyatt: No, the micro computer did not have a write-once read-only memory. At Teledyne, the write-once read-only memory was just sort of a side issue for that missile program. I was continually loaded with all kinds of very interesting technical problems that the government had.

Klotz: Did those feed into the concept for the microprocessor?

Hyatt: The thing that led to the microprocessor was that many of the things were previously done with special purpose logic. I needed a small, inexpensive computer that didn't have to do very much. That's what led into the microprocessor.

Klotz: What was happening for you as an engineer, as a creative technologist?

Hyatt: At Micro Computer Inc., we had several important contracts for [numerical control systems for] machine tools, photo plotters, and the like. I was working very hard to get those products out the door. Hopefully we would get some more income and keep the company

independent. That didn't happen because, as the funds ran out, we couldn't buy the parts to build the systems to push them out the door.

Daemmrich: And there is lead time between making a pitch, getting a new client, and then delivering the products.

Hyatt: The clients that we had, the customers were continuing, had continuing requirements. We had enough backlog to keep us going. The systems were cheap enough so that the customers would take all they could get. We were trying to build up our production just when the venture capitalists were cutting us off.

Daemmrich: Who were some of the clients?

Hyatt: There was a company that had a photo machine being built in Japan, DS America; their American affiliate was buying our control systems to put into their photo plotters. Interesting enough, to compete with a quarter of a million-dollar Gerber [Scientific] photo plotters. DS America sold them for one quarter of the price of the Gerber machines. There was another one called Given International. They had lathes and milling machines and a whole range of other machine tools. They wanted to put our computerized controls on those machine tools.

Daemmrich: I am going to suggest we take a pause here.

[Recording Paused]

Daemmrich: We're back. Talk us through the initial post-Micro Computer experience. The company, whatever term you want to use, is taken away, is dissolved, is closed. You walked away with your own intellectual property. How many patents had you submitted at that point, or was it the one big patent?

Hyatt: It was primarily that one patent application that had been filed that was still pending, and the non-patented versions of it. I then developed the skills to file my own patent applications and I drafted new ones, not only on what I had done at Micro Computer, Inc., but also the extensions of that. I still had my home laboratory and was building up and checking out

projects, technologies and hoping to get venture capital financing to get them to market.

Daemmrich: Describe your home laboratory. When did you first build it out? What did it look like?

Hyatt: Initially it was just a table in a back bedroom. I checked out the Micro Computer with what now is a really primitive thing. A 3-inch Tektronic oscilloscope with a single trace.

Daemmrich: That's how you would test your breadboard?

Hyatt: Yes, and troubleshoot it. Then it grew to a five-trace oscilloscope and a lot of other test equipment and associates helping me with it. More recently, in the early 1980s, I built up an exotic image processing system. Interestingly enough, I showed videos of it and circuit boards in a court proceeding.

Daemmrich: How did you go about learning to do your own patents? Did you take a course on that, or was it self-taught entirely? How does that work?

Hyatt: I got the document called the Manual of Patent Examining Procedure, the MPEP. I read it and it seemed logical to me. I took the Patent Office tests and passed them, and I have been registered for more than 35 years now.

Daemmrich: You are a registered patent agent?

Hyatt: Yes. And a member of what some people call the Patent Bar. But I am not an attorney.

Daemmrich: You don't argue a case in court, but you can submit your own patents?

Hyatt: Actually, I have argued my cases in court. I have argued and won a lot of appeals to the Board of appeals, in the Patent Office. Just recently, I testified at length in a patent litigation against the Patent Office and the judge ordered three of my patents to be issued.

Daemmrich: What year was it when Micro Computer, Inc. was finally closed?

Hyatt: I think that was end of 1972. Just a very short while before Intel published their ads for their MCS4, their calculator chip.

Daemmrich: Right. Did you consciously say I am now an independent inventor? Or was it really, I love what I do and I am going to do it from home and I will figure out how to make money as it goes? Are you worried about it after it closed or feeling pretty confident?

Hyatt: I was pretty confident in getting it refinanced and the reason was that a lot of money had been spent, both seed money and the investors' money for developing the numerical control products and the Micro Computer. I was all set to go back into business, tap some of my old customers, and get moving again. Unfortunately, as I recall, that was the start of a recession. Things didn't work out, and by time things got better in the economy, my recollection is that the computers – Micro Computers had started to take over. So rather than having no competition as I did in 1969-70, the field was flooded with competition because my old investors were producing Micro Computers big time.

Daemmrich: That's really interesting in terms of the timing. In 1972, right in there is the first oil crisis. Huge economic shock in the United States. Deep recession starts as well as an inflationary period. Famous stagflation period through the 1970s. As the economy gets better, which it is very slow to do, by then you are already beginning to see the first personal computers. For example, the Altair. Did you get one of the early Altairs to tinker with at home?

