

GERALD COHEN

ORAL HISTORY

COMPUTERWORLD HONORS PROGRAM

INTERNATIONAL ARCHIVES

Transcript of a Video History Interview with Gerald Cohen, Founder of Information Builders

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DSM: Okay, today is October the 20th 1998; this is an interview for the permanent research collection for the Smithsonian Institution's National Museum of American History. We're interviewing Mr. Gerald Cohen, President and Founder of Information Builders, Incorporated. I am Dan Morrow, the Director of the Computerworld Smithsonian program; my colleague in this interview is a James Bailey, author and a scholar, and an early member of the management team at Thinking Machines. Before we begin the interview, for the record, this will be part of the permanent research collection at the National Museum of American History, and as part of that collection, will be made available to the public, unless Mr. Cohen specifically requests that parts of the interview be embargoed for a period not to exceed 25 years. Formally, you may stop at any time, stop the interview at any time if there are any questions that you'd like us to ask, stop us and we'll ask them. The purpose of this interview is to capture for the Smithsonian's archives, since the background character and the career – the men and women who are leading the information technology revolution. It's an honor to interview you, Gerry Cohen. We'll begin at the beginning. If you would start by just talking about when and where you were born, your parents, your brothers and sisters.

GC: I was born in Manhattan, New York City. I have lived there a good part of my life. I guess I'm classified as a Manhattan Indian. I'm one of the few people who was actually born there. I went to public school there. I went to high school there. I went to college there and I went to graduate school there. So, that's why I call myself an American Indian.

I grew up west side of Manhattan. My parents were both born in America. They weren't immigrants, but they were children of immigrants. I was born in 1935, right during the Great Depression, and I think my parents were traumatized by that Depression. We don't have a lot of information about the Great Depression. It's one of the sadly forgotten incidents in American history, it seems to me. But you can imagine a whole generation of people coming out of it with a mindset that affected everything they did in their lives.

So as I grew up in New York City, I went to local schools, local colleges, and then I went to Columbia University for graduate school.

DSM: What did your dad do?

GC: He was originally in real estate. In the early thirties, he and his brothers were in the real estate business in New York City. That business got wiped out late in the Depression. They hung on for a long time. Not everybody got hit in 1929. These guys got hit in the 30s, 1939. By 1939 he was bankrupt, and he had to go back to school. He went to NYU and became an accountant. Then he went out and got a job for fifteen dollars a week, which was enough in those days to pay the bills, believe it or not. That meant my mother could stay home. This was during the time when one parent could go to work and the other could stay home...for fifteen dollars a week. I didn't think of being poor or rich in those days. We were probably as poor as you can imagine, but we had no idea that we were poor. We probably just didn't do certain things. If you didn't have a television, you didn't know what to compare that to. Today we know television makes a big difference. We can see the rest of the world, and how other people lived.

DSM: Tell me something about the house in which you lived, and your last memories of home.

GC: My earliest memories were from about three years old, but there are more clear memories from the time when I was a five-year-old. I clearly remember going to kindergarten the first day. I think going to kindergarten is a great traumatic moment for kids. Probably everybody remembers their first kindergarten day. I'm sure you remember that. It was only a half-day in those days. You went at five-years-old and there was a half-day, and usually your parents were there to take you home. It was a neighborhood school, only a block and a half away. So for a year I suppose my mother took me there and then after that, I would go myself with all the neighborhood kids. In those days New York City was a very neighborhood kind of place. I lived on 110th Street, and I was friendly with 110th Street kids. Then there were 109th Street kids, and 107th street kids, and 14th street kids. We had Columbia University further uptown, and we knew they were the Columbia kids. Of course they got all mixed up in the classroom. So you knew you had friends on 104th Street, and 103rd Street. We were very street-oriented - tribal.

DSM: One of the questions I really like to ask in these interviews is, were there any early hints when you were just a little guy of what you eventually would become? Do you remember learning to read, or riding bikes or any of that stuff?

GC: Yes, you know it's funny. We didn't have computers. Nobody dreamt of computers in those days. So it's not like you could be a doctor and say, "Well I grew up to be a doctor because I took care of everybody," because I didn't.

But I do remember when I was in kindergarten they had these little puzzles, and I was a whiz at doing these puzzles. The kindergarten teacher saw I was a good problem solver. I don't know what that has to do with computers, but you are always solving problems with computers.

DSM: That's a good one. So you were about six-years-old, seven-years-old when World War II broke out.

GC: Yes, I remember that very well, World War II. We all got little dog tags. People don't remember that. They were these little plastic things. They had your full name. They didn't have Social Security numbers, so they had date of birth. And I don't think it ever had our address on it believe it or not, I guess because kids could move around. You know something, I had it for many years, and I lost it. I really wish I had it. I'm sure you have it here in the archives – little, round, plastic discs with our names and our dates of birth.

And we learned what was called “duck and cover.” Do you guys remember duck and cover? They taught you how to run under the tables. We had all the air raids in those days. It was great fun to be a kid then. You can imagine New York City, there'd be air raid wars and they'd say, “Close those blinds!” and you had to pull the shades down. Or, “Turn the lights off! You live on the seventh floor, turn that light out!”

DSM: So you actually had blackouts.

GC: We had blackouts in New York City, sure. My father was an air raid warden. You know people had to do their thing in those days.

DSM: So the first President you would remember is Franklin D. Roosevelt?

GC: I was born in Franklin Roosevelt's time. I think I actually saw him. I must have been eight or nine. I guess I saw him in 1943, just before he died in 1944. He had come through in a closed car, and everyone said, “Oh there's the President.”

DSM: Was the radio a big medium in your household?

GC: It was, but I don't remember these famous fireside chats or the famous Winston Churchill broadcasts. You know you miss it, you miss it. I remember we went to sleep.

DSM: What do you remember hearing on the radio? Did you have favorite programs that you listened to?

GC: Well as a kid you know, you had the kids' soap operas: you know, Hop Harrigan, The Green Hornet.

DSM: The Shadow.

GC: "The Shadow" was on Sunday evening. If we were driving in a car somewhere, we always had "The Shadow" on. But most days I would come home from school, do homework, then we'd listen to Green Hornet or Hop Harrigan, or Jack Armstrong, the all-American boy. He later on went to sell weenies. He was the first comic character to push a product.

DSM: Who were your heroes when you were a child, either fictional like the Lone Ranger types, or real ones, like family members?

GC: I can't really think if I had a role model or a hero. We were pretty sports-oriented then. I probably had some sports heroes. Basketball was a big activity in the inner city. We didn't have a lot of room to play these other sports, so basketball became the big sport. I don't think I really had a hero in those days.

DSM: Who was the first teacher that you remember?

GC: Well I remember my kindergarten teacher, Mrs. [Alchel]. She was the one who always thought I was such a whiz at doing puzzles. Then I remember quite a number of my early elementary school teachers. We had Miss Kelly. She was a wonderful teacher. She had terrific people-handling skills. These teachers came from the generation of The Depression, and this was a no-nonsense generation. When I first went to school in New York City, you wore a shirt and a tie, and we were little kids. And discipline meant discipline. You were told keep quiet, and you kept quiet. They didn't hit you or anything, but this was done according to the old rules. We learned to read. We learned our math and our history. We learned our geography. We learned our free arts. By the time we were in fourth grade, all of us knew early American history. They could read. They could write fairly well, and they could do basic arithmetic.

DSM: Do you remember when you first started to be really interested in arithmetic, mathematics, was it really early or later in high school?

GC: Oh no it was later, in high school. In New York City you went to your local high school, or you could try out for several citywide schools. There was Science High School and Stuyvesant High School. These were math and science schools, and you took a test. Part of the test was math and science, and part of it was vocabulary and English. And I passed the test for Stuyvesant High School. I was a 13-year-old kid, and I had to be at school at 7:30 in the morning. So I got on the train in the morning, and attended classes from 7:30-12:30. The schools were crowded. There were two sessions. So I went from one end of Manhattan down to the other. I would switch three trains. It cost a dime in those days. So you get on the 7th Avenue subway, and you went down to 14th Street, and transferred to some other train.

I failed the first session at Stuyvesant High School. I was failing in geometry. The first term we took was geometry 1, plain geometry, and I was failing. I remember very clearly the teacher saying I would be retested and may not belong in this school. It was a math and science school and here I was failing geometry. I was just devastated. Maybe that's what it took, but within a short time, I became a star. By the time I graduated that semester I had geometry down pat. I was using the algebraic solutions to these things, not just the geometric solutions because you can apply algebra to solve geometric problems. We had a lot of kids who sort of bonded together and got really good at it. It was like a Chess Club type of thing, and that's when I really got to like mathematics.

DSM: Is there a teacher in high school that really had an impact?

GC: Yes, the teacher who thought I ought to be retested. I forgot his name, but that was just about the right medicine, I suppose.

DSM: We'll look him up for you. What would did you do for fun when you were in high school at that age?

GC: I probably played basketball every year of my life from age 11 to 17 or 18. Winter, summer, we would go out and sweep the snow off the court, or play indoors somewhere, and we would play semi-pro. The guys had semi-pro teams so I was playing basketball all the time. I wasn't very big, but in those days, you didn't have to be so big. It's a shame that now that it's just big guys, because it's a great sport.

DSM: Yes, the era of Frank McGuire, University of North Carolina, was at its height at about the time you were just starting high school.

GC: Yes, I was just one of the last generations before the really tall guys came in. When I was playing, it was more ball handling and play making.

DSM: Did you have any good friends in high school, really close personal friends or rivals that made the difference in your life or career growing up?

GC: No I wouldn't say they made a difference. I made many friends in high school and I keep up with many of them today. I have an interesting story about one guy that I went to high school and college with. I always used to believe in what was called change of destiny. Many people have this experience, where you will in some sense change a destiny with someone else. You may not believe that but in this situation, this guy and I were in college, and I was a mechanical engineer. We were getting out, and he said, "You're going to stay in mechanical engineering." And I said, "Well I don't really like it. I'm really looking into patent law. In patent law you need an engineering background, but it sounded more interesting. I'm thinking of going into patent law." Well he had never heard of that. So I told him all about it. The end of that story is that he became a patent attorney. He's still my patent attorney today. He's my friend and patent attorney, and I went on to computers. We sort of switched where we were going. And that's happened to me about three or four times in my life. I suspect it's not an unusual situation that two people will exchange directions that they're going.

DSM: What are some of the other examples of that?

GC: Oh I can't think of too many of them. None strike me right now, that was such a vivid one.

DSM: I forgot to ask you, do you have any brothers and sisters?

GC: I have one older brother Bernard. He's five years older than myself.

DSM: Okay, through high school you had a heavy emphasis on mathematics at Stuyvesant. What about your decision to go to engineering school at CCNY? Did you go into CCNY to be an engineer?

GC: Yes, when I was in high school, I think Dwight Eisenhower was President. And Dwight Eisenhower I believe talked about the 'engineering gap.' Dwight Eisenhower was the President who essentially put the infrastructure back into the United States. He built all the roads after World War II, and he said, "We don't have enough engineers."

So everybody became an engineer, and suddenly the engineering schools got crowded. My mother said, "Well you ought to be an engineer, because you'll be able to earn your keep the rest of your life, and get a useful trade." So I went to CCN, which was free for the graduates of New York City high schools, and very easy to get into if you were from Stuyvesant or Science.

We didn't have the money for an out of town school, so it was never a question of whether I was going to compete for some other school. I won the New York State scholarship, which was in those days, a magnificent sum of \$1400. You collected it over four years. It was \$350 a year. Tuition was probably two or three thousand tops, maybe. My mother said, "No you're going to go to City College and just bank that money." So I had \$1400 when I got out, which I'll tell you about later.

So there I was in mechanical engineering, I had to pick one, CCNY just had four engineering curriculums: chemical, civil, mechanical, and electrical. I guess I picked mechanical and got a reasonably good mechanical engineering education. When I got out I discovered I didn't really like mechanical engineering very much.

DSM: So you never had any thought of being an electrical engineer early on?

GC: Well you get a little bit of electrical engineering. You get a little civil. You get a little chemical. You do a little bit of everything, and then you have this specialty. But when I got out I said, "Gee, where is this general education supposedly that I can go on and do other things?" I didn't see that, but I did go into another field. I found an influential book called, Operational Research. I forgot the two authors. They were British authors. It was a book about the activities during World War II, a group of scientists in England, whose job it was to apply mathematics to military problems. And they pointed out that you could also apply the same mathematics to business problems. In England they called it operational research, and in the United States, the field I grew up with was operations research. And of course like everything else, operations research, by the time it came to the United States, also renamed itself Management Engineering.

DSM: So your first Masters degree in Operations Research is an engineering degree, not a business administration degree.

GC: That's right. It was somewhat related to industrial engineering, but this book was just really a wonderful revelation to me. I thought this is really fun, how you can apply mathematics to business problems. And they did it in the following kinds of things. In the early part of World War II, the idea was that to get the supplies from the United States to England, you'd send out these little convoys, a few ships, which would have a few destroyers on them. The smaller the convoy would have a higher probability of slipping through the German submarines that are looking for them.

I think that makes plausible sense. And this was from a time when we were re-supplying England, and then the time we got into the war ourselves. And they discovered that our tonnage losses were astronomical. Over 40% of our tonnage never got through. It went down to the bottom of the ocean. So they asked these mathematicians to look into this. They came up with an absolutely simple solution. They said, "Look, you shouldn't have little tiny convoys. You should have big convoys." And the reason for that is that the periphery grows as the ratio of the size of the convoy, but the area grows by the square. So you could put four times as many ships that you could send over and only have twice as much area, which is a very simple geometric idea, right? So you just have to put your destroyers on the outside of a much smaller circumference, and you have a much larger number of tonnage to get over there. And the amount of tonnage that would be sunk went down dramatically. It was a very simple idea.

DSM: Who introduced you to this book, was it a professor in undergrad?

GC: No it was a group of guys who were doing operations research. I forgot exactly how it was that I ran into them. It may have been from an early job I had or something. But I got this when I was at Columbia University and I was living on 110th Street. And I started to work as an operations research analyst at Allied Chemical Corp over on 118th Street. It was easy to get to.

DSM: So was this your first job?

GC: That was my basically first job, at Allied Chemicals. I was an operations research analyst, and at night I would go to school at Columbia for my industrial engineering degree. It was a very mathematically oriented degree. Now you say how does this mathematics apply to business problems? I can tell you some terrific military problems. But it sounds so dull.

DSM: Well how did it apply to your own business experiences?

GC: Well it did apply, in an interesting way. It's a style of thinking of how you apply mathematics to a certain class of problems, particularly problemistic type problems. When you're in business, you're always evaluating risk. So when I first got out working at Allied, we had problems like, we manufacture chemicals, what size batches should we make? We set up a chemical, how big should the batch be? Should we make a month's supply, six month supply, a year's supply, based on the orders we're going to have? It is sort of the inventory re-supply idea. That's a really very mathematical problem, what is the optimum order size to re-supply, for example.

So I worked on all these queuing problems, chemical engineering problems, which are somewhat mathematical. We put a whole lot of monomer into a reactor, and the molecules and monomers stick together, and then two in the tubes, pretty soon you have four. Pretty soon you have strands of different sizes, and that's what produces nylon. Nylon is really a polymer. A polymer is a different distribution of little molecules. Some of them have strands of 200, some of them 100, some of them 50, and the question is how fast do they polymerize and what should the heats be? These are all mathematical problems. And that's what I did for a while at Allied Chemicals.

DSM: Now, you're married, and you have four boys?

GC: Four sons.

DSM: When did you meet your wife?

GC: Oh I met my wife when I was a kid going to summer camps. I was a waiter in one of these camps.

DSM: Now where did you go to summer camp? You have to tell this story.

GC: I went to a summer camp called Sedgewick Camps. It was one of these kids' camps up in the mountains around New York City. I was just a waiter, and she was a junior counselor. It was one of these summer romances that just blossomed.

DSM: So how old were you then?

GC: Oh I was about 18. She was 17 or 18. We were kids. We went out for about five years while I went through college and then we got married.

DSM: You are still married?

GC: No, unfortunately we separated about ten years ago.

DSM: You have four boys. Who are they?

GC: The oldest is Jeffery, then Evan, Daniel and Adam. They're all out of college, doing their own thing. That's a whole different life experience.

DSM: Which is harder, raising kids or running a company?

GC: I was so young when I raised kids. I was married at 22, and Martha was 21. You're so young and close to being a kid yourself, that's the best time to have a kid.

You don't know you're raising kids. It's just kids. It's the easiest thing to do. I'm a big believer in marriage. I'm a big believer in early marriage. I'm a big believer in early children. It's just natural. You have the kid. You raise them. They're there, and you don't agonize and think about it. It's just the most natural thing in the world. So I had no trouble raising kids, it was a very easy thing for both of us. My wife might say, "Wait a minute, you went to work. I had to stay home," as she used to say to me. But you know, I participated in everything, and I think it's much simpler to have children when you're young. Running a company is hard.

DSM: We're about to get into your first jobs when you get out of school and I'm going to let James Bailey talk about that. But I want to ask you one more question, you have two advanced degrees, one the logical advanced degrees in Operations Research, but the other is a liberal arts degree, a Masters degree in Liberal Arts. Can you talk about that.

GC: Okay now you're going to have to fast forward twenty-five years. When I got out of engineering school, I realized even then I had a deficient education. And sometime around 1986, my third son was going to college. As I helped him do his college search, we came across the school called St. John's College, which has a campus in Annapolis, Maryland right next to the Naval academy, and another campus in Santa Fe, New Mexico. And they specialize in the classics. All you do at that school is you read these books and talk about them, and they organize it in a seminar tutorial kind of setting. It's not a classroom setting. It's not a teacher/student setting. It's, you read the book and talk about it. So you might read several cantos of Dante. Then you would come in the next day and everybody would talk about it. You're not allowed to have extraneous material, and so you have to read the classics.

My son liked the idea, and while I was doing the discovery process, I learned that they had a program for adults, which led to a Masters degree. You went four summers in a row. You had to take off the whole summer, and you'd read about sixty books in the space of these four summers, and you'd earn a Masters degree in Liberal Studies.

DSM: So this is the summer of--?

GC: Oh I went 1987, '88, '89, '90. I'm actually the class of 1990 with my Liberal Arts degree.

DSM: And you got to take every summer off?

GC: Well in those days business was great. It was an easy time for me in those years I have to admit. Business was just super. We had it organized pretty well, and they would take time off. People always ask me that question, “How could the President of the company just go off for two months?” I would say, “I think it’s very healthy. It is healthy for the company, too. Because then other people get to do things they wouldn’t ordinarily do.” But I guess it was more possible in those days. By 1990 already, things had heated up. The industry has gone through a much faster pace since 1990. I don’t think I could do it today as I could then. That was probably the last, strictly in amount of time to embrace what was important to me. It was also luck of course, and preparation, but time is so important. I just hit the timing right. I don’t think it could be done today.

But reading the classics is an activity that connects you with every educated person up until the 20th century. You had to read a certain body of books, so they have themselves a sort of language of reference. So something would come up, you would know that was a Shakespearian reference or Greek mythology reference, or something out of *Inferno* or something like that. And everybody knew the background and what it implied as a way of talking. It was really a great loss that we don’t have that today.

But anyway I went to school and I read all these books and I had a grand time. They give you things you can’t read on your own. You have to read it with people in a group and talk about it to really understand it. As I’ve continued it my reading skills picked up and I suppose I’ve been a good reader. So if you ask me what my hobbies are, I’m going to have to say reading.

DSM: Well I’m going to ask you an unfair question, especially having been in the Great Books Program. What is your favorite book?

GC: Well I don’t know if I have a favorite book, I actually just have favorite movies and things like that. But what is a book I really like? I think The Iliad for example clearly deserves its reputation as one of the greatest books. It’s a fabulously interesting book. It’s a wonderful book to talk about with other people. There’s a certain mindset when you talk about The Iliad. I can’t tell you how many allusions to things that you see in everyday life here that there’s a background to, it’s a wonderful story. It’s one of the world’s great stories and also a good read.

DSM: It is one of the all-time great wartime stories. Speaking of which, this is my last question. You were born during the Great Depression, you started school at 6 or 7 at the beginning of World War II, you finished high school just at the end of the Korean War. Tell me how these things affected your family, you personally, if at all.

GC: Well I think my family was much more affected by the Great Depression. That sort of set them into an absolute conservative mindset. Don't change – earn a living, don't spend too much money, worry about the future always, because it's always going to get worse – you never know when the rug will be pulled out from under you. And that sets a mindset for them. So that was more dramatic for me than the wars that were going on.

World War II did not affect my family personally because all of our relatives had already been in the United States. My parents being born here, their cousins, the aunts and uncles were already here, so I didn't really have a connection with what was going on in Europe. The Korean War came along, my brother was in the Korean War, so that was my own connection there. He came home completely safe. So I guess I was fortunate in that sense; it was strictly a matter of timing and my timing was not to be affected by the wars.

DSM: Getting out of high school during the beginning of the Eisenhower era has got to be a great time to be getting out of high school.

GC: Well for engineers – yes. When I got out of college for engineers it was a terrific market. You could make \$433 a week, which comes out to exactly \$5,000 a year and that was a magnificent salary. My parents were astounded. They were like, "My son the entrepreneur. What a fabulous decision."

DSM: Now I'm going to take you down into jobs. You were working in Allied Chemical as you were working on your degree, what was your first real job after you finished school and now were a certified mechanical engineer? Tell us about getting a job and how you got that job.

GC: I got that job not through the college interviewer, but from New York City Agency. I don't quite remember. I guess I must have sent a resume in and he had it and called me up. I went down and got interviewed at Allied Chemical and got into the Operations Research Department, which paid well. It was a delightful job. It's a real staff study position – Operations Research never really caught on a lot in America, in some sense. It morphed into Financial Analysis later on. You'll find more of these people doing mathematics related to financial. It also morphed into computing, which was how I got into computing.

At Allied, for example, we would do these studies on what should be the proper ordering program for producing chemicals, or what sequence should we mix chemicals in a vat. You start out obviously in a vat. You put in white plastic that you might move to ivory, then you move all the way through the spectrum until you finally get to black, because you have to clean it each time. The problem you have is there are demands for different colors. There was a huge demand for black, and if you have to wait two months, that's not so great right? So what's the optimum way of doing it?

Now to solve these kinds of problems you need computers. They had a computer that did payroll, and they had a computer that did some of the basic accounting functions, then they bought a GE computer for scientific computing. You have to go way back to remember GE being in the computer business, and it's a lesson of how GE failed. It was an obvious lesson. We were one of the early users of GE computers and we did a lot of our work on that machine. And what can I say about it? It failed a lot. It used tape drives, and the tapes were always failing and so you'd lose your data. I was a kid. I didn't know any better. They would say, "Hey go program this," and I picked up the program language and just learned it. As a kid you don't have an obstacle like, I'm a Cobol programmer, or I'm a C programmer. You just say, "Oh okay, good, I'll just do it." So I picked up the programs and I was programming on GE machines. The GE machines totally failed and were out of the company within a year. They just didn't work.

DSM: So the first computer that you ever really laid your hands on was a GE?

GC: Yes, I think it was one of the early ones. We had early IBM machines. Eventually they replaced the GE machine with an IBM machine. But what happened was, I had transitioned into solving problems using computers. We're applying these mathematical kinds of ideas to solve problems, and you need the computer to compute. So I had started to become a programmer and program these scientific kinds of things. So that's how I started to slowly make the transition from solving the problems, to conceptually solving problems, to physically solving them and being involved in computers. Pretty soon I got to liking computers better than all these little inventory and queing problems.

DSM: When did you first become aware of these things called computers?

GC: It was at Allied I think. When I was in college, we didn't have computers. When I got out in 1957 or '58, and even when I got out of Columbia in '61, in '61 we're talking about it a little bit. The earliest technical thing I saw like a computer in City College was, if someone said, "Here's a portable radio." And it was a little tiny cigarette pack radio, and everybody thought that was just so remarkable - look, a little radio in a cigarette pack. It came out of the space program you know.

It was the most high tech thing I had seen up to that point. I guess I didn't get into computers or even see a computer until I actually started to work for Allied Chemical.

JB: The GE machine, you programmed this in assembly language?

GC: Yes, that's what they had. There was no problem, just pick it up and work on it.

JB: Now fill in a little bit for us from Allied to when you formed your company. There's a span of time in there.

GC: Yes but there's a real connective thread there you see. I was doing Operations Research at Allied, and I had learned how to program and was doing some very interesting projects. One day I got a call from a company called Mathematica in Princeton, New Jersey. They were a very prestigious operations research firm. So this would be so much fun working for, this is real operations research you know? The idea was, at companies like Allied Chemical, operations research was really on the fringe. It was very rare that we got something implemented. We would study it, present our finding, and people would say, "Oh that's very interesting, thank you very much for doing all this work."

So I left Allied Chemical and went to work for Mathematica. They had all these professors who worked for them part-time, very famous guys, guys who had invented linear programming. Oscar Morgenstern who together with Von Neumann did game theory, for example. They were all on the staff there. It was a fun place to work. A lot of their work was government studies. I had some interesting projects there. I did operations research and I started to get into also computerization of these problems.

One day, they said, "Hey you know we got a contract with Allied Chemical. You used to work there. So why don't you go over and you be the project leader for that project." The market research department of Allied Chemical kept track of everything going on in the nylon fabric business for carpets and clothing and things like that. They would go to a trade show and they'd see all the colors, and the competitors, and the prices, and they wanted to keep track of this and analyze this. So they wanted to collect their own data, be able to put it in themselves, query it themselves, and Allied had a remote computer somewhere. We're talking 1967 maybe. It was a pretty long time ago. Allied had just put in an early model IBM 50360, model 50 or something like that. And this group was uptown in Manhattan so they put in terminals. If you have to do this over terminals, think about how modern this is.

I have to tell you this terminal was really a teletype, which in this case had a hard wire into the computer, and that was the project. So I actually invented a product for them, which we originally named RAMIS. RAMIS originally stood for Random Access Marketing Information System. That was the acronym for it. We prepared an English-like language, and you can do everything. We gave them a database to put the stuff into, and a language to talk to the database, and it was very primitive. We were able to at least do that project. Then Mathematica said, "We have another contract with Nabisco." We did all the planning, and I actually wrote what was called 'The Weekly Planning System' for Nabisco. It was a system they used for twenty-five years, and only recently replaced, interestingly enough.

So we did all the planning for the bakeries in Nabisco. It was part of the operations research project I did for them. You know when you do Ritz crackers, which order you do the crackers in, and which machine, and how you split the machine. And after you make Ritz crackers and you want to do whatever other crackers, you have to clean up and all these kinds of things. So they told me to go up to Nabisco. They are big served by the federal government – it was an anti-trust suit believe it or not. They were being sued by the government for monopolizing the saltine cracker market.

So they told me to go over there and help them computerize all their information. Then we would put in the product we used at Allied, and Nabisco was going to pay for all the upgrades to the product. So I hustled over there, and worked for several months, and updated the program. Then we renamed RAMIS to stand for 'Rapid Access Management Information System.' Nabisco was just delighted because their own people on this particular project could quickly do ad-hoc reports – sound familiar? This was 1968. The government asked why they raised prices, and they would say, "What do you mean raise prices? Here's what we did." And of course the government was astounded that they knew all this stuff. Then Mathematica says, "Look we got another contract with American Express. They want to analyze credit card users to see who's the most profitable, and look at all kinds of stuff." As a matter of fact there are a lot of interesting studies of that type. You know, "What should the hours be for denying a credit card?" These are really mathematical problems, looking at payment histories and things like that. So they said, "Look they have a lot of data to collect. Why don't you go over there and see if you could this on that?" That's when we made RAMIS a much more robust program. And of course, at American Express we discovered what was clearly obvious, that the most unprofitable credit card holder you could ever have is a guy who pays his \$15 a year and never uses the card. They didn't make a profit off him – a very obvious answer right? Don't use the card - just pay the bill. I don't know if that's true anymore but I'm sure that that's partly true.

So I was at Mathematica for about nine years. We developed RAMIS, and I didn't realize it, but by the time I left, we had formed a division just to sell the program, the software. Now if you think about it at that time there was no software industry. You just didn't sell software. But Mathematica being a consulting firm, formed the group. I was the Vice-President in charge of Mathematica Software, and we sold it through service bureaus; a whole interesting service bureaus that lasted about ten years in America. And RAMIS was starting to become a reasonably interesting product. Then I had a big dispute with Mathematica. Being a consulting firm, they're more interested in consulting than the software. I said, "Look you need different policies. If you sell software you need to hire salesmen." Mathematica was a very uptight type of place. "We don't have salesmen here. We all have PhDs, and our PhDs go out and talk with their counterparts and bring in the business, however – they don't *sell* in that sense. We don't hire salesmen." And I said, "That's what software needs. It needs salesmen and tech reps to support it. It's a whole apparatus, a whole new thing."

So we had this big problem and I split off from Mathematica, and I had a terrible couple of months doing nothing. Remember I had a wife, and a house in the suburbs, and four kids, and I'm unemployed. It was a really a terrible time of my life. Today I think I'd be more relaxed about it. But it's interesting, and I think other people have had this experience, I didn't want to go out on the street in the daytime and people say 'Oh he's not working.' I was living in the suburbs where the peer pressure is tremendous. My wife would say, "You go out and do this," and I would say, "No I don't want to go out in the daytime, because then they'll know I didn't go to work." So I spent all this time fixing up my den so I could work at home. I got myself a typewriter, so I'm working at home. It was very emotional, and I suspect a lot of people go through that. It's one of the real problems about being unemployed, you don't realize the emotional impact it sometimes has on you if you've worked your whole life. And if you're in an environment that you know, you've got a house and kids and everybody works, you don't realize how you get wrapped up into that. I don't know how I would respond to that today, but I can't put myself back into that position again.

DSM: This was the first time for you since undergraduate school...

GC: I had never been unemployed. Remember the environment I came from - you have to support yourself. You have to always be self-sufficient - that kind of attitude from my Depression era parents. So suddenly being unemployed was devastating for me. After all, I went to college and had all these degrees and I was the Vice-President of Mathematica, and there I was on the beach.

DSM: Did you work when you were in high school?

GC: Yes, I worked. Stuyvesant High School had a whole program. I had a job as a delivery boy for a mechanical dentist. I had a job working for Robert Taft who was running for Senator. In those days they had mimeograph machines, and I would do that and deliver his buttons and whatever he had for me to do. They kept us all very busy. At Stuyvesant we were expected to work.

James Bailey: I want to take you back to RAMIS version 1.0 in '67 at Allied Chemical, and just, can you give us just a flavor, you're sitting at your ASI33 or—

GC: Six hundred board. Six hundred boards!

JB: Somewhere there's a machine with some miniscule disk, although it was probably vast in terms of physical presence. What did you type, what was an example of what one of the people was typing?

GC: It's interesting, I always call it serendipity exactly for that reason. There I was, faced with a type. They told me I was going to have to do this remotely. I had to invent something – there was none of this kind of stuff. So when you can only type out in and out, what is it, six on a board is thirty characters a minute or something like that? You go bump, bump, bump. We invented a language that was an imperative English language. You would make declarative sentences like 'Sum up sales by month.' Makes sense, right? Now if you want to make a matrix, you can say 'Sum up sales by month cross year.' So you get a matrix. This is 1967. Last week I was in Florida and I was listening to Bill Gates and he was talking about the latest things that they're doing with Excel. He said, "Oh I'm very proud of pivot tables. In Excel's spreadsheets you can take a crop, a row and you can pivot it across, and make it columns. We call it pivot tables." But we had this cross function and this was in 1967. And it was an absolute standard feature of RAMIS to say use a matrix to sum up sales by month across year. It would be very visual. It was an imperative thing to this language. Now we didn't call it a fourth generation language – we actually invented fourth generation language. That was something that we didn't know we were doing until someone gave us the terminology. We called it 'non-procedural language.' That is, a procedural language is a language where you write a program, and in the program you tell the system very clearly not only what you want to do, but exactly how to do it. Get me this record – go get a record, is there a record? Yes. Then take this field and add it to this field. Take this field and add it to this field. You know, then is there another record? And very clearly you write a program. So in a procedural language you tell the system what you want and exactly how to get it. A non-procedural language is the idea where you tell the system what you want and the program's pretty smart and it'll just do it itself.

In 1967, that was pretty hot stuff, you see, there was nothing like that. But it was clearly something that could be handled by the end users themselves. This was before sequels. There was no sequel in those days. Today people think Sequel - SQL is a fourth generation language - which I don't think so, but it's a similar spirit. But this was way before SQL. What we thought of was a non-procedural language. Now fast-forwarding, in 1981 someone wrote an article about FOCUS, the follow-up to RAMIS, and they called it a fourth generation language, and the term caught on like magic. Everybody suddenly recognized the idea that you come out of procedural language to non-procedural language, and that's the fourth generation of languages. And pretty soon everybody had to call their product a fourth generation language, so today everything is. But this is what we did in Allied Chemical, and they were able to handle it themselves. It was remarkably successful because it got a following. We sold RAMIS to lots of interesting companies, until the split we had in 1974. I left in 1975.

JB: Now was the response immediate when you typed this in?

GC: It was time-sharing. At Allied Chemical, they didn't do time-sharing. They had a remote batch. Time-sharing came a little bit later. In 1967, the first time-sharing machines hit the market, IBM. It was RCA who invented time-sharing. IBM to counter them came out with a machine called a CP67. CP67 was the first time-sharing operating system that they had commercialized in 1967. And so, time-sharing had already started. But Allied only had a fast batch. You type it in, it was as if you had taken your key punch cards and delivered it. So you type in all your key punch cards and then sometime later, could only be fifteen minutes because it was still batch, things would type back. By the time we got to 1971, '72, we had put RAMIS on time-sharing machines. And that's a whole wonderful era. Time-sharing was a great idea. Up until about 1970, computers were batched. That is, you typed everything on key punch cards, you brought it to the data center, they said thank you very much, come back tomorrow, depending on how quickly they're responding and we'll give you your printout. And RCA originally, and then IBM took over, recognized that you could have people come in through terminals -that's another story there. The modem had been invented and required a little technological innovation - how do I get to the terminal - the computer required a modem, so that's a whole story of how the monopoly of AT&T on communication had to be broken. Well once that was broken, people started to like terminals that could talk to the central processor remotely. Then the problem there was, I don't want to wait a day. So time-sharing said look, we'll take a large machine, everybody will get a little slice of it. So time your thinking in typing, or stopping typing, that's a huge time difference in terms of like speed of light. So the system could go a round robin and give everyone a slice of time by the time you got around to thinking what you wanted to do next, you see. And it was called time-sharing.

Conceptually I understood it. I saw that I could get a very large expensive computer and share it with all these hundreds of users. That's how the whole industry grew, and service bureaus came along. And service bureaus being the most innovative ones, because companies were locked into the batch processing, service bureaus like National CSS and Tymshare. So we put RAMIS on National CSS, which was an outgrowth of various technical advances. When I left Mathematica in 1974 or '75, the first thing we did was we started to work with a company called Tymshare. That's how the time-sharing industry went from about I would say from about 1972 to '82.

It was a terrific era. That was really in my opinion an era of greater change in computing than almost up until the Internet. The Internet is obviously a watershed change. But the time-sharing thing prepared the industry for personal computers and the Internet. All the elements were put into place at that point - modems, remote communications, remote languages, terminals, graphic terminals, you see what I mean.

JB: Quickly before we get into Information Builders itself, I just wanted to come back on Nabisco and the anti-trust suit and technology. We remember companies like CDC much later on doing that same thing, but this could have been the first time ever. What sorts of things did you type into that machine, and what kind of information did Nabisco get back? Can you just give us a little flavor of what that was like?

GC: They were very concerned with the prices that they charge for the various cookies. Then they needed to know the cost of all the ingredients that went into the cookies, why they made those pricey decisions. So I had to collect all this information about the prices, quantities, internal costs, demand, how much they had to produce - things to support whatever their argument was. I forget exactly what the government claimed. I think they claimed they monopolized the premium Saltine business. That might sound humorous today, but Nabisco was really upset that Burry's came along and knocked them off. They had something else that they called Premiums. Then Burry's came along and just called them Saltines, and became known generically as Saltines. We used to just call them Premiums.

JB: Was there any free text stored in this?

GC: No, in those days, you didn't have a whole lot of storage. You couldn't believe the pain we went to to squeeze this thing down so it would run in 256k. The numbers were so much smaller than text, you didn't want an alpha numeric field that got too long. So you rarely saw text. That came later.

JB: So it was the mid-70s after almost a decade with Mathematic that you started Information Builders. Can you tell us a little bit about what led up to the decision to form your own company, and how it played out in the early years?

GC: Well I'd been at Mathematica almost ten years. I was Vice-President in charge of the software decision. We had a big fight over its future. I wanted them to split it off into a separate entity, because it needed its own policy. You couldn't be a consulting company running a software company; which is true. Even today, there are very few examples, almost none of software companies being owned by consulting companies. It just doesn't work. So I tried working out some kind of deal with some third parties, it didn't work. Anyway, I made the stupid mistake of giving an ultimatum – in three months if we can't work this out, I'm outta here. Which I learned was a stupid thing to do. But looking back on it, I suppose it was the smartest thing that ever happened to me. They didn't deal. They probably thought oh they can do without me, you know? I probably had the attitude of, oh I'm so important they'll never do without me. The world couldn't go on without me here at this company. I'd been there ten years, and that's a good lesson that I learned. We never worked it out and I left. They gave me a goodbye party, which is so strange, these goodbye parties. So there I was, out of work. And I had a hiatus of several months before I could get myself going.

Now what I had in the years that I was doing RAMIS, I had built up what I would call a kind of capital, I guess I would call it contact capital or something like that. Entrée capital, I had Entrée. I had a number of very good customers and people I had dealt with and did wonderful applications for. So we started Information Builders, and one of the guys from Mathematica came with me, Peter Mittelman. Later on we also added one of our customers, Martin Slagowitz. Peter Mittelman was going to do IBM computing and Martin would do technical support and help lines, things like that.

What happened was I went to the American Can Company, of all the unlikely places in the world. The American Can Company ran a spectacular service bureau. They were a well-run company, and they realized that the best way to have good internal IT was that if you sell services to the outside, that would keep you on your toes, and you would provide very good service inside. So they ran a service bureau called the American Information Service, AIS. And AIS was the American Can Company's service bureau, plus they sold to the outside. They needed software to sell to the outside, and they said, "Look, if you produce this program for us, give us certain exclusive to resell it, we'll give you \$9,500 a month during the development phase." They said the vice-president in charge could only sign for \$100,000, and I think \$9,500 a month went for ten months and it was the only way they could give it to me.

But they gave me something much more valuable, which was the computer time, and they also gave me the computer terminals. So that's what put me in business. I got a little 1,000 square foot office in New York, and we divvyed up the \$9,500 a month, \$1,000 went for the rent. I went to a small space specialist. He specialized in under 5,000 feet. He got me this place, and they whitewashed it totally white. I mean lemon's not going to do a whole lot for you. Today I can still look back on my starting point, that's true. I was President so I took so much a month, and Peter took, and Marty took, and we had a sector, and we had two programmers part-time who ran the program for American Information Services. We labeled this program FOCUS. I guess it stood for online computer users, but we needed was an acronym that was easy to remember. So we gave it a computer type name, and FOCUS was our term for this non-procedural language. We got started about March 1, 1975. American Can gave us our first check and we set up shop.

Now the reason I got to them was because we had a very good customer and a guy who was very influential in my life, Franz Edelman. He was head of MIS at RCA, their Sarnoff Laboratories. Sarnoff Laboratories was right across the street from Mathematica, so they became one of our customers. We got RCA going with all kinds of users of RAMIS, and I said to Franz, "This is going to be a much better program than RAMIS. We've learned a lot. First generation stuff is a wonderful training ground for getting something going, but sometimes you just have to sit back and start over again. When you do that you come out with something much better." That happening lots of times you know. DOS they sent back and suddenly got Windows. So it was a good experience, and he said, "Yes, I think you're right, and we have a lot of use for that program." Franz was the one that connected with American Can where they had enhanced the operating system, and RCA wanted to use those enhancements. So there was a connection there and he introduced me to the American Can people. Franz was a dear friend.

So in addition to American Can who gave us a small amount of money, RCA told us they would buy the system in advance and we would deliver it the next year. So that's contact capital I would say. 'Sweat equity' is what they'd call that today, but even with sweat equity you have your own money. But here was a situation where these guys said, "Well we know you can produce, and next year you deliver the program to us." They bought the program in advance. That's all they had to do. There's no risk here, you just pay in advance and you'll get it next year. And we had the American Can Company sort of behind this, so we got busy to work.

I was at it for about three months until about June and I knew this was really going to be a great program, and I realized that the American Can Company shouldn't be in the time-sharing business with our little business. So I wrote to a company in California named Tymshare.

Now in those days there were four or five leaders in the time-sharing business. GE was in time-sharing. CDC was in time-sharing, also TYmshare, McDonnell Douglass, a number of companies were in the time-sharing industry. So I wrote to these guys in California who had a terrific program, and Tymshare said, "Okay we like this idea. This is fabulous. We understand what you want to do. Come on out here to California and show us what you've got." I said, "Well you'll have to send me airfare." And they said, "What do you mean?" I said, "Look I'm running off of American Can's money. I can't go out there on a bad nickel if you guys want to talk to me. So if you guys take care of the expenses I'll come out." He said, "Okay!" That's how we did business in 1975. I don't know what you do today in Silicon Valley but that's how we did it in '75.

So I got out there and they were just moving into the building in Cupertino. Cupertino, California was all apricots. It was marvelous, mile after mile, orchard after orchard, of wonderful apricots. They had chopped down this orchard and put up the first building. Well you knew what was going to happen. Today you will not see an apricot in Cupertino, what a tragedy.

So I get out there, and RCA had lent me the equipment to do the presentation. We didn't have PowerPoint you know? But we did have the view graph projectors, where you wrote on film and you could dress it up with artwork, and they had done that for me and it was very nice. I made the presentation. They were excited by it. They decided that they would like to put in some money, and they would make a deal where they would sell the program on a royalty-usage basis to their customers. And it sounds like, oh that's obvious. It wasn't so obvious in 1975 about royalty usage. I should have talked earlier about the early computer days, you know, when you sell computer programs in the first place. But needless to say, let me just talk about getting Information Builders started. So the problem was, they said, "Well you got this American Can Company – are these guys going to let us in? Do they have a lock on the deal?" I said, "Well why don't you come out and talk to them?" So I arranged a meeting between the American Can Company and Tymshare.

It was very strange. American Can Company said, "We're a big, huge New York Stock Exchange company. Who are those guys? California? Never heard of those guys." The guys from Tymshare said, "Who are these guys? They make cans, what are they doing in the computer industry?" So both of them said no sweat, we'll just split it down the middle. I was so happy.

It was funny, the guys who did the negotiating for American Can, they were two partners. They had a partnership desk. Do you know what a partnership desk is? It's like you sit on opposite sides of the desk and you see each other. It's really funny. It's like I think you see in Dickens, pictures in old times, guys at high desks and they face each other. Anyway they said fine.

So Tymshare had superb facilities, superb facilities. We cut a deal with them that they would search our program, and as users would use it they would pay, and if they didn't use it, they wouldn't pay. So it didn't cost anything other than what they would use. They had a lot of customers worldwide. Tymshare's claim to fame was they put networks. They were probably one of the earliest, if not the earliest, to construct an international network such that you could be anywhere and come into a central machine. They had these little microprocessors that did all the work that our CISCO routers do today, very early in this game. You had a lot of international companies that wanted to consolidate information, and Tymshare would sell both the network access. So we had customers all over the world.

Tymshare hired and trained product managers, and they said, "Gerry you don't have to sell this. You just produce the product and we're going to sell it for you." I would say for three or four years they did that, and they sold unbelievable quantities of FOCUS. That was in 1981, before we knew FOCUS was a fourth generation language, and we sold unbelievable quantities. We had not hundreds but thousands of customers. It was astronomical the quantities that we sold. Just to give you an idea, we didn't know what this business was all about. The first contract we signed with Tymshare laid out how we were going to split the first \$80,000 a month of revenue. You'll get so much, and we're going to get so much, etcetera. Then we got started selling it, and within a year the revenue was over a million dollars a month. Well eighty thousand to a million is a lot of space. So they said to me, "You have to come out here and we have to talk about this contract." That shows you how the expectations and the numbers you know can get out of hand. Tymshare was a very interesting business.

JB: When you say selling, were you selling copies of the software, were you selling usage rights, what was the transaction?

GC: For example, a company would want to keep its personnel information with Tymshare, and through the terminal, enter new people, and take out personal information. Or they would want to do some special study. Or they would keep all the warranty claims on Tymshare. We had U.S. Post Office customers, and we had what was Western Electric customers, and we had Colgate/Palmolive, Coca-Cola. We had customers all over the world, and they were all doing these kinds of information systems. It was the classical kind of stuff where you would keep track of something, and time-sharing was a very convenient. If you were terminal, and your company only offered batch processing, and we had a very elegant language to do this. You can do it yourself. If you're a computer programmer you can be self-reliant.

It was a comprehensive system. We gave them everything they needed. That is, you didn't need any other software. So you didn't have to worry about integrating things, you know. A Tymshare tech rep would go in and set up the database, the beta data describing things, the building procedures, builder screens, the forms; and then do their own ad-hoc reporting if they wanted to.

So we got up to this million dollars a month. Ultimately I think we got considerably beyond that, but that just gives you the idea of the scale. Now, remember, during the early years of batch processing, the number of people that used computers were you could probably measure in the tens of thousands. When you got the time sharing, you probably had a factor of ten, and you got into the hundreds of thousands, if not millions, but probably upper hundreds of thousands. That was at service bureaus. By the time you got in-house time-sharing, you probably got into the millions, another factor of ten. It wasn't until you probably got to the PCs that you got to the many millions. Now with the Internet, you're going to get into the hundreds of millions. So you can see, time-sharing was again in that ramp-up of factors of at least ten. It's a significant era.

So we were wildly successful and FOCUS took off. Then what happened was that in 1975 Microsoft started, and it was when Bill Gates got started. Now I didn't know him at the time. We started independently.

JB: One thing that's sort of striking is you've been talking, starting at Allied with the early GE machines and some CDC machines, probably some PD10s at Tymshare, things like that. We haven't come together with classical mainframes yet. A lot of your early experience seems to be on what the world would have thought of as scientific machines.

GC: Okay, good, I'm glad you mentioned that. Tymshare had two class machines. They were very big on PDP10s and IBM370s by the time they had come out. And they offered an operating system called CMS, or sometimes called VMCMS. DEC PDP10s had a very large scale time-sharing audience. But IBM entered the market and like a lot of things IBM do, they persevere, they sometimes come out ahead. So the CMS operating system was what Tymshare used. It was IBM mainframe machinery and I was in the IBM mainframe market. I became very good in that marketplace, and that's a good point because there was a lot of time-sharing on small machines. I can't tell you the numbers of machines that were out there. Everybody invented time-sharing machines - companies that no longer exist today.

But that got us into the mainstream, and by 1978, 1979, IBM started to make machines that they could sell in-house time-sharing. So companies, instead of spending \$10,000 a month for the service, they say look I can get that back in a year or two. So they started to buy IBM machines. Companies recognized that this is where time-sharing is at. It was a change of mindset about these things. There is an appropriate time when you want to do batch, but time-sharing is really the way you service lots of users with more productivity for the organizations to do more things.

So I get started in selling these in-house computers, and Tymshare came to me and said, "Look, don't sell FOCUS to these customers in-house, because you're just taking money out of your own pocket." They said, "Gerry, don't sell FOCUS to Western Electric. No matter how much they can pay you, you're going to be behind economically. In two or three years time, you're going to get five times more than they're going to pay you in-house." That was said to all the other vendors in time-sharing, not just Tymshare, but every time-sharing had a choice to make, should we go in and sell in-house or just pump this out? Should we pump the revenue out, or should we make a business out of it rather than just sell products?

So we said, "Well, if we don't sell it to them, they're going to find another alternative. The marketplace is going to win, and a competitor will come along and invent something, and they'll just buy competitor products." Economically it made sense for someone to eventually do this functionality. You can't take this mindset that we're the only guy in the world. So we told Tymshare, "No, this is what we think is the proper way to do it. It doesn't pay to lose it entirely because we won't survive and it's not fair to us." So we started to hire salesmen. Now, it wasn't obvious how the industry was to be structured in 1978. You have salesmen who support them, technical people. How do customers get support? We said, "Well how about telephone? We'll set up a hotline. Oh that's a good idea."

DSM: Do you remember who your first salesman was?

GC: Yes, Dave Kemler, who's currently my Vice-President of Sales, he's been with me all these years.

DSM: How'd you find him?

GC: He was an ex-IBMer. We were looking around and we said, "Dave, you know the machinery. You worked for a service bureau. You'd be perfect for this." He was very reluctant to join us. He said, "You are five, eight, ten guys." We were fairly prosperous in the sense that this revenue was coming in, but he had worked for IBM and that was so much bigger. So I said, "Why don't we go to dinner. You bring your wife. I'll bring my wife, and we'll all go to dinner together." And I think the humanizing of it changed his mind.

Unfortunately, the first day he joined us he didn't have an office and he was very upset. It worked out, but I wouldn't let him go out on sales calls and sell for six months, because maybe he'd put his foot in his mouth, you know. He remembers that very well. But it's the same thing we have today - you have to learn the message. So he slowly started to build a sales force. We put in hotline. We put in a telephone support. We put in a technical support. We invented all the things you need to support software products. Software products are being sold large-scale to lots of companies doing sort of standard things, but we put in consulting services to help them do projects if they wanted to pay for that. Then Marty was moved over into that. We recognized early that this is an international program. We had customers all over the world. So people in England and in France would want to buy it too. So we started with agencies, although we did set up our own company in England right away, but we had agencies in other countries of the world.

I had learned that when I was at Mathematica. Mathematica had a very international kind of viewpoint, which is strange because most of them were immigrants from World War II. For example, Morganstern had come from Vienna and he was still on the Vienna Institute. So they had this international viewpoint, and I had been going to Europe quite a lot even for Mathematica business. So it was very simple for me to set up an agency in these various countries. I actually knew how to do that. So we were very early international. We set up in Japan. We've been in Japan about twenty years now.

But in getting back to the story, we built our stuff for international, and the services and infrastructure to support that. We recognized that you need branch offices, at least for this class of product, which is really an awfully expensive product. In those days you were putting it on IBM mainframe computers. It was a relatively large scale and you needed people to go out there and explain it in person. You needed an education facility to teach them how to use this, so we built an education division. We had to really invent all the things that software companies needed. There were no role models. Name a software company in 1975. I bet you can't name one. They were just infant companies like we were. So there's nobody that you could point to and say that's how you do it - do it like so and so. So we evolved a lot of these ideas about how you support customers, and the contracting terms that you have. We invented all these kinds of things on our own. So that's how we got started in the early days at Information Builders.

DSM: Was your mom still alive? You were about forty years old.

GC: No, my mom had died very young. She died when she was 57 from stomach cancer. The great tragedy of my life is that she didn't live to see her grandchildren.

DSM: Oh heavens, and your dad as well?

GC: He died three years later. You know it was a strange thing, I was 27 when my dad died, and I thought, "I'm an orphan." But I'm a lucky orphan because I lived to see my twenties out of school. I didn't have a concept until years later how people sometimes live with their parents until they're much older. You know what I mean? I hadn't thought about the idea that you could be 50 and have parents who are 75 or older. I just thought – "well, I guess that's the way it is. Life goes on." As I got older, I realized the loss that I'd never been able to experience as an adult. But it was not something I thought about at the time, aside from the initial grief, you see.

JB: So we sort of move forward with the story. Nowadays, we sort of - conventional history is that there was a mainframe era and then there was a quiet sort of era, and there's almost nothing in between. There was a Tuesday afternoon when the whole industry stopped being a mainframe industry and started being a fully developed client server industry. In fact, you lived through what must have been kind of a confusing and tumultuous transition when these funny little PCs or IBM compatibles or what have you started showing up on your customers' lists.

GC: Well that was a wonderful opportunity for us. Actually there was another era before that. You had the batch era. Then you had the time-sharing era. Time-sharing was the most exciting industry. If you look at the price multiples of all the companies in the industry, they were the darlings of the industry. This was real high tech, time-sharing. Then the mini computers came in. Thinking Machines, it was a mini computer in some sense, right? Olsen had started the Digital Equipment Corporation - and I mentioned PDPs. So you went from time-sharing, really sort of coinciding with the era of the mini computer. And we had recognized already in the late 1970s early 1980s, that it would be a good idea to put our product on more than just the IBM mainframe. Wang computers were popular, and HP. There were a number of other computers... Unix was just starting up. So we decided to make a portable version of the product that could run on different pipes, and that's when we started to diversify the company a little bit. We formed a platform division. We had only just worked on IBM. We formed the DEC division, and the HP division, and Wang division, a Unix division, and we started to build a clientele on other machines.

We were pretty successful on DEC. DEC was a wonderful business for a while, but the other machines were just so-so. We had a lot of customers you see. The trick was to service the customers so they stay with you. You have customers who say, "Look we're taking those applications off the IBM mainframes and we're going on fax machines." DEC invented the fax machine, so why not follow them through that? It was more difficult selling fax directly, but most of our customers came on from other places, migrating.

So we had terrific business, migrating customers who wanted to take applications off and onto mini computers. Now we forget that DEC in those ages would say that they were going to swamp IBM because everybody's going to get off onto our price performance machines.

So that was a big era, the mini computer era. At the tail end during the mini computer era you had the PC. And the PC for us came in at about 1981. We call it an IBM PC today, but the first PC that came out in 1981 didn't have a hard drive, it just had floppy disks, 64k memory. And we wanted to see if we could make a copy of FOCUS on that machine. We had to invent all kinds of utilities and things to cram into it - you could buy a separate disk drive that you could plug in. It wasn't until the XT came out, I believe it was, that had an internal disk drive, right? By 1982, we had an early version of what we called PC FOCUS, which was a miracle in engineering. We went to all our mainframe customers and said, "Look, here is an exact replica of what you're running on the mainframe on the PC." Now obviously - if changes have to be made, we'll change it if we need to because it's a smaller machine.

JB: Okay I'm not going to let you get through this one so fast. You're putting FOCUS on an IBM PC in 1981. Whose decision was that, how did that happen?

GC: We had seen the PC. It was a technical challenge. Then we had the Apple Computer era, the 2C. My kids had 2Cs, I thought that was a wonderful machine. The early spreadsheets were out, the VisiCalc. Do you remember VisiCalc? And I said, "Hey, we have a place here. This type of program would be really useful on a personal computer." We had already the experience of pointing it towards these mini computers, right? We had the skills, so we said, "Let's try it on this small PC." And sure enough, IBM came through, memories got bigger, hard disks came in, and we had a ready market for it, customers loved it. By 1982 or '83 we were selling these things everywhere. We lived through the whole DOS era, 1982 through maybe '90, '91. We were selling PC products, and we linked them together eventually. We got good in communications. One machine would talk to another machine, and we'd get data everywhere. So that's how we were from batch, to time-sharing, to mini computers to PCs.

And PCs put the kibosh on the service bureau business, because at that point the service bureaus survived customers going in-house. The reason they survived going in-house at all was that the service bureaus had more to offer, particularly the network. They're way ahead in networking. They had years of experience writing complex worldwide networks that have to be up all the time, and companies couldn't reproduce that so fast. So their business actually continued for a while. It was the PC I think that slowly drained off this business because the PCs forced communications to get better - internal modems, jacks, you see what I mean? And pretty soon networks kind of came into fashion in-house.

So the client server came in around 1989, '90, '91, '92. That is when the next era came in. People wanted to hook up these personal computers to these other machines, right? That makes perfectly logical sense, to take the first computer and hook it up to our time-sharing machines that are running the corporate businesses. And we were slowly getting into that business. That was what was what's called the client server.

A number of companies jumped in, and Microsoft was clearly going to be dominant once Windows came out. It was clear that visual basing in Microsoft was going to dominate that business. It wasn't like the old days where you didn't really have a clear winner in fourth generation language, or some of these other products. There was room for everybody. But it was clearly evident that the desktop thing was airtight. My recollection is that Microsoft had just split with IBM, and the consequence of that is that it made IBM much more willing to talk to the rest of the participants in the software industry. Up until about 1990, they were your enemy. IBM was strictly 'not invented here, not us, we're fighting it.' No matter who you were, they were going to compete with you. Even though we sold wonderful software to IBM computers, and they'd gotten a lot more use out of those computers, and made those computers more productive, we were still considered the enemy. Around 1990, '91, that started to change when they split from Microsoft and they realized hey we'd better get our act in gear.

So we made a deal with IBM to produce a program, which we later called EDA, Enterprise Data Access/SQL. We said to IBM, "Look, if people can't get access to the data on those mainframes easily and bring that data down to the desktop or wherever they wanted it, the logical conclusion is that they're going to take it off. And if you take stuff off the mainframe you lose the machine. That's your livelihood." We had wonderful technology, which we built in FOCUS and we realized that we could divide that into two pieces: the front-end technology, the language that I had spoken about. But what made the language so nice was that we made all the back-end so easy. There were no problems in the back end. It was what you might call today a data drive. We built all the data drives. We said, "Look, we'll repackage the data drivers. We'll make the front end a SQL front end so that anybody could use it in any product." So you could be in your Excel spreadsheet doing a sequel statement and down would come IMS data. And IBM liked that idea. So for about two years we jointly marketed this product called EDA/SQL, and that carried us into the client server era.

That's actually one of the backbones of Information Builders today. We morphed from FOCUS to the client server technology. So we weren't very good at front-end tools on client server. For example, the Windows version of FOCUS never caught on. The DOS version was very popular, but the Windows version wasn't.

If you think about it, Windows at one point had a tremendous lock. At one time there were hundreds of companies in the DOS industry, and there were lots of programs. By the time you got to Windows, you didn't have that many tools. There were no Microsoft tools. So when the Web came, that was a golden opportunity for us because there, we sort of skipped the desktop. At the time we had wonderful desktop products, but it was pretty tough to sell them. When the Web came along we invented a product called Web FOCUS, the grandchild of FOCUS. So we had all these thousands of FOCUS users. They loved Web FOCUS, and we were selling Web FOCUS like hotcakes.

JB: Now when you say when the Web came along, let's get the chronology, when is that? Are you talking early 1990s, mid '90s, what's the timing? When did it come along for you?

GC: The Web came along for us probably in 1995. You couldn't sell our type of commercial software. Obviously firewalls and things like that were selling, and browsers, servers were being sold, but what we had was a way to publish data dynamically. If you wanted to look at sales by month, across the year, and the data's alive and you want to look at it right now, the product, whatever it is, would come right out of your screen. You could say, any month's sales with a low budget - make it red, if it's above budget - make it green. Then you would get a report with reds and greens on it. And if it's red you could point and click on the product history.

We had fabulous use of the technology because one of the things we were very good was enabling technology. The way we survived for twenty-three years through all these eras is that we always enabled the latest technology so customers could take advantage of it. Otherwise, how would you take advantage of it? You'd have to go to something brand new, throw out your old investment and bring in the new one. So if customers wanted it on mini computers, we would give them a version of FOCUS just drafted for mini computers. If you wanted to go to PC, we would go to PC. You want the PC to talk to the other guy, here's how we're going to do that. We invented EDA so they could talk to the data and all the applications we did before from different front ends.

In the Web world, we sort of come back a little bit on ourselves with Web FOCUS. We had the era of client server where you hooked up personal computers to backend computers. The Web will complete that by hooking up all the computers to each other. That's the completion of the game. You don't want to be a personal computer, you want to be a part of the Web. Now a personal computer is personal, but really is it so personal if you're going to share it with everybody else on the Web - chat rooms and email and everything like that?

I can give you a little sideline observation I made. I remember I was at a COMDEX show a couple years ago, and Bill Gates gave a talk. This was about 1996, and he was talking about the latest things they're putting into Windows, and the kinds of features he was pushing, and little things that helped you use it -maybe it was speech recognition. He basically said your personal computer becomes more personal. And I thought to myself that's absolutely the wrong direction. You do not want it more personal, you want it more connected. You want the features that connect it better. And I thought to myself how companies are influenced by the Chief Executives, the guys who run it. Their personalities and their ideas really do permeate organizations, and there's a clear example of how he really truly wanted a personal computer. Maybe that's his style of work, it's truly personal. It's not so important to be connected, you know? And I thought that was a core example. Now obviously in a large organization they can do lots of things, but my thought at the time was, his personal predilection was really a personal computer. But the world is going just the opposite way. We want all machines to interconnect with each other.

JB: While we're on that subject of the person that runs the company and how their personality affects the products, how about yourself and Information Builders? How do you see Gerry Cohen being expressed via Information Builders products?

GC: Well, I would say the following. The first observation that is pretty obvious is we're a private company, and we're probably one of the largest private software companies in the world. So already in this era of Silicon Valley high-tech multiples, that's already an anomaly. So I guess I'm to blame for that. People always ask why don't you go public? I guess we could have gone public, but we didn't. And that's not to say we won't ever go public, but...that probably was my decision more than anyone else because I thought there were things we just didn't need as a public company. We didn't need the capital to get going. We weren't out there to get rich quick. We have 1,800 employees, they're doing just fine. We've got a nice corporate culture. And I do think that the head of a company does set the tone. And I think most of the people who are in the company accepted my decision, because if they didn't they'd have gone on to start-ups, and some of them have made money and most haven't. There are a lot of guys who leave us, and I see them five years later and they've been through five different companies. Sometimes that's the game they wanted, and they can do that. So I think that in every company the founder particularly sets a tone. And after the founder leaves, invariably it changes. I remember J.C. Penney, Mr. Penney used to call everybody associates, and they had a certain culture because of that. You just don't find that today.

JB: Another thing as we've been talking is almost this assumption that RAMIS was invented in the 60s, and renamed in the mid 70s and here it is in the late 90s and nothing has changed. But clearly that's not the case, clearly the product you see in '98 must be dramatically different than the product you invented in '67. Can you comment on that?

GC: It's not quite so simple. When I left Mathematica, and then when I started Information Builders, and I started FOCUS, the guys at Mathematica said, "Well how do we know you didn't take any code?" How am I going to look at the code? We started absolutely from scratch from a coding point of view. So the only way you protect code is you can copyright it, or you can look at trade secrets, but you can't take trade secrets out of someone's head. We invented something that was in the spirit of RAMIS. FOCUS was in the spirit. In other words, it serves the same audience. That is, the user wants a comprehensive, fourth generation language to do an entire application themselves, and to be self-sufficient in doing that. You don't always have to rely on outside experts. You can train people in the domain of the knowledge - the managers to kind of take care of this application thereafter. But Mathematica was one of our major competitors for about I would say seven or eight years. But from a code point of view, it's like a car. The 1975 Ford is not the 1999 Ford. It's different. We write lots of code every year. We add new features, dramatically, but it services the same audience. It's a dilemma because if something's been around for five years people think it must be old technology, and new, new, new, new sells. But we're adding code at a dramatic pace. Every year there are all kinds of new things we have to do for the Internet; all kinds of things we have to do for client server, all the communication code we have to write, all the security code, the new security systems we had to put in. Then there are some small things. The Euro comes in, we put in special Euro functions. The year 2000 we put in wonderful date handling functions that we hadn't thought of before. We just keep going and going.

DSM: We asked you about your heroes when you were little. What about now, are there people in the business that you find really admirable characters?

GC: Well I don't know what you mean by admirable characters. You know, you have these unpopular icons out there, you know.

DSM: Who do you like, who do you respect, who do you have real respect for?

GC: Oh I have great respect for Bill Gates. I think he's done a wonderful job. I personally don't like necessarily the way Microsoft operates as a company. They do play hardball, and that is difficult for a lot of people. My own personal opinion on the antitrust suit, which is going on right now as we sit here is that we should have gone back to what happened to IBM in 1965.

In the '65 consent decree, IBM had to separate their software applications from their operating system. The consent decree of '56 boiled around the idea. In 1965 the government said the following: look, you produce a sort to sort records, and that sort's part of the operating system, and there are companies out there who want to sell their sort programs but they can't because you bundle your sort with the operating system. You can't do that. You have to publish the specs on how the sort works with the operating system, publish a price for it so other people can sell sort programs.

Well I don't see any difference between that and the situation today, none at all. There's a company that manufactures their operating system. They're taking pieces and saying we're making operation systems better for the consumer. So was IBM in 1965. I mean that is an exact analogy, and the entire software industry got going in '65 only because of that decree. Suddenly we were able to sell software to companies that up until then got it "free" with the operating system. It's a very similar situation. So I'm totally in favor of breaking up at least from an operating system company and everything else, whatever else they want to do. I do think there is a problem there. I think there's a great precedent for this. But I have great respect for the guys that run it and their business strategy and what they've achieved.

DSM: What is it about Information Builders, that building this company that gives you the greatest pleasure?

GC: Well I like information systems, I always did. Remember how I told you we had this guy Franz Edelman from RCA and he helped us make all the contacts? I once said to Franz, "What do you want to do with this? This is all so tough." But this is what I do. This is really what I do for a living. This is my trade. I like building information systems. I get a kick out of it.

I just came from a conference early this morning. We were talking to some customers, and one of them from the Department of Agriculture put up a fabulous information system. They have the fifth largest bank in the United States in terms of loans. They have a 60 billion dollar portfolio of loans that goes to mostly rural communities for all kinds of project. They have 900 stations, and they want to know what's the status is of their loans. How many loans do they have in the state of Mississippi? What is the status of the projects? There are all kinds of databases, because these loans go to all different programs. You couldn't put that together for them. They now have all these different databases at their fingertips. You get information that you could deliver to Congress when they would ask what did Mississippi get in agriculture loans? It's a wonderful information system that's at your fingertips. They actually demonstrated it to Vice-President Gore as one of their demo systems. It was super interesting, and they love it. And I get a kick out of that. I could just tell you about information systems we put on for years. I enjoy that.

DSM: Well I want to be sure that I ask at least one more question that I think people in 300 years would not forgive me if I didn't ask. And that was, what did you do with the \$1,400 that you had squirreled away while you were in school?

GC: Well with the New York State scholarships, you took a test. If you won it, you had to go to college in New York State. And if you did, you got \$1,400 to use as you wanted - \$350 a year for four years. At the end of the four years I said to my buddy Bob, "Let's go to Europe." We got the money. So we spent about eight weeks traveling around Europe. That's one of the great adventures of my life.

JB: If you think back to American Can in the 1960s or Allied, or corporate America in the '60s, before information systems, and now thirty years later, clearly they've had a big influence on information systems, but information systems and your kind of products have had an influence on corporate culture and what it means to be a business. Any thoughts on how products like yours and companies like yours have changed business, what the impact is back in the business world?

GC: I do think that information technology is making a very big impact on the way companies are run today; in terms of the number of people they employ and how they employ them.

Any new technology takes probably fifty years before its impact is felt. The first electric generator was put up in New York City in 1888 I think it was. But everybody didn't get electric lights until 1920 or something like that. The same was true with telephones. It was about fifty years before people said gee this is fabulous technology. And I think the same is happening with computers, particularly the personal computer. I really think companies today can run much more efficiently because of computers. And this intermediation, a very fancy word, but basically says I can have a computer do something instead of people doing it. I think you're really seeing that today. I think it's been occurring these last fifty years, but it's been occurring but you didn't really see it, visibly. And I think today you visibly see it.

I really do think a good part of the prosperity in the United States is due to the efficiency we get out of the use of our computers, and you see it in every walk of life. But a lot of that is this intermediation. So you might argue that there's a certain unemployment factor there, and a division of society, and that's a separate debate. But be that as it may, I think one of the reasons that we have such a vibrant economy is computers. They're making a difference. And you can come up with example after example in organizations where the culture of the organization has just changed because of computers, and the economics of the organization has changed. You did not see that ten years ago so obviously - it was there, but I think today you can see it. The investigator finds it with ease.

And I think our products are participating in that, obviously. We're making information easier for people to use and less people are needed to do everything. I'll give you an example of a system. This is when we were nominated for this Smithsonian award, when we became a finalist. We've had Los Angeles County as a customer for years and years, and they put up a system in their court system. If you had a court case in Los Angeles County, you had to go down to the clerk, and ask when your were scheduled, and who's the judge, and they had to look it up somewhere and find out if all the little stages where you served went to process, the warrant, did the judge get the answer, all the steps that go into it. If there was a change in the scheduling, that was a hassle finding it out. If a law firm wants to find out, it's just a mess to get this information. They would fax it to you. If they didn't have faxes, you just hoped to find out. They put that all up on the Web. It's a public site. And with great ease you can find the schedule on let's say the Santa Monica court. You can find your case if you knew a case number, or you could see all the cases scheduled. You could see who the judge was, who the defendants were. You could drill down to find out more information about the items in the case. So if something is missing you can make sure it's there. You just didn't need all the people in the court that you needed and couldn't get a response from. So all the law firms have at their fingertips exactly where everything is scheduled in the court system and the status of everything. That's a terrific improvement in efficiency in that court system. Nobody's faxing anything to anybody anymore. And what's the consequence of that? Well you just don't need so many clerks in the court. It's as simple as that. Now you probably do need computer programmers or computer people instead. But it's made a dramatic difference in how that court feels about itself, and how they feel up to date. And you can monitor what's happening so easily in the court, because you can do an analysis of what's going on.

DSM: Well we're at two hours and twenty minutes into the interview. The time has really gone quickly for me. Are there any questions that you think that we have not asked that we really should have?

GC: Well you asked me the germ of a question before, which was how does mathematics relate to this computer software, or this information system? And I've always dwelled on that idea.

DSM: Well expand on that.

GC: All right. You know I was in operations research and I loved the idea of applying mathematics to business problems, and I took cueing theory and probability theory and all this type of modeling, and then you have programming and game theory. And I tend to think that, particularly when you're running a business, that you've got to have the ability to balance risk.

You've got to quickly make up some assumptions about what the risks are, how much they are, how it's going to come out. And I actually think mathematical training is a good idea. I think I do it without thinking about it. It's not a conscious type effort. And I reasoned there are some problems that do take some conscious effort. For example, you interview people for jobs, and at some point you have to say - you're the candidate. And let's say you have to tell the person right then and there, all right? So, it's an exceedance idea. I see someone that's pretty good, but I say oh I think I'll go on to another person who is better than the first person. I see a series of people who aren't so good. I get someone better than I even liked before. Well maybe that's as good as I'm going to get. That's an exceedance idea.

Now actually that's a mathematical idea. When to stop? I'm trying to give you a flavor for this. There's a notion of literacy, literacy of people who can read. Numeracy is people who can compute. I'm sure we all know people who are not numeric. They just don't get numbers. They just don't get a sense of proportion on numbers, the reasonability of numbers, the use of them. I think what I got out of mathematics was a very straightforward sense of how to use numbers, the reasonability of numbers in everyday life. So that's the way I connected my mathematical background.

DSM: Thank you for that splendid interview. My experience in doing these is that after we go home, we all think of things we would have liked to have said, and questions that we would have liked to have asked, and if you think of any of those things, I hope you will come back and give us the chance to update this in a couple of years if you're so willing.

GC: Oh thank you, I think you did a wonderful job of getting me to talk about my favorite set of topics.

DSM: Thanks again, this has been great. Thank you.