Oral History of Gary Morgenthaler

Interviewed by:
Luanne Johnson

Recorded: December 8, 2005
Menlo Park, California

CHM Reference number: X3441.2006

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Gary Morgenthaler

Conducted by the Information Technology Corporate Histories Project

Abstract: In this interview, Gary Morgenthaler discusses his career as a programmer with Stanford University and Tymshare, an early time-sharing company, as a consultant with McKinsey & Company, and as a founder, COO and CEO of Ingres, one of the major database software vendors of the 1980s. Ingres (originally called Relational Technology, Inc.) was founded in 1980 to commercialize the INGRES database technology developed at UC Berkeley. He describes the intense competition between Ingres and Oracle throughout the 1980s and how Ingres began to lose momentum in the late 1980s, leading to the sale of the company to ASK Computer Systems. In the 1990s, Morgenthaler became a venture capitalist, running the West Coast office of Morgenthaler Ventures, the venture capital firm founded by his father in Cleveland. As a venture capitalist, he was instrumental in the founding of Illustra to market POSTGRES, also developed at UC Berkeley. Illustra was subsequently sold to Informix and then to IBM.

Background

Luanne Johnson: First of all, I want to get your personal background, where you grew up and what your family was like and so on.

Gary Morgenthaler: I was born in Erie, Pennsylvania. My parents moved, when I was two, to Iowa and my early childhood was in Des Moines, Iowa. My father was an entrepreneur and VP of sales for a young company there. He moved the family to Columbus, Ohio, when I was 10. And then to Cleveland, Ohio, where he became CEO, first in Columbus, then in Cleveland, of an entrepreneurial company backed by one of the first venture capital firms.

Johnson: So the Cleveland office of Morgenthaler Ventures is your father?

Morgenthaler: Yes. My parents still live in Cleveland. And we have an office which runs our _____ activity. My parents are just remarkable people, both of them. I spent my high school years in Cleveland, Ohio. Then I left for Harvard in 1966. I graduated in 1970; I was enrolled in the government department with a specialty in international relations. So I was

a student of Henry Kissinger who was teaching at Harvard at the time. I think I took four courses from Dr. Kissinger while I was at Harvard.

My incoming expectation was that I was headed off into the State Department or the foreign service to pursue a career in government. I had been student body president, on student council, and in many other organizations in high school, so that seemed like a good background for government. I found the studies interesting and Harvard was an astonishing place then, as now. There were people like Brzezinski and many other people. . . . Graham Allison, who is on the faculty there now, was my hallway proctor. There were just unbelievable people there.

That was fun but, come 1970, we were in the midst of the Vietnam War. I, and pretty much every other student I knew, found a real cognitive dissonance about becoming part of a government which was engaged in politics you don't believe in. And our general sense was that, if you join this to become part of it and be complicit, by the time you're able to change anything, you will have been co-opted by it. So it just seemed like the wrong choice for me. I had taken two courses in computer science at Harvard, just to sort of broaden my interest, and I found them very interesting. To earn money, I did some part-time work doing data analysis for various professors around campus and I was good at it, so I took a summer job at Case Western doing data analysis as well.

First Programming Job At Stanford

My brother was a grad student at Stanford. He had a rock and roll band. He and I played music while I was growing up, so I came to California after graduating to play drums in his band for the summer. I found that California was too good to leave, and I began looking around for what I could do. At that point, I started taking job interviews. The economy had just turned down. I took 40 interviews and had three offers, one from American Express, an insurance company, and . .

Johnson: These were computer-related jobs?

Morgenthaler: Computer-related jobs. And the third one was at Stanford. I said to myself, “Well, the others sound boring, this sounds great, I'll take it.” So I began to work at Stanford. And then, before they figured out that I wasn't a computer programmer, I became one. It was just that, you know, I was used to taking crash courses where you do all the study for the course in the last two weeks. So I thought: I know how to do this. I get the book, do a two-week crash course, and I’m a computer programmer.

Six months later, I was running the program and then I was running three programs and so, at Stanford, I taught the undergraduate online courses in French, Russian and German for first and second year Stanford students. Did data analysis for the Language Arts for the

_____ program. This was in a laboratory with Pat Tupee. It was called the IM triple S, Institute for Math Studies in the Social Sciences. Dick Atkinson ran the program. Dick became President of University of California and the head of NSF. I was reporting to a guy who was reporting to Dick Atkinson. I had a near-harrowing experience, toward the end of that first couple of weeks in the job, when they began to wonder whether or not I was going to be okay in the job. But I persuaded them I was and then they were very happy with me.

Three years after that, I was deciding whether I wanted to go on and do a Ph.D. at Stanford or go into the industry; my interests were commercial and not academic. I didn't want to teach. I found computer science very interesting. What I found most interesting was that, every time I ran into a problem and the system wasn't doing what I thought it should be doing, at the application level I couldn't solve the problem. I had to go to some of the operating systems guys and say, "Why is the system misbehaving? Why is this page thrashing?" And a German fellow, Reiner Krebs would come out smoking his pipe. He'd go in with this huge program listing and he would come back out the next morning and say, "Well, the problem is this and we fixed the problem last night. Thank you for pointing it out to me." Well, I'd say to myself, why can't I fix my own problems? I think I need to become an operating systems designer.

Technical Career At Tymshare

So I went off to Tymshare and -- this is the story of my life -- sold myself into a job that I wasn't really ready for. So I became part of the operating systems group at Tymshare, first, in a utilities programming role, which I did for six months, and then they said, "Okay, you can do this job", so I became one of three operating systems designers.

Tymshare, you may recall, had an operating system called the TYMCOM-10 operating system. And they basically took the DEC System 10 operating system called TOPS-10…it was a time-sharing operating system for the DEC-10.

Johnson: About what year was this?

Morgenthaler: 1973.

Johnson: They were no longer using the SDS, is that correct?

Morgenthaler: No, actually, they were. They had one building on Budd Road for advanced development which is where I lived, and a building for their XDS 940, which was running – and this was sort of a small world situation -- timesharing for a number of applications, among which was the numerical machine control application for a company called MDSI. As it happened, my father was chairman of MDSI. MDSI, over time, grew to be one of Tymshare's largest customers, so it was kind of uncomfortable for me. Tom O'Rourke and my father got to know

each other and they became friendly and he sort of checked to see how I was doing. Tom said, “Oh, he’s doing fine.”