Hyatt: I started out with a S100-plus computer that had a CPM operating system, because I needed more.[2] That worked out really great. I also did a lot of early work on artificial intelligence, and I have patent applications pending on my work in that timeframe. There is just a whole bunch of technologies that were very primitive at the time that I did a lot of work on and have patent applications pending.

[2] The IMSAI 8080 was the second S-100 computer made (the first was the MITS Altair 8800) and was sold starting in 1975. It was card and bus-compatible with the Altair 8800, but considered better engineered.

Daemmrich: In those years, how did you pick what problem to work on? Was there a pattern to the day, did you get up, read a technical journal and say there's a gap, I am going to solve this? Or just one thing led to the next.

Hyatt: I have to review my materials to refresh my memory on that, there were a whole bunch of different technologies. I did a lot of the early work on what's called CDMA and spread spectrum, I have a lot of patents already issued on those. Some more advanced versions of that are still pending.

Daemmrich: What got you interested in CDMA? That's a way to have a cell phone talk to a tower, right? Signals going back and forth, finding a common language?

Hyatt: There is some old technology called spread spectrum. We used that in the deep space instrumentation facility to talk with spacecraft far away. I realized that was applicable to communications, and a whole bunch of other fields. So I drafted a 500-page patent application, very large by that standard. Got about five patents issued on it. You could say I did a lot of the – I have patents, expired patents on a lot of the early work on CDMA communications. Which took over.

Daemmrich: They still are selling CDMA phones. When you had that patent, did you license it to companies like Qualcomm?

Hyatt: No, those patents were not licensed. There was a portfolio of 22 of my patents that Philips licensed for me, a multinational company. They did a marvelous job licensing that. But those were different types of technologies.

Daemmrich: I will come to that in a couple of minutes. Say more about, picking the projects when you were in this independent phase. After Micro Computer, but before the 1990 patent issued.

Hyatt: That was a very interesting time for me. You might say those people did me a big favor by taking Micro Computer, Inc. away from me because it relieved me of the business requirements and let me be more thoughtful. I have got patents on everything from liquid crystal displays, LED illumination controls, to CDMA communication. These are all expired

patents now. The Patent Office cut me off about 20 years ago, and I am still struggling to get new patents issued. The old patents, I've got about over 70 patents covering these technologies even including liquid crystal displays.

Daemmrich: You also developed, was it in the 1980s that you began doing work on image recognition and converting an image into data that can be analyzed?

Hyatt: Yes. I started the work in the 1970s and filed patent applications on it in the early 1980s.

Daemmrich: You were talking earlier about how that worked, what it did in terms of distant images.

Hyatt: The problem we have in inventing is when you come up with a new technology, it opens all these doors that are very exciting, but it also provides a whole raft of new problems that you have to solve. Therefore, it is very, very challenging. It is the old adage; necessity is the mother of invention. You have this very exciting invention and all the applications for it, but you have these problems you have to solve that initially seem insolvable.

Part of the inventing technique is how do you deal with that? Because if you just say that is impossible, give up, it won't work because of this thing. Or if you keep working on it and working on it, I believe that eventually you will come up with solutions. Not immediately. Many of mine have taken a moderate amount of time. But I also have found out that my mind and probably all humans' minds work on a background mode of operation, subconsciously. If you have an interesting problem you're working on and thinking about, even after you go off and do other things, that your mind keeps working on a background subconscious level. I've done experiments on that and verified that it works. That's where the aspect of Eureka, I found it, comes in. You started your mind working on it and it has been working on it subconsciously and all of a sudden it pops into your conscious after it has found its solution. If you believe in that idea, which I believe I have proven at least to myself with experimentation, what you want to do is live your life by counting on

your subconscious being an important asset of yours and learning how to get your subconscious mind to work with your conscious mind, both for inventing and for your daily lives.

Daemmrich: How do you link your subconscious with your conscious? Some people, it happens in the middle of the night. They wake up and jot it down in a notebook.

Hyatt: It works while you're asleep also. Your subconscious mind is something that is not very clear but I'm sure it works, and I'm convinced it works and it is very powerful. My experiments have shown things like music, which I love, things like music lower the threshold of your subconscious mind and therefore by listening to music you are dulling the ability of the subconscious mind to help your conscious mind.

Daemmrich: Interesting. Was there a moment you can recall where you said, you know, I have become an independent inventor?

Hyatt: I never thought of myself as that. The independent inventor came up in my working with Congress in the 1990s relative to the GATT legislation and other patent-related legislation. It was necessary to educate Congress and the Patent Office people I was working with that independent inventors can be very valuable. I was concerned that they were being prejudiced against and discriminated against and held in contempt rather than with respect. So, it is necessary to discuss with them what I called the independent inventors at the time. At that time, I guess by association, I was one of them.

Daemmrich: In the 1980s, even in the early 1990s, how did you see yourself? What did you think you were doing? Just problem solving or if you met somebody you hadn't met before and they said, "Gil, what do you do," how would you answer? Maybe that's a very Washington D.C. thing to ask.

Hyatt: Several different approaches. If it was in a professional form, I would say "I'm a consultant, mostly for the aerospace industry." In a resume type of form, I would say, "I'm an engineer, scientist and inventor." It all depends on the context.

Daemmrich: Identity always does. That's a really interesting point.

Klotz: I was struck by your description about the subconscious, as if that is the scratch memory and it gets hardened. Given that discussion and your conception of a computer processing and memory, do you see a connection between human and computer processing and memory and if so, what is that?

Hyatt: I do a lot of my testing and observations from my own mind. And that is where I learned about the subconscious processing and other things. I am totally thrilled with human memory. I have no way of duplicating it.

I think of things, and everyone does, I believe, in a virtual way. I picture things but I don't see a picture. My mind sees a virtual picture. I don't hear words. But I have thoughts and information and things of that nature, and I know it comes from the mind, I don't know how it is stored. I know things that have happened 50 years ago. But I know it by sort of seeing a virtual picture of it, as other people do. And I have no idea how to duplicate that. I am really thrilled with it and unable to really understand how.

Daemmrich: That's memory, but how about the processing of calculations? The way a human does that compared to how the computer you invented does it?

Hyatt: I haven't thought about that, but computers are very structured, they are very simple minded, and to the best I can answer that without really thinking about it is the human mind is much more complex and uses different processes.

Daemmrich: You said you did a variety of consulting into the 1990s. Who was hiring you? Can you give me an example of a project?

Hyatt: Teledyne hired me back as a consultant. I needed to support my inventive work and technologies and support myself. Teledyne hired me back, and Hughes did. I worked for, I spent a lot of time working for Interstate Electronics on various projects, such as a submarine-launched ballistic missile system. That was extremely interesting to me because I kind of took charge and they let me do it. I got my own computer system,

developed the software and gave them a finished product. I found that to be very exciting. How to test out this submarine-launched ballistic missile system. That got into Kalman filtering and a whole bunch of other things that I did advanced work on.[3]

Daemmrich: What did you say about filtering?

Hyatt: I have done a lot of work on digital filtering. One type that we used in that submarine ballistic missile was called Kalman filtering. It's a really exotic technology. It allows you to develop data and to put it simply, develop a database and use it to extrapolate out the future.

Daemmrich: When I hear filtering, using a computer, I think we are going to take everything that is pink and put it in this column and everything that is blue in this column. That is maybe sorting not filtering. What is computer filtering and tell us the more complex version that is Kalman filtering?

Hyatt: That is a system where, normally a filter is a resistor and capacitor on a wire that filters the signal in some way. In a very simplistic form. Kernel filtering is used because you have to detect – if you want to detect a tank in an image or sharpen the edge in order to see it better or something like that, you have to look at, not only the pixel you're working with but also the pixels around it. That is a very, very helpful step. But then if you want a big kernel to do some really good work, that has enormous amounts of computational processing.

For example, I work in real time. Many other people have great ideas but, for instance, it takes a day of computing to get a frame for a movie. That is cheating. I do it in real time, you do it 30 or 60 times a second, not 24 hours per frame. With that, I do my digital filtering in real time which means when you get a large kernel, that takes a lot of processing and you've got to come up with some innovations. Same with artificial intelligence. You say let's program something and see what happens. But I'm looking at it in real time where I filter the information coming in so it is suitable in real time, so it is suitable for artificial intelligence. Then I have to feed it back in order to adjust it. It is an iterative process. It's not

[3] Kalman filtering is an algorithm that provides estimates of unknown variable(s) given a set of measurements observed over time.

simply, you plug in some numbers and let the machine come up with a better number. No, that's trivial. I do it in real time with feedback and filtering, so you get information right now that is really meaningful.

Klotz: Technologically, many of these things relate back to that iterative processor and more and more complicated transforms. They seem related under a kind of conceptual umbrella.

Hyatt: It merges together, and the solutions are relatively complex in that they don't use just one concept, one technology. They are a merging of variations of multiple technologies. The more you have in your mental database, the more innovative you can be in coming up with novel solutions with complex interrelationships. Such as the incremental processing in combination with the kernel filtering in combination with artificial intelligence techniques.

Daemmrich: How do you define artificial intelligence? When you think about it today, compared to 20 years ago, 30 years ago, is it the same way you were thinking about it then, or did you have something else in mind at that time than you would today? That's a convoluted question.

Hyatt: The thought process evolves based on what you did in the past. It's all one continuous process. So, what I did in the past, I defined but I now have improved techniques.

Daemmrich: What is artificial intelligence that is different from computation?

Hyatt: Assuming that you know what the artificial intelligence [AI] algorithms are, what you need to do is adapt the inputs to better facilitate the AI processing and then I believe, in my work anyway, I use feedback to continue to adjust the filtering to give you better inputs so the algorithm can give better information. Therefore, it is a combination of transformation, filtering, and AI and then feedback, all in one combination. All in one loop.

Daemmrich: Looking back to the consulting you did for Teledyne and some of the others, did they say, Gil, you're doing so many consulting projects, how about you come back in, and we hire you again? Or were you the one

being adamant and saying, I want to be a consultant, I like the independence.

Hyatt: It never came up that way, because when you go in as a consultant, it is for a specific project and a specific length of time, with the idea always that you are going to be leaving after that's done. So if it was any overtures of that I was aware, I was not interested in it. That would get turned off early on. I needed to have the time and freedom to do my own research and development.

Daemmrich: The work you do at home, is there any particular time of day you find productive? I want to get more feel for the invention style. Some inventors do a lot of sketching lying down. Others said they do it from 3 to 5 in the morning. Is there a pattern to it?

Hyatt: The pattern is forever. Continuous, never turn it off. It takes – when you're interested and hot on the trail and have problems you have to solve, you just working away well into the night. Get up in the morning and back to the computer and the drawing board.

Daemmrich: So did you also have periods where you took a break between major areas you worked on?

Hyatt: I often take 5-microsecond breaks. [Laughter]

Klotz: And as the computer gets faster, those breaks get shorter and shorter.

Daemmrich: Or at least more precise.

Klotz: You mentioned that music and other inputs compete with the creative work of the subconscious. Have you found things that do the reverse, promote the kind of subconscious connections that show up?

Hyatt: Yes. Actually, the conscious and the subconscious merge together a little bit. It is hard to figure it out because it is all mental. When I get absorbed in something, I'm totally absorbed in it. Great powers of concentration. I'm really good at concentrating on something and hopefully getting it done.

Daemmrich: In 1990 the patent, of course, you are probably most famous for issues finally. The '516 patent, people call it, right? How does that work? The PTO somehow notified you in advance it is going to issue? Or do they just mail it to you, so you get it 10 days after they issued it?

Hyatt: You get a notice of allowance and an issue fee due.

Daemmrich: That comes before it is officially announced?

Hyatt: That's when the case is allowed, and they send you a notice of allowance. Then you pay the issue fee and then it proceeds to publication and issuance. So, you have advance notice up to I think 6 months with extensions of time.

Daemmrich: So, they give you time to pay the fee before it officially issues?

Hyatt: Yes, and often you can kind of clean up the application, make minor amendments, things of that nature. And maybe you want to change the title and you work with the examiner on that. So, you know it is going to issue and you've got an opportunity to do some cleanup on it.

Daemmrich: There's a lot of publicity around that patent and you suddenly were speaking at trade shows. A number of journal articles we've seen, really praise this patent and point out how remarkable it is. How much did that change your life in one year?

Hyatt: That was a concentrated effort keeping up with the aftereffects of the '516 patent issuing. Then Texas Instruments came in with an interference proceeding. That took a bunch of years in the PTO and the court.

Daemmrich: Philips took a license though before Texas submitted that suit?

Hyatt: They didn't believe the suit had any merit. I was well past that stage anyway with my new technologies.

Daemmrich: How did you find that, suddenly being in the limelight? Was any part of it fun, or – life changing at some level?

Hyatt: Yes, it was good to have the attention and it stimulated a lot of individual inventors who realized that it wasn't a lost cause.

Daemmrich: Did you have independent inventors coming to you, asking for advice?

Hyatt: Yes, I still do.

Daemmrich: What advice do you give them? Does it depend on the case, or do you have a general statement?

Hyatt: It depends on the case but in general I tell them that individual inventors are highly discriminated against by both the Patent Office and the profession. And that to a large degree don't waste your time. The days of Edison are gone.

Daemmrich: That's not encouraging.

Hyatt: As I said in one case, it was a podcast, I think I ended it with, Edison would turn over in his grave if he knew what was happening.[4]

Daemmrich: With Philips taking the license, they were the first to license the '516 as well as a host of others?

Hyatt: Yes, they did more than that, and they were so intrigued by it, they said they could license it to others, so I gave them an exclusive right to sub-license it. In fact, they got numerous sub-licenses for hundreds of millions of dollars.

Daemmrich: So the Sony, Sharp, Toshiba, these other companies were licensing from Philips from you?

Hyatt: Yes. When you have someone like Philips, doing what they did and succeeding big time, you do what they ask you. That seemed like a small concession.

---

[4] *Clause 8: The Voice of IP*, Episode 12, Interview with Gilbert Hyatt, July 16, 2019.

Daemmrich: It also is a remarkable thing for a large multinational corporation in how it works with an independent inventor. There are so many more stories on the other side. Filing lawsuits or just taking ideas and ignoring the inventor.

Hyatt: Yeah, it is very unusual. I had a mentor in Philips, Mr. Hammersma, he ran a division of Philips and he said, he has confidence in this, and he will take responsibility.

Daemmrich: Did he seek you out or did you have, had you hired someone to do the licensing on your behalf?

Hyatt: Philips was talking to me from a short while before. Therefore, when he came into the picture, I was already talking with the Philips people. And he sort of took charge.

Daemmrich: It was really directly between Philips and you, right? You didn't have a whole legal team.

Hyatt: I had an attorney, Greg Roth, the gentleman who filed the Micro Computer patent in 1970. He was helping me.

Daemmrich: All right.

Klotz: Why was Philips wanting to keep a low profile, for fear of backlash or to support you?

Hyatt: Their motives are sensitive, so I can't talk about that.

Daemmrich: Talk us through the experience of this patent contest. Did Intel or Motorola join with TI?

Hyatt: On the interference? Only Texas Instruments.

Daemmrich: Was that your first time having to go through the full deposition process?

Hyatt: No, I had been in several other lawsuits in the preceding decades. But the interference in a very specialized thing, it really isn't a lawsuit. It is an administrative proceeding.

Daemmrich: What exactly were they claiming as interference?

Hyatt: They were claiming that I couldn't get the benefit of the 1970 filing date because it didn't describe the single chip variation. Eventually that is what the court decision was on, the single chip version of it. They took the single chip claims away. But the Micro Computer claims, not single chip ones, were left.

Daemmrich: So the integrated circuit technology was all in place?

Hyatt: As long as it wasn't single chip, it was in place.

Daemmrich: Right. Broadly, if you think about this early 1990s, as the license revenue starts coming in, did that change your life and in what ways?

Hyatt: It did in that it permitted me to get help and I hired engineers and patent attorneys and others. Philips was a big help because they didn't charge me, they were working on a contingency for sub-licensing. They essentially gave me carte blanche to work with them and essentially give me patent attorney advice and things of that nature. It did change things considerably, escalated my work resources considerably.

Daemmrich: So how many – at the peak, how many people had you hired, other engineers and the like?

Hyatt: I'd prefer not to discuss that.

Daemmrich: Fair enough. Philips – was it the U.S. division, or was it out of the Netherlands?

Hyatt: It was out of the Netherlands from the top level, but it was through one of their U.S. affiliates called U.S. Philips. There also was North American Philips who were the people I worked with mostly, but U.S. Philips is the actual licensee.

Klotz: Your mentor at Philips, did that precede your connection or did it come through your connection?

Hyatt: It came through the connections. He decided that he – Philips should take a license and that he would sub-license my patents. That's what he did.

Daemmrich: That's phenomenal. There are stories from other independent inventors of IBM being a company that would really pay attention to independent inventors and license patents, while other companies would just contest, contest, contest. It seems like the big companies – some of them go very much in the mode of, "that's the real deal, let's license it because we are in manufacturing, not sitting in court." Other companies are much more of the mindset, "let's litigate this." Has that been your experience?

Hyatt: Almost entirely. The companies do not take licenses from independent inventors, even if they have attorneys working for them. More recently, I have been talking with independent inventors who have really great inventions and patents issued. What happened is Michelle Lee took over the Patent Office, she is an ex-Google person, and the PTAB invalidated patents. A lot of associates of mine had their patents invalidated by the PTAB.

Daemmrich: Yeah, I know there's at least one significant patent reform bill making its way around Congress. To be determined whether that goes through.

Hyatt: What is really important, the U.S. Supreme Court has recently come down with something that essentially says that the relationship of the PTAB and patent judges is unconstitutional. They are presently under the trials and tribulations of that, trying to work that out.

Daemmrich: PTAB is an administrative, not judiciary entity, right?

Hyatt: It is a complex thing that I don't profess to know. But it is very interesting because I just got one of my patent applications through to the board, which the Patent Office has been preventing me from doing so for 20 years. Now that the channel is open it is going to be very interesting to see what they do. In addition, I had three or four patent applications

before the federal court. And the judge ordered that the PTO issue three of them. That's presently being appealed by the Patent Office. It is supposed to be the entity that issues patents, and they say, we don't want to issue these patents.

Daemmrich: But they also don't want to say why not, right? They issue patents but also decline them if it doesn't meet the threshold for novelty, or if it doesn't meet one of the legal thresholds?

Hyatt: That is one of the problems; the information I have is that they admitted my patents were patentable. They met the patentability requirements but through secret processes called SAWS (Sensitive Application Warning System) and others, they refused to issue my patentable applications.

Daemmrich: It sounds like SAWS originated around 1994. The PTO says it is about sensitive matter patents. One interpretation of that would be, well, they don't want to issue patents on bioweapons, for example, especially after 9/11. They don't want to issue patents on devices for terrorist activity or something. You could imagine that kind of sensitivity.

Hyatt: No, you can't and let me tell you why. The Patent Office is charged with enforcing the law. There is law. When you say the law is insufficient and I am going to add to it, that is unlawful. If the patent is patentable, if it meets the laws, then they have to issue it. And if they want to change the law, they have to go to Congress. They can't make a secret program. I have thousands of pages of their secret information, their secret documentation on SAWS, I got through FOIA [Freedom of Information Act].

Daemmrich: When did it become clear to you that your patents weren't being actually evaluated? Does it predate 1994? You've mentioned a couple of times, it sounds like even in the late 1980s and early 1990s you began to have this suspicion. Or is it since the mid-1990s?

Hyatt: I was very disappointed when they withdrew four of my patents from issue back in 1997-1998. And then a patent examiner confided in me that I was blacklisted. I have learned recently that all of my patent applications were put under this unlawful secret SAWS program and that

there are many different things they did that are unlawful to keep my patents from issuing.

Klotz: The process of focusing on what the Patent Office is doing or not doing, do you feel it has been a resistance to your creativity or has it fueled your creativity?

Hyatt: From everything we have been able to discover from back in the mid-1990s, they wrongly cast me as a submariner, said no more patents for Hyatt.

Daemmrich: Wow. If I could maybe ask Sharon's question a different way. As you've had to deal with US PTO this way, a lot of very complex litigation, you've had to bring lawyers in who were extremely specialized in figuring out the SAWS program. Has that stimulated you to be more inventive in any way? You could imagine a scenario where this is so frustrating you just quit. I can't beat the government. Forget it. I am going to go live on beach in Tahiti. But you continue to have ideas and continue to submit patents. Are you filing the patents to just keep forcing them to pay attention?

Hyatt: No, I haven't filed any patent applications in 25 years or so because they weren't, they stopped issuing the patents. There was no purpose in doing that. I think that is really bad because they are depriving the public of all of these inventions which I now need to keep as trade secrets because they won't issue me patents. Once we get the problem solved and I get my patents issued, I will get the venture capital to then get those products to market.

Daemmrich: It is interesting, you say secure the venture capital. You didn't have the best experience with your backers, but you still see them as a really successful system overall, or viable?

Hyatt: It is the only game in town, so then you've got to take your chances. The American way is the big companies do the technology with minor improvements. The radical new ventures and independent inventors, the start-up companies with new technologies, are the ones that advance the technology and that help improve America's competitiveness. They need venture capital. Venture capital won't invest or is reluctant to invest

without patent protection. And if the Patent Office will not protect the inventions, it is futile to invest in them because the big companies will just walk away with the technology. The big companies own the markets and therefore without patent protection you can't compete with them. So to keep America competitive, you need a fair patent system, and we don't have a fair patent system. We have a corrupt patent system that is very heavily oriented towards the big companies and supporting them, maintaining the status quo.

Daemmrich: That happened in part through a couple of legislative changes, but a pretty important one was 1995. The GATT to WTO. I'm curious how you see it. Whether the changes were right or wrong and what impact they had. The first to file versus the first to invent, for example.

Hyatt: That is counterproductive to the American system because that lets a company find out what someone else is inventing and get a patent on it when the true inventor is left out in the cold. The old system was very well-thought out by brilliant people, and it has helped America maintain its leadership and strengthen its leadership. Now patents are being held in contempt and the patent system seriously weakened. Independent inventors, from where much of the breakthrough inventions come from, and small, innovative companies are being discriminated against and held in contempt rather than respected.

Daemmrich: The first to file is just easier for a big company because they have more lawyers who can write a patent application faster?

Hyatt: Yes. There are many things. One is that they can get to the Patent Office sooner. Second, a lot of entities don't patent right away. The universities have a requirement to publish or perish. Once they publish it, once the technology is indicated in a conference or something, then a company can say, that is a great idea, rush out a patent application and beat the true inventor to the Patent Office. The true inventors are fighting their own technology in the marketplace then.

Daemmrich: How about the 20-year versus 17-year? I don't know how that would help one side over the other.

Hyatt: They got that passed through false information. They argued to the Congress that the average pendency was 17 years and therefore 20 years from filing is actually giving more time. The misinformation is that the trivial patents, the ones that issue right away, had an average of 17 years [patent term]. The important patent applications take a lot more prosecution to get them issued. If it takes 10 years to issue an important patent, or 15 years, or 25 years as in my case –

Daemmrich: Then your term was zero, maybe even a negative 5 years.

Hyatt: Something we sued the Patent Office on is the expiration of two of my applications because they were filed under the 20-year term and the Patent Office delayed for more than 20 years, so they expired before they could be issued or before they could be resolved.

Daemmrich: You mentioned in passing that you are now fundamentally keeping new ideas as trade secrets. Without getting into any of them, do you write them up in the same way as you used to write up a patent application? How do you keep records of your new ideas?

Hyatt: That's confidential information.

Daemmrich: Fair enough. A couple of broader questions. Life perspective, really. The revenue came in and helped you in the work you were doing. Did you spend anything on yourself?

Hyatt: No, I am a frugal guy. I spend a lot on my technologies and the efforts to get the patents issued. I don't have the time to travel or do frivolous things. Do fun things, let's say. No. Actually, getting money from the licensing just caused me to put more time and effort in because I could get more done with more people and work with them.

Klotz: Is that what is fun for you?

Hyatt: Yeah, to a certain degree. Inventing is a big puzzle. You're working on a puzzle trying to solve it. It is not fun like skiing or diving is or hiking or climbing. That is a different type of fun. It is very exciting.

Daemmrich: Do you have any hobbies?

Hyatt: Yes, inventing. [Laughter] No, I used to love various types of sports, particularly skiing, diving, hiking, and climbing.

Daemmrich: The intensity of it, especially the litigation?

Hyatt: I am taking on the Patent Office. I'm learning now that they did what they did at the highest levels. How can an individual deal with an agency that in secret at the highest levels, decided that they're going to destroy the individual?

Daemmrich: The other case you were deeply involved in had to do with your move from California to Nevada. That went to the Supreme Court.

Hyatt: Several times, yes. When someone succeeds like I did, the big guys attack. California wanted their share of my royalties and the Patent Office wanted to cut me off, and others for other reasons attacked. I won big time against California after dealing with them, after fighting them for almost a quarter of a century, they were found to be wrong--I was a Nevada resident when I said I was.

Daemmrich: On the tax issue, when a case goes to the Supreme Court, at that point you don't have direct involvement, right?

Hyatt: Yes, my attorneys are arguing the case. I won a unanimous decision against California at the U.S. Supreme Court. I also won a unanimous decision against the Patent Office at the Supreme Court.

Daemmrich: Did you go there and watch the Supreme Court argument? The oral argument.

Hyatt: Yes. I worked with my attorneys before their oral arguments on that.

Daemmrich: So you were fully involved in the case at that point. Were you asking the attorneys questions, they were asking you questions?

Hyatt: I worked with them.

Daemmrich: You're not trying to become a lawyer, although you seem almost to be there – maybe not by choice. You are probably better versed in administrative law than 99 percent of the country. [Laughter]

What would you like to achieve yet, thinking broadly?

Hyatt: As I said, what I would like is to have the federal agencies obey the law. Do what the law says. Don't abort the law for bureaucratic, illegal processes.

Daemmrich: What about in terms of what we have seen happen with computing? Where would you like to see that develop next? Or what do you anticipate happening, maybe 20 years from now? What will my phone do in terms of image processing, or my computer do in terms of calculations?

Hyatt: The components will certainly advance. What is most interesting to me are the things that will change the society. It will be a totally different society. The next generation will be as – they will not understand how our society is today because they will have different tools. For example, I evolved with that. In the old days, for research, I would go to the library and plod through tons of paperwork to find things. Now I go to my computer, punch a couple of keys, and I have the world's knowledge at my fingertips. The world is changing drastically.

Daemmrich: Any concerns that the next generation doesn't grow up doing invention in, to some degree, a physical way? You designed a chip and you thought through the concept, but then you built the breadboard. A kid today might not have the skill to do that. Everything is on a screen. They are never soldering.

Hyatt: We've got two different layers there. As we discussed, we would like to have the world more innovative in its thinking but that doesn't mean they have to make inventions. Just living with an innovative attitude can really enhance the quality of life.

But then there is the second one, those people who will make the great advances. We don't need 100 million of those people. We need fewer of those people. There are brilliant people up and coming who are able to do that. Brilliant people. I have the honor of knowing a few of them. The problem is, one of the major problems is, they cannot do what they are destined to do without government support. And if they can't get patents or venture capital, if they are discriminated against and held in disrespect, they won't do what, they won't meet their destiny and America will not be able to compete. It's very important to reengineer the Patent Office, to use – among others, to respect rather than be contemptuous of the inventors, whether they are individuals or not. So that they can meet their destiny and come up with the technologies we need to advance our society.

Klotz: Do you think that push to change the Patent Office comes from there being more inventors? What is the force?

Hyatt: There is no force because the Patent Office has tremendous power. An agency that has their way with people and they have a culture that is counterproductive to innovation. So from my insight and the tremendous amount of documentation and other material that I see, it is a losing battle. They are going to cause, continue to cause the loss of America's competitiveness and the other countries that are much more supportive of innovation are going to overrun us unfortunately. You know who those other countries are.

Daemmrich: So the bright ones you do encounter, especially if they're young, what advice do you give them, aside from the patent issues? Advice about inventing.

Hyatt: Do the best you can and hope that the country wakes up and lets you achieve your destiny.

Daemmrich: What have we forgotten to ask you?

Hyatt: Could we take a break?

[Recording Paused]

Hyatt: [Part of the tensions regarding the USPTO come from the fact that] inventions cause additional applications [uses] but also additional problems. Some of my best inventions are solutions to problems caused by other inventions. The PTO criticizes me for having a 500-page patent application. Well, but the initial invention is supplemented by solutions to all these problems that were caused, you have to explain those problems and the solutions. You have a better mousetrap; you have other applications you can use it in. Now you can use computers in applications you couldn't afford to do it before. So how will you now use a computer in those type of applications? That brings up other types of inventions. I was working on artificial intelligence, and I needed feedback and transform processors and all of those were problems that had to be solved that now are innovative features.

Daemmrich: Some may call it a virtuous cycle.

Hyatt: You folks are psychic. You have asked all the questions and I would have to think about it more to come up with some others.

Daemmrich: One last fairly broad one. You are far too young to answer this, but how do you want to be remembered?

Hyatt: Are we recording?

Daemmrich: We are.

Hyatt: I don't care about being remembered. Why do I want to be remembered? I want to do what I have to do. What I have been designated to do. I love certain things. One thing I love is America. I will tell you why. My parents came from places that were horrible ethnic problem areas. Really horrible. They came to America, and they had a good life, and they were good citizens. They gave me a good education and now I have a chance to pay back. And I want America to be – continue to be great. I am concerned. So, I would much rather have the country and the technology and the quality of life and all be better. I don't care about being remembered.

Daemmrich: When you think of America's invention history, there were the 19th century independent inventors, and then the rise of corporate labs. There were independent inventors like you who sustained it. The patent issues we have talked about a bunch of times. What else keeps this country a place where inventors invent?

Hyatt: I wrote an article for Congressman [Thomas] Massie. It essentially said what everyone knows but in a much different context. That Congress passing laws only takes a little bit of ink, it doesn't take money. We are not looking for grants. If you pass the right laws so that you can make a profit from inventing then the inventors don't particularly want the profit, but the venture capitalists do. And the venture capitalists will flood to finance the inventions because they want to make money. The inventors are then relieved of a lot of the unnecessary work in trying to support themselves and their inventive processes. They can be free to do their invention. Also, venture capitalists are much better at choosing the winners than government is. So, all government has to do is, as I put it, write the right laws to encourage and reward invention and our capitalistic society will take care of the rest. All it costs Congress is the ink and the paper to write the right laws. What the inventors need in the future and what America needs is rewarding of innovation so that venture capital will fund what we need to keep America great.

Daemmrich: Do you feel optimistic that the changes will come? Depends on the day of the week, maybe.

Hyatt: From everything I see, it is going from bad to worse but that is from my perspective. The Patent Office, after they have delayed for 25 years, are even more embarrassed than they ever were about issuing my patents. Therefore, they are almost, if I can go to the extreme, fanatical about stopping me from getting patents. I am very cynical about that. The fact that they hold inventors in contempt rather than with respect I think is a culture that is not easy to get around. I am very concerned about all of that.

Klotz: You mentioned your family. Are your children inventive, is it an inventive family?

Hyatt: They are hard-working, they are good people. They keep out of trouble. I am very proud of them. But they are not inventors. My son is an IT specialist. I am proud of him; I am proud of all of them. Thank you for asking.

Klotz: We all can make a distinction between being inventive and being an inventor. One way to be inventive is to be an inventor but that's not the only way to be inventive.

Hyatt: That is very important because people can and should be inventive in their daily lives just in doing their daily lifestyles. Inventiveness would help them be more efficient and happier, I believe.

Klotz: You mentioned that one of the pluses of an innovative culture is that innovation helps people in their everyday lives. How does being innovative help in everyday life?

Hyatt: Rather than getting set in your ways, being alert to what you're doing and being sensitive to better ways to do it. I think that it would be very helpful if people would be more alert to looking continually for better ways to do things in their daily lives as well as in technology.

Daemmrich: Gil, this has been fascinating. Thank you.