So, my interest became operating systems. I became very focused and very passionate about creating the world's best operating system. We took the DEC System 10 operating system, which was advanced for its day, but state-of-the-art technology had moved on into what's called demand paging. Instead of taking an entire file, an entire application, in and out of memory every time you want to do anything, the new technology, which we implemented, brought in just those pages, those blocks of the application, that one is actually going to touch, because that process is faster. Then, in the time-sharing world, the main memory, which was a scarce resource, can be shared among multiple users, all of whom were just using the portion of the application they actually needed to touch. You bring in pages when they're required and not before.

And that was a new concept. It's one I ran across at Stanford, and I and two other people lobbied and said, “We know how to get three times the throughput on the TYMCOM-10 than you are presently getting. If you give us 18 months and just sort of stand back, we will deliver you three times the billable units on your machines than you're presently getting.” And we did just that. I was very proud of that. So Bill Weir and Allan Ginsberg and I . .

Johnson: That must have been a major flexion point for a time-sharing company.

Morgenthaler: Oh, yeah. It was a huge advantage for them because the TYMCOM-10 and the DEC System 10 were a cash machine for Tymshare in 1986. We did this work in ‘‘73 to ‘‘76. That operating system lasted us another 10 years and it was more advanced than Unix, more advanced than anything else that was out for the next 13 years.

It was a fun time for me. I was in my early 20’s, a hippy with long hair. I had my own million-dollar machine; it was mine from 10:00 at night until 4:00 in the morning. I didn't have a whole lot of social life but I had a great intellectual challenge and I had this giant toy. And I and two other people sat down and tried to figured out what we could do with it. So it was a lot of fun. I learned a huge amount. I will concede that this was one of those times when I threw myself, wholly unprepared, into something where there was great opportunity, but I managed to get it done.

Johnson: You like being on a steep learning curve.

Morgenthaler: I love to be on a steep learning curve and I actually live to be on one. I thrive on it and I'm not happy unless I'm on it.

So that was '73 to '76. First I came in as a utility programmer, then operating systems programming, three, four months of that, and then they promoted me to the operating systems group, one of three people. We revamped the TYMCOM-10 operating system, and then, by '75, we'd done all the interesting work and I was working on utilities and new features, and it became sort of mundane.

So I needed a new challenge. The operating systems group needed managing and the other guys were talented technicians, not managers, so they asked me to manage that, which I did for awhile. But it was still pretty mundane so we handed it off to somebody else and I said, "Look, I think the interesting work here is done. I think the future is not in mainframe computers or very large computers. I think it's in smaller computers and particularly I think it's in microprocessors." The Intel 8080 had just come out and then the 8086 and the Zylog V-80 and V-8000. So I persuaded them to put me in charge of the minicomputer systems group at Tymshare.

I formed this group and was allowed to recruit into the group a number of very good people from the company; I had sort of cross-functional responsibility. I had a group of eight people or so reporting directly to me, but they also made me responsible for technical oversight of all the people, seeing that the application people in Ann Hardy's group were successful in using the systems products. It was an odd matrix. Matrix organizations were in vogue at the time and you were sort of responsible for the success of people on a dotted line basis without direct management authority.

But my direct responsibilities were for producing minicomputer and microcomputer products. We built them, we deployed them, we came up with many innovations. There are a couple of innovations I'm particularly proud of. One is that I built, personally, the high-speed interface for TYMCOM-10 and TYMNET, so I had some chance to interact with TYMNET. And I got a sense of distributed computing, the notion that you're actually talking to another computer out there on the network, it can message back and forth, so you can control computers remotely. It was the Internet before the Internet.

We deployed systems out in the market and in customers' sites and we were managing those distributed systems, we were doing automatic software downloads into those systems, remote debugging of what's going on, real time remote debugging and control, a lot of things that were 20 years ahead of their time.

And so that was great fun and from late '75 to early '78, I was manager of minicomputer and microcomputer systems. And this project had high visibility within the organization. I was called in quarterly, at least, to report to the board of directors because this was one of Tom's pet projects. I was working with Warren Prince, a prince of a guy, who was the Group VP and on the Board of Directors. Warren took a liking to me and he was enthusiastic and wanted to make things happen, so I got high level cover from the board and we got requisitions and we got access to customers and we got all the stuff that you need to actually build and test products.

When all that was done, we were very productive. My eight people built about 16 different product implementations and we were really excited about it. I had people from the Stanford Ph.D. program and people within the company who joined the group; we just built a crack programming team. I had people working really hard; they were good people and they were working very hard. And then it came time to actually deploy these products. And marketing was focused on selling more of what they already had, meeting quarterly numbers.

I would go into the board meetings and say, “Look, I just came from this meeting, there's this guy named Bob Noyes; he's drawing a thing he calls Moore's Law. And here it is. Here's Moore's Law. And now if you think about this for a second, what this means is everybody can have a computer. You can have your own computer, even if you're in your home.” People looked at me as if I had just, you know, as if I was on drugs. And, after awhile I thought, “Well, okay, they don't like my long hair. I'll cut my hair. And they don't like my slides, I'll improve my slides.” I was going in talking about this every quarter and nothing would happen.

And, after awhile, I thought, “I'm not getting through to these people. Maybe I don't speak their language. Maybe I need to go to business school or something. Because they're smart, I respect them, they're good people, I like them. I'm saying things that are totally sensible to me but they're not connecting. I need to do something different. It must be my fault.” Later, I thought, “Well, maybe it's not entirely my fault. Maybe they weren't listening.”

Consulting Career at McKinsey & Company

But, anyway, at that point, I had two choices. So I got the enrollment forms for Stanford, and I like to think I would have been admitted but, at the same time, I knew some people at McKinsey & Company. My brother had worked there and I played touch football with them. For some reason, they were impressed with me and they said, “Come on in and interview.” So I went in and interviewed and I was one of three people in the country admitted without a business degree at that time.

I got an offer to work in the San Francisco office at McKinsey and I looked at this and I said, “Well, okay, I can make, $50,000 a year or I can pay $20,000 a year to go to Stanford. And if I graduate in the top 5% at Stanford business school, I might get an offer to join McKinsey. Here's my offer from McKinsey. Which do I take?”

It wasn’t a hard choice. But it did occur to me that I was going to be the only one of the three people in my class without a business degree. I was a step behind people, so I really needed – here's that learning curve thing again. I read the course syllabus and looked at the books that people were reading and I got my own copy of the books and, nights and weekends, I read them; they weren't that hard. In fact, they were relatively easy, I thought. So, six months into McKinsey, I could hold my own.

I loved McKinsey for the people, I loved the diversity of intellectual challenge, I loved learning practical applications of marketing, capital asset management and planning – just learning about financial analysis, this kind of cash flow and that type of value, all the things that you learn in business school. So I got a chance to put them to work in projects and it was fun, for a while, to be part of a crack team. My first week at McKinsey, I was thrown into the midst of the last of seven or eight days of a study assignment. We were doing this for one of the divisions of a multibillion dollar corporation and we were supposed to produce the strategy that was going to make the division successful. We worked 16 hours a day and showed up on the doorstep of a CEO and the board, and presented our conclusions. That was life at McKinsey.

It was like a Ph.D. thesis every three months in a new field. Then you get sort of a week's breather at the end of the study; then it's like Mission Impossible, you know, here's your next assignment and then you're off . . .

Johnson: And the future of the client's company is riding on it, but don't worry.

Morgenthaler: You have no choice about it. It's, like, okay, I'm going to Minnesota. Great. My first assignment, as the new kid on the block, was International Falls in the dead of winter. My next assignment was in Phoenix in August. It's as if, well, nobody else wanted to take those assignments. And I wasn't sufficiently senior to pull a better assignment.

So McKinsey was three years of really intense business exposure. Lot of fun. Great learning. Wonderful people. Lifelong friendships. My classmates – the people that joined the year that I did -- are still good friends. Extremely high quality people. An organizational culture that's unique because the organization takes upon itself to really deeply train. As an institution, McKinsey trains people with the world's highest standards about the exponents of theory and practice and execution and it's a take-no-prisoners organization. You fall a step behind in that organization, you're gone.

Johnson: That's why it has the kind of reputation it has.

Morgenthaler: Yes. It is a tough environment; you're expected to produce. You're in with the best and it's exceedingly competitive. It's an up-or-out organization, so there's an element of competition that can make it a brutal place. But it was a wonderful experience for me, personally.

At the end of three years, I looked at this and I said, "When I was recruited, you told me you were going to build a technology practice. I've been here three years and there's not one of the partners in this organization who knows anything about technology. And you're telling me it's a seven-year track to partnership, so I'm going to spend the next four years working on forest products and shipping and retail and oil and gas petroleum exploration because you can't sell a

project to a technology company. In three years, already, my technology skills are dulled; four years from now I'm not going to have anything to say of any importance to any technology company. I will have been seven years out of the industry. You can't solve this equation." So I began to think about what I was going to do next.

Founding of Ingres (Relational Technology, Inc.)

Through my father, I had known a number of people in the venture capital industry, and I had an offer to go to work with one of the venture capital firms. But I felt that I needed some executive experience before I could be a good venture capitalist. I didn't know how I could counsel CEOs if I hadn't been one. But one of the venture firms convinced me to take a look at some projects. This was Sutter Hill Ventures in 1980 and they had me look at a bunch of projects and, well, most of them were just awful.

But one of them was three professors from UC Berkeley, Gene Wong, Michael Stonebraker, and Larry Rowe, who had just embarked on a project called INGRES. They had hired a regional sales manager from Cullinet, a fellow by the name of Jon Nakerud. They had come with a business plan to Sutter Hill Ventures and they probably shopped it various other places. Jon wrote a skeletal business plan, which did not stand scrutiny, to put it politely. He brought it to Sutter Hill Ventures and Sutter Hill asked me to take a look at it.

As it happens, Tymshare had had an attempt at a relational database management system called Magnum. The operating systems group provided the underlying facilities and so I watched these guys trying to build a relational database management system. Predictably they got it wrong, so it was never very successful. But I thought, gee, that's an interesting idea.

And then I sat down and talked to Mike Stonebreaker. I asked questions and the more I asked about it, the more I thought this really, really makes sense. If we can get this to work, this is important. I was beginning to get passionate about this and, after awhile, it crept up on me. I went into Sutter Hill Ventures and I said, "Everything else you've shown me is dreck, but I think is a great idea. I think this is transformational and that there's a big industry here and a big company, potentially. But, there's not one of these guys who can manage a dog fight. So I don't know what you plan to do about this but I don't think the company's financeable. The idea, however, is. The idea's great, the team's great."

And they said, "Well, we've kind of reached that conclusion. We thought you might like to join it." And I said, "Well, okay, doing what?" And they said they'd like to make me executive vice-president and chief operating officer, one of the founders of the company. So I began to think about it. At McKinsey, I learned marketing and finance, at Tymshare, I learned engineering, but I hadn't done sales. Jon Nakeurd had done sales, and he'd done sales with a database-related company. That's a good fact. He's a different kind of character, but I can get along with

different people, so that was probably okay. We seemed to like each other. I wanted to be in a management position in a company and I really believed in the idea. So I said, "Okay."

So I left the Bank of American Building and my commanding view of the incoming shipping traffic every morning to go to a windowless basement in the north end of Berkeley on 2212 Euclid Avenue -- Jon Nakerud's basement. We'd walk down the wooden stairs which would sway back and forth as you walked down into the basement. Does that give you a picture of . .

Johnson: Yes. Oh, I know that part of Berkeley very well.

Morgenthaler: With the bare light bulbs hanging from the ceiling. So, I would show up every day in a suit. This got to be a joke, because I'm from McKinsey and I've decided, look, I'm serious about my career. This is a serious thing. And I show up in Berkeley and these guys are dressed in t-shirts and cut-offs and shorts and sandals. So I basically said, "Look, I'm serious. We're making a business here and it's going to succeed." I would show up every day in a suit and tie and it got to be a joke. I'd take the suit jacket off and I'd roll up the sleeves, but I'd keep the tie on. It kind of got to be a joke, but I was also giving a message to people that this is not an impulsive lark.

Johnson: Had the company been incorporated at this point?

Morgenthaler: Oh, yes.

Johnson: It was originally Relational Technology, Inc. wasn't it?

Morgenthaler: Yes. It was formally incorporated and financed in November of 1980.

Johnson: Okay.

Morgenthaler: November 10th, if I recall correctly.

Johnson: These guys were shopping around? The intention was to create a company if they got the financing?

Morgenthaler: If they got it, yes. They didn't have any money and, without the money, they probably wouldn't have done it. Sutter Hill later said to me, "Absolutely, we would never have financed these guys if you hadn't joined them. So it was your willingness to do this that . . "

Now I'm down in the basement in the north end of Berkeley, I noticed that I'm the only one that's quit my paid job here. Jon didn't have a job. The three professors kept their day job. I'm the

only one …it's the old ham and eggs joke, right? I'm the one that made the real commitment. So, I was very determined that this was going to work. To Mike, Gene and Larry's credit, they worked hard at this. They put in hours and all their non-teaching and leisure time; they were committed to this and . . .

Johnson: Doing what? I mean, were they doing redesign or redevelopment? Commercializing? What were they doing?

Morgenthaler: Well, Berkeley turned out to be a huge resource because we had a flow of students, undergraduate and graduate students, of exceptional talent. This is the same group that produced Bill Joy and others of his caliber. So a very good gene pool on the one hand and very good training and then also lot of just computer science culture and best practice at Cal. It had its own Berkeley flavor, but it was a great contribution of talent, and Mike Stonebreaker was an extremely good promoter of the research version and he was pretty good at connecting with commercial environments, so he spoke with a number of industrial customers. He would get a pretty clear idea of their interests. Then he would feed that back into the research, so that while the research always had an academic side -- what's interesting, what's novel and so forth -- there was also a practical side which is to say, okay, what's going to sell?

The university version of INGRES was first implemented as six processes, six separate programs that, would swap in and out with memory on a PDP-11/45 computer. It was so slow that it was reputed to dim the lights on campus when they ran it. It just was such a hog. Our first job was to take this version, re-architect it as a single process, transport the code over to a VAX computer and then go through it and, line by line, take out anything that wasn't efficient and, line by line, reorganize and re-architect the algorithms to make it faster. The initial version was easily twice as fast; then five, and then ten times as fast as the original University version. A lot of the criticism of relational database and a lot of the negative PR about relational database was that it was so slow. It was an interesting academic curiosity, but it was so slow that it wasn't going to be practical. To Jon Nakerud's credit, he said, "I think this is the future and I think these guys are in denial that it's coming." John made the bet and left Cullinet. The other database companies, the leaders at that time, basically were in denial that this relational thing was coming.

Johnson: Repeating the pattern of Tymshare being in denial with the microprocessors coming in.

Morgenthaler: It's an old story, too often repeated. The innovator's dilemma. The company began in November of 1980 and, by the summer, June or July of 1981, we emerged, bleary-eyed, from the basement. By that time, we had, I think, all told, some 16 people, cheek by jowl, down in this Berkeley basement – part-time grad students, people like that. It was intense with very close quarters for everybody down there.

Johnson: But you were still operating off the funding from Sutter Hill?

Morgenthaler: $300,000. The princely sum of $300,000. And we brought to market a commercial product on $300,000.

Johnson: $300,000. It's amazing.

Early Growth of Ingres

Morgenthaler: We shipped to _____. And they were happy with it.

That was the first commercial customer. Then we began to roll out various military customers and other customers: Naval _____, Commerce Clearing House was another, and a handful of other customers.

At that point, Sutter Hill looked at this and said, "Oh, that's pretty good. Let's see if we can find somebody to fund this with us, to do a step-up, so Welsh, Carson, Anderson, Stowe came in. Kip Moore, Charles G. Moore. They cofunded the series B round and he raised a whopping million and a half dollars. <laughs> It seemed like a lot of money.

We moved from the basement. We were out of cash, but we had a product, and we had customers. The customers liked the product and Sutter Hill said, “Okay.” We got into a commercial building at 2855 Telegraph Avenue, the old Farm Insurance Building – a funny story. We keyed off the Valley culture at that time, including the Friday afternoon employee get-togethers, although we didn't have enough money to afford furniture. So we would sit around in kind of a circle at the end of the week to talk about what had happened. This was sort of an open environment, with a lot of windows looking into the room, so people thought this was some kind of a counseling group, relationship counseling. Relational Therapy? Relationship Technology? They'd be looking at it and thinking, “What do you suppose these people counsel?”

We really kind of picked up the pace at that point. After all, in the basement in Berkeley, we didn't have any money for any capital equipment, we paid minimum wage salaries to the grad students, I took a huge pay cut to do this and Jon Nakerud did, too. And the professors were paid just a per diem fraction of their normal consulting fee. We all basically said that we’re in this together, and that we were going to have to take a salary cut.

Johnson: And the development was done on University computers?

Morgenthaler: We borrowed time on the University’s computer and we agreed to give them a free license to the software. Anything we developed, they could use. So that worked out well.

But, by this time, we actually had a building, an office, a place where we could have our own computers and then we really began to kick it in high gear, because getting time on time-shared computers remotely over a dial-up link is really limiting.

So 1981, we sat around in an open office. We couldn't afford any partitions. As a result, there was a high degree of communication and, with that communication came a lot of trust, because everybody was working hard and it was a real corporate culture of "We're all in this together." If anybody had a problem, everybody else was willing to pitch in and help work on it. The engineering team just resonated because these guys were so smart; we began to kick out release after release after release. Inevitably, there were problems, but the engineering team got them solved. In those days, there was a new thing called VisiCalc, which had just come to market. With that, they were able to plan and manage and predict and get it right, and people were astonished. So all of that seemed to be going along pretty well.

Johnson: What was happening with marketing?

Morgenthaler: Jon was in charge of sales. I was the COO, Jon was CEO and was in charge of sales. Initial sales were pretty good. Jon was a great missionary for this.

Johnson: Targeting the larger companies?

Morgenthaler: Targeting the larger companies. He had some relationships from Cullinet, and in the first two years, that all seemed to go pretty well. We were now in 1983 and the company did $300,000 in revenue in the first year. We then did – I want to say a million eight in the next year.

We then did three million and we then did seven and a half, something like that. So we were basically doubling every year. But, by the time we hit three million or so, Jon seemed to take a different attitude. It was as if, well, the company's successful now and I'm going to go take flying lessons in the afternoon a couple days a week. So he did that. I kind of expressed my misgivings about it but I figured I'm, you know, I'm the COO, Jon's the CEO, I'm not going to make waves about it. And then we began to miss the sales plan and then the sales team began to lose purpose.

Johnson: So there was a sales team.

Morgenthaler: Yes. He hired a young woman out of HP, Marcia Stewart, Marcy Stewart, who was very bright, a Cal grad, very personable, bubbling with energy and green as could be. Green as in green. But smart. We taught her, and her interpersonal skills were such that she would form a relationship with the customer. She was so service-oriented, so smart, so quick to pick up things, and so much fun to interact with that she became very good and very successful.

She was our first sales person. We then hired a second sales person. They had to talk me into it. His name was Richard Shepherd. Mike Stonebreaker brought him in and said, “I know this guy; he'd been bugging me to become a part of this company. He’s in the university-wide administrative office and he'd like to be a sales person for us.” I said, “Mike, that is the single worst idea I've ever heard. That's really brain dead.” Then I met with him; Rich was a communications grad, honors grad out of Princeton, who was so verbal, so personable, had such good interpersonal skills in communication – and a born closer. I remember, he was asking me closing questions every step of the interview. By the end of the interview, although I never would have guessed it, I was thinking, “This guy can sell.” So I said, “Okay, we'll teach him computer science. We'll teach him all he needs to know. But we're not going to give him the commercial customers; we have all these academic customers, so we'll give him the academic customers.” And he did a bang-up job. We dominated the university field because he was terrific. Rich went on to become the director of marketing for us and the VP of marketing and communications at Sybase and then became VP of marketing at _____. He made enough money at _____ so that he's now retired.

We just took risks. We didn't have any credentials; we took risks on wholly unproven people. We just went on raw talent, ability and desire. So many had no training, no skills, no experience – we had to teach them on the fly. It was scary. But we got it done.

Becoming CEO of Ingres and Competing Against Oracle

At any rate, by late '83, we had missed the sales projections in two of three quarters, and the board had clued in on the fact that Jon, the CEO, was not engaged, and there was no program to get us back on plan. I was running everything but sales. Engineering was fine, marketing was fine, customer support was fine, operations was fine, clients were fine; sales was broken. And in the summer of '83, the board decided that they were going to take Jon out of the CEO role. They kept him as non-operating chairman for a while, in a sales position where he could still sell because he was the only proven sales person. But the board basically said, “Jon, you're not really interested in being the CEO of this company any more.” That lasted for awhile but then even that wasn't working. Ultimately, Jon was separated, keeping some of his stock. They made me Acting CEO in the summer of '83. And I said, “Well, okay, so I'm ambitious, what do I have to do to keep this job?” And they said, “Well, we’re going to run a search and try to find the best person we can and we're going to find a great, experienced CEO for this job. Oh, you're interested in the job? Okay. We'll put your name in the hat, too, and show us what you can do, kid.”

Johnson: Who was on the board at this time?

Morgenthaler: Bill Draper was the initial chairman and then Bill gave way to Len Baker, who came on just as a director. Jon became chairman and then, about this time, Bill Younger transitioned into the role, taking over that role from Len Baker. I think Bill Younger was a

director at the time, relatively new to the job, very new in venture capital. Nevertheless, there was a sort of order from headquarters that we're going to run a search and we're going to get an experienced CEO for the company.

I said, “I want to get this job, so what do I have to do? Let's figure this out.” So I recruited a very experienced, top flight VP of sales, Al Sisto. Guess what? We began to hit our sales numbers. We got back on plan. Got ahead of the plan. We were banging out the sales numbers. Everybody's happy. And the board said, “Well, yeah, but marketing's broken.”

I said, “OK, we have a budget now, so I'm going to go recruit a VP of marketing.” And I recruited in a fellow by the name of Peter Tierney. Al Sisto came in from Intel and System 2000, one of the early database companies, with experience in sales and an absolute crackerjack sales manager. Pete Tierney came in from IBM where he was regional marketing director for IBM, running the eight western states. Truly, this was a recruit beyond my dreams.

So I now have as good a team reporting to me as anybody in the industry. Two people I have recruited and persuaded to join the company. Six months into the search, I look at the goals the company had set. The goals were to get the company back on a revenue plan, to make sure that we didn't miss a beat on operations, to recruit a top-flight management team. We were ahead of our revenue plan, and it had to be agreed that Al Sisto and Pete Tierney were top flight.

I had recruited in a VP of finance as well, Tony Muller, who went on to become VP of finance of Silicon Valley Group, of JDS Uniphase – a very successful guy. So I've got an entire management team underneath me. We're beating the plan. Everything's working.

And the board of directors was still conducting a CEO search. I asked them, “Why is that?”

They said, "We think we need somebody with more experience." They kept bringing in these buffoons, people who weren't remotely qualified. They'd say, “What you do you think?” And I'd say, “Well, I'm a good soldier. If you find Superman, I'm going to salute. I want this company to be successful and I want my shares to be worth some money.” They kept bringing in this procession of people who weren't qualified. At the end of six months, I said, "Well, what's it going to be?" They said, “Well, we think we need to start a new search.” I said, "I'll tell you what. You start your search. I'll start mine. We'll see which one finishes first." I had the job the next day.

Johnson: People get into tracks and they can’t shift their perceptions.

Morgenthaler: Yes, they see you for what you were, how they viewed you in the past, not what you are now. So, in January of 1984, I became CEO and from then through 1988, served as

the CEO of Ingres. And, every year, we doubled sales and, every year, we were profitable. We grew sales on average 100% per year over the eight years that I served as CEO of the company. Profits grew with sales and we were within five to 10% of our plan every year, no matter what – the good years, bad years, 5 to 10% of the plan. All this time, we're chasing Oracle; my arch nemesis was Larry Ellison. But it wasn't just Larry Ellison, it was also Tom Seibel, and Craig Conway, the whole rogues' gallery. They had some exceptional talent there and our job was to compete against people who went on to become icons of the industry.

They had a huge talent pool over there so my three professors from Cal and I are competing against this marketing brain trust from the Peninsula, and we're handicapped because we're over in the East Bay. It was hard, to be candid, to recruit top sales talent over to that side of the Bay. The job pool was here, in the West Bay, so we were kind of fighting with one hand tied behind our backs. We had the engineering team located there. We considered breaking up the company and putting sales and marketing here and it might have-- I don't know. Hindsight is 20/20. It might have been the right thing to do, but we ultimately decided we needed to be one company with one culture, one organization. We wanted to keep engineering and marketing together so they could communicate.

So the company grew through 1988. We attempted to take the company public in 1987 on October 16th. And that was the Friday before Black Monday when the stock market lost 25% of its value in one day.

Johnson: Yes, I remember that very clearly.

Morgenthaler: Sort of like a financial earthquake. We had been very successful. We'd written and filed the registration statement on Friday and then, on Monday, we just watched the bottom drop out of the stock market. We looked at this and said, "We can't go public. Nobody's going to go public in the immediate future." It took six months to get back on track. Meanwhile, we had been catching up versus Oracle. There were a couple sub-stories here.

Johnson: Go ahead.

Impact of IBM's Standardization on SQL

Morgenthaler: Let me sort of roll back. In '81 through '83, Ingres was marketing a query language called QUEL, for Query Language. And QUEL was a fundamentally superior query language to SQL. It was superior in that it had two things, really three things, that SQL didn't have. It had very consistent query notation and SQL is a little bit quirky. Secondly, it was wholly declarative and relational database is about declarative technology. SQL had some quasi-procedural aspects to it so not only was the syntax poor, but you actually had some sort of procedurality showing through in SQL. And then, finally, there were a variety of

circumstances that were unsolved problems SQL and QUEL solved those problems. Query closure and nesting _____were very elegantly done with QUEL.

Johnson: Was that developed by the engineering team?

Morgenthaler: Gene Wong is the consummate mathematician. He was the department chair at UC Berkeley and he is a master of simplicity and elegance. QUEL was his invention. From '81 when they first built the product to '83, we were just clobbering Oracle, beating out SQL with QUEL. Come late '83, early 1984, I can't recall exactly, IBM announced DB-2.

Johnson: Ah, yes.

Morgenthaler: And with DB-2, IBM announced that they were taking their System-R prototype and implementing and standardizing on the SQL query language. Well, I want to tell you, we started suddenly swimming upstream, and up a waterfall. That which had been an advantage to us, because it was a fundamentally superior product of technology… And when I say it was superior, Ted Codd, the developer of the early relational database theory and the arbiter for two decades of what was and wasn't a relational database, came and apologized to me personally for the mistake that he had foisted on the world in SQL when QUEL was obviously so much better. He said, "I feel really bad about this. I feel like I owe you an apology."

So that which had been an advantage was suddenly a disadvantage and Oracle, to their credit, and to their success, turned this into a marketing advantage to say, look, IBM sets the standard, IBM backs SQL, you can't be out of step with IBM, it's going to be the industry standard. And it was then that I learned the power of standards in the marketplace because, suddenly, that which had been an advantage was now a disadvantage.

So we tried a marketing response, which was we built an SQL wrapper, which allowed you to write SQL and convert it into QUEL, but the fundamental engine was still QUEL. That was a mistake and lost time. It became pretty clear to us, I think, within a couple of months, that that was not going to fly. We really had to rewrite the engine.

In the early days, we had probably a two- to three-year technology lead and advantage over Oracle. We started with a lot of functions from the university code and we started with the people who knew it well and were very good engineers. But then we were obliged to rewrite the internals of the system to make it compliant with and competitive with SQL and that cost us a year, easily, 12 to 18 months, and it was a big setback for us. We had been gaining; when we were eight million, Oracle was 15 million, I think. And then we were 17 million, 17.6 million, if I recall, and Oracle was 24 million. So Oracle less than doubled and we had more than doubled that year. We had grown within 30% of Oracle's revenue base, and it was clear we were going

to catch them. They had more feet on the street than we did, but every time we competed against them, we'd win almost 80% of the time.

We were building sales coverage, we had a better product and then SQL comes along. The next year we grew again, but we grew from 17 to 27 million, we less than doubled, and Oracle grew from 25 million to 48 or something, almost double. Suddenly we're 27 to their 48 and the gap was widening and now they've got the standards issue, they've got a momentum issue. And life got harder. We had been in a period where we were on a roll, and we had a better product, we had the whole thing in place, then the standard issue just kind of ran us off the rails. It was a woulda, coulda, shoulda time.

So we regrouped and recovered and, by '86, the product was fully SQL-compliant. We had both QUEL and SQL interfaces; we provided two separate interfaces on this product, re-architected it and we produced Version 5 of INGRES. Version 5 was so much better than Oracle. It was just wildly better than Oracle. It was more reliable, it was much more robust, it was transactionally faster, and we had implemented query optimization technology. Ingres fundamentally invented query optimization technology. You may be aware that INGRES has reemerged, had been brought back out of Computer Associates.

Johnson: Yes, just in the last few months.

Morgenthaler: Yes. And to this day, 16 years after Ingres was sold, INGRES' query optimization technology, to my knowledge, is still the best in the industry, equaled only by Oracle, and IBM is catching up. But the query optimization technology was way ahead of everybody else, even to this day. That's 16 years later. That's a long time.

Johnson: Indeed, it is.

Morgenthaler: This was very arcane, sophisticated, heuristic-based, statistically-based, query optimization technology that was just leading edge AI. And it worked. It worked brilliantly, it didn't just sort of work. We would run queries against Oracle and we'd run 10 times, 100 times, 1,000 times faster. So we'd call on an account and say, "Well, it's very nice that Oracle's larger than we are, and it's nice that they've made you these promises. Here, run these queries. You tell us what you think. And, by the way, if you don't like those queries, here are 20 different queries. Just run them and tell us what you think."

So, we began to regain momentum and we went from 27 million to 48 million – we almost doubled. And then we went from 48 million to 87.6 million. We were on a very nice path. Oracle still had a lot of momentum, and they were finding other issues in the marketplace, an IBM version, PC version. Someone said to me, "Ingres has the best developers, Oracle has the best market share." They were able to create marketing issues around things where they just

didn't have it right, couldn't deliver products and the products weren't robust, but made for great press copy and for great advertisement. There's this sort of P.T. Barnum quality about how they ran the business. To this day, I'm troubled by the fact that… When great marketing wins, that's fine. It's wonderful and marketing matters; it's about messaging and being clear with the customer, having them understand what you are saying. What is troubling is when customers are promised things that are not delivered. I'm this kid from the Midwest, and integrity is supposed to matter. It's supposed to be important; you're supposed to do what you say you're going to do. Why is it okay with customers when that is not delivered? It was disappointing that they got away with that as often as they did, but they seemed to. Anyway, we narrowed the gap and we were… Oracle had gone public.

Renaming the Company to Ingres and Going Public

By the way, you asked, "When did Relational Technology, Inc. become Ingres Corporation?" I think it became Ingres about 1986.

Johnson: I was just wondering if that was connected with bringing Pete Tierney in in marketing.

Morgenthaler: I think it actually happened about the time that we brought in Michael Seasholes as VP of sales. He had been the VP of sales at Oracle and he and Larry had a falling out, in part, over integrity issues. Mike's a lovely guy, very Christian. At one point, he had enough and he confronted Larry about it, such as, "You're saying things that just aren't true, Larry." And that was it, he was out. So he found himself looking for a job. Al Sisto had run his course as VP of sales. Wonderful guy, but it was time. For him and for us. Mike Seasholes was available and we recruited him. Mike took the role of VP of sales for a little over two years and did a superb job of driving our growth. He was a whirlwind recruiter. He recruited great people. He drove the field hard. He was clear about messaging and he was fabulous on big deals. This is the guy that goes in and there was not a dime left in the customer's pockets when he was through. So Mike was impressive.

Morgenthaler: One of the things that I came to understand (and Oracle got to this before we did) was that there was confusion in the marketplace because our brand Relational Technology began to take on sort of the gold standard of relational software. Oracle started out as Relational Software, Inc. and so we were trying to differentiate Relational Technology from Relational Software, trying to convey the message that if you want to get the real thing in relational software you get it from Relational Technology, not from Relational Software. And, in about '83/'84, they changed the company name from Relational Software to Oracle. I laughed, you know, because you think of the Oracle of Delphi as telling you things that were nonsense and ambiguous enough that they might come true. The answers you got back from their database were that way, the answers you got from their salesperson, were that way. I always questioned if users wanted ambiguity and nonsense, or would they like something that works?

So there was that aspect of it. But I began to see, by '85, '86, that they had it right and we had it wrong. They were promoting one brand and we were promoting two brands. And we were dividing in half our marketing investment by creating two names and two images. People knew us as INGRES in the marketplace and people knew of Relational Technology Company, but not connecting the dots between the two. Or asking, "Why are you telling two different stories and presenting two different names? You only have one product, and it's INGRES. Why don't you call the company by the name of the product?"

There's always a little organization inertia, and the word "relational" was important and we owned the word "relational." Everybody was beginning to know that you need relational technology and relational was right there in the name. But after awhile, I thought, no that's wrong. People are getting confused and it's about making this as simple and crisp and compelling and factual as possible and we need a change. So that's what we did. I believe it was in '85 that we began the process; and, by '86, it was fully rolled out and we became Ingres Corporation, with a logo, signage and corporate colors and corporate graphics. If we're going to do it, we're going to do it right. We're going to make a bold, integrated, thoughtful, top-flight, top quality corporate image. So we did. That was an improvement, because the market was less confused; there was Oracle and there was Ingres.

I haven't thought about this in years. It is kind of interesting to do. If you step back, there were a handful of stories in the 1980s that were the compelling competitions in the marketplace. There was IBM versus Microsoft for operating systems. DOS versus OS-2 and Windows versus OS-2. In workstations, there was Sun Microsystems in competition with Apollo.

It was really sort of about open systems versus best in class for products. Subsequently, there was Apple versus Microsoft and the MacIntosh operating system versus Microsoft, one of the great dramas. If you think about the great dramas of that period and the head-on-head company competitions, I think most people will tell you that Ingres versus Oracle was in that class of the great dramas of that decade – a match to the death of two companies. It was fascinating to be part of it. It was very energizing and you came into work ready for battle every day; you snapped on the chain mail, you were heading into battle that day. Every day for ten years. It was being in a war zone and every account, every feature in the product, every press release, every news story, every positioning statement, every thing was mano-a-mano with Larry Ellison and Oracle for ten years.

Johnson: What about the other companies like Sybase and Informix? Were they just around the fringes?

Morgenthaler: Informix made a fundamental mistake, in my opinion. Roger Sippl is a wonderful man, a good friend, a close friend, and somebody I think the world of. But Roger acquired a software company out of Kansas when he suddenly wanted to go into the spreadsheet business and word processing. He was going to be an all-in-one, everything in

one package and I think that was a strategic blunder. Their company lost focus. They had teams in multiple places, managing that was hard, they began to have negative financial surprises, and missed their targets. They lost momentum and began to develop dissension within the organization. Roger himself got replaced by Phil White. So Informix lost momentum and was off to the side. Informix, if the truth be told, never had the products that either Ingres or Oracle had. It was a low-end database and it did not have advanced query optimization.

Johnson: You really weren't head-on with them in the marketplace?

Morgenthaler: No. They sold OEMs in small boxes at low price points.

Johnson: You were in a different market.

Morgenthaler: Same market, just a different place in it. We did see them occasionally but, only when buyers were really price conscious and they didn't need the best, they just needed something. Informix will do and here's the price and are you willing to match it? For certain customers, we found a way and other customers we didn't bother.

Johnson: So when you were going in, for the most part, you were in there against Oracle.

Morgenthaler: It was mano-a-mano against Larry Ellison and Craig Conway and Tom Siebel, to name a few, because there were many more . .

Johnson: When did Ray Lane come in there?

Morgenthaler: If it's OK, I'll jump ahead here.

Johnson: Yes, go ahead, please.

Sale of Ingres to Ask Computer Systems

Morgenthaler: Jumping ahead to 1991, end of 1990… Ingres had been sold, in the fall of '89, to ASK Computers. That's a whole story in itself and not a happy one, not a pretty one. So in late 1990, I think, about a year after Ingres was sold, Oracle absolutely hit the wall. They had a revenue shortfall. A serious one. They had accounting improprieties, serious ones. They had a major revenue restatement, and the stock plummeted. And customer confidence just went to heck in a hand basket. So I'm sitting on the sidelines; Ingres is sold. I have worked the last 10 years to be ready for this moment. Now it's time to just jet past these people and kick it into high gear and the market suddenly is totally… Oracle had been telling people that they were the market leader. The reality was that Ellison had been misstating revenues and earnings all the time. They weren't real, not nearly to the degree that they were presented. So the board took

action. They made Ellison CEO and Chairman, they made Ray Lane president and COO. And Ray's a very good guy, very buttoned down, very professional manager. He came in and brought order, and they made Jeff Henley the CFO.

Johnson: Oh, right.

Morgenthaler: So between Henley and Ray Lane, there was suddenly professional management and responsible people of integrity running the shop at Oracle. But Oracle had, among other things, run out of cash, and they faced a serious possibility of bankruptcy. There was a $10 million loan, I think, which was, in those days, a lot of money. That $10 million loan from Nippon Steel made them able to meet payroll. Nippon Steel was a major customer and they were able to get that loan. I don't know that it was forthcoming from anywhere else in the market. Everybody was so shaken by the improprieties and by the misstatements and by the fraud, frankly. I don't think it's a stretch to say it was fraud. It was fraud. You're going to leave the guy that's committed fraud on the market in place as the CEO in this company? Well, we'll bring in people underneath him. By the way, it was probably a good business choice, in retrospect. But people were pretty shaken by the fact that this had just happened, and it was serious. It was not just one contract or two. It was systemic within the organization. But they righted the ship.

Ingres had been sold to ASK and Sandy Kurtzig, who is a lovely person and a friend, acquired a company where she knew nothing regarding the technology or the market.

Johnson: Let's go back and tell me a little bit about how the decision to sell to ASK happened. Did ASK come looking for you?

Morgenthaler: Let me roll back the clock. In the spring of 1988, we took the company public. In the summer, the board, for whatever reason, believed that having a Chief Executive Officer and Chief Operating Officer was a good structure, and they pushed very hard for a long time, and finally said they would really like to have a COO in this company.

I agreed that we should recruit somebody, but that we had to be clear. If the real goal was to recruit a CEO, if they'd lost confidence in me for whatever reason, I would go help them recruit a CEO, and we'd negotiate my exit package. I was committed to the success of the company. If that was their goal, I'd help them recruit a CEO. "No, that's not our goal," was their response. So I told them, "Well, a COO is a different kind of person, let's be clear about this. He's tactically oriented, he's by the numbers, he's hands-on control, he's managing the budget." Part of their concern was that I was having to fly out to close all the big deals. When I was on an airplane; somebody had to be watching numbers. I had recruited in very good CFOs over time, but still there are parts of operations one needs to be paying attention to. So I accepted the logic that there is a customer-facing side of this, and I could recruit somebody who could handle operations.

We recruited in a fellow by the name of Paul Newton, who came out of UCCEL. We brought him in in early '87, prior to going public. Following the public offering, Paul persuaded the board that now was the time to make him CEO. He had been with larger companies; the board was impressed with that, and thought that Paul's previous experience was the right credentials for the person to be CEO of the company. I said, "Well, excuse me, this is not the job we recruited this person for. This guy is not remotely capable of managing this job. He is not strategic. He lacks depths of understanding of engineering and a variety of things that are necessary to be successful in this role. If you want to recruit a CEO, I'll go recruit one for you, or we'll recruit one together, but this is not the right person to be CEO of the company."

Paul's very political. He privately campaigned to the board. The board made a decision and made me chairman, made Paul President and CEO. I said, "Look, I disagree with how this has happened, because this was never the goal. Nothing he's done has created a case that would say he's the right person to be CEO, and there's nothing in his background or in his character or makeup that makes him suited."

So, what happened at Ingres was that we had a huge amount of momentum and, within a year, suddenly we were returning loss quarters. All the momentum was dissipated. The people Paul had hired in were dreadful. He hired a VP of marketing to replace Peter Tierney. He hired Michael Wilson, who fired all the people who had reported to me because they weren't his staff. Pete Tierney left to become executive vice-president for Oracle and started to beat up on us. Mike Seasholes was fired for no reason; he was exceeding the sales plan. He brought in great people in the field, but he was fired.

Paul brought in one of his own people and we immediately began to miss the sales plan and the quality of the sales hires went down and the key accounts didn't get closed. Within a year, the company was missing plan, losing money, running out of cash. I was on the board, basically, saying, "Guys, you've made a mistake. It's time to admit the mistake. Let's fix this. This is not the right person to be the CEO of this company. Maybe some other company, but not this one. Ingres requires somebody who can manage this and who can compete successfully with Larry Ellison."

The board was – how do I put this? The professors were inexperienced in business, so they looked to the venture capitalists; the venture capitalists looked at this and, as you know, ten years is a long time to hold a venture investment. They saw a chance to do a two-to-one in the sale of the company and triggered an unsolicited takeover offer. So Ingres got a hostile takeover offer and we had the usual outcome. It's the right thing to do for shareholders. It got sold to ASK as at a profit.

I'll say that, to some extent, it was the result of my inexperience and not really understanding what the VCs wanted and needed. Earlier on, had I been clear that they really wanted to get liquid on the investment, I could have found them liquidity. There were huge shares. I called on

Fidelity and State Street and Jenison, etc. I knew all the major investors. Want liquidity? We can sell your shares for you at a premium. So, there was a disconnect there. Anyway, the company got sold in the fall of 1989. A year later, Oracle hit the wall, but Ingres was being led by people like John Carlos Polatti, nice guy, Italian, worked with Digital, sold minicomputers, knew nothing about databases. Here he is up against Larry Ellison who is doing it for 13 years and is a very aggressive marketeer. Take no prisoners, Genghis Khan, right?

Interestingly, INGRES continued to be fairly successful. The technology was so good and the customers were so loyal and their database was so sticky. This is not just about the product they bought but their data was now embedded in it.

The customer made this investment and this is the operating data, this is the information model by which they've organized and managed their company. They are married to this product and their future, their destiny is intertwined. All of the standardization is built around SQL, but all of their applications, everything else is non-standard. All the report writing, all of the forms, all of the fourth generation language interfaces, all the query interfaces, are all product specific. So it's incredibly sticky, you know? The switching cost for customers is tremendous, so relatively few customers are willing to endure the pain to make that switch. INGRES customers were happy with the product and they just kind of soldiered on. INGRES, I am told, actually billed out a $300 million revenue stream for Computer Associates. That's anecdotal. I don't know that they ever broke it out but that's what I've been told.

So in the year that it was sold, I think Ingres did $126 million of revenue against the $160 million plan and that was part of the problem. But still it went from $86 to $126 million in revenue, which was meaningful growth, if they'd managed it better. And, at that point in my life, I had choices to make and every other database company, I think, literally, with the exception of Oracle, contacted me to see if I wanted to go with them and become CEO. Object-oriented databases were in vogue back then, if I recall. I looked at them and said these people haven't learned anything from the last decade. You know, object-oriented is Cullinane reborn with new terminology. It's a navigational model, it's a-record-at-a-time model, it's not declarative, and customers won't like it. And, sure enough, they didn't like it.

So I decided to do something different. I took some time off because I'd been 10 years without much more than two weeks a year vacation.

Johnson: Ten very intense years.

Morgenthaler: Very intense, very intense years. So I took some time and traveled. I had, along the way, divorced, so I took some time with my kids. I had the pleasure of meeting my current wife, and have been happily married for 12 years now.

Johnson: Good, congratulations.

Morgenthaler: I have to say that I didn't get the first marriage right, but this one's very right. It doesn't get any more right and I'm so very happy with it.

Opening the West Coast Office of Morgenthaler Ventures and Founding of Illustra

At that point, I was looking for something else to do. Kleiner Perkins had talked to me about a venture partnership with them. Also _____was an important venture firm in those days, so I was interviewing with them. My father's partners heard about this and they told him that they were thinking about expanding on the West Coast and were looking for the right person to lead that. They asked him, "What about Gary?" My father indicated that was totally up to them. He didn't want to push his children on them. His partners said that no, they thought I was the right person. I had to be persuaded because, although I love my father dearly, I wasn't sure about going into business with my parent.

Johnson: I understand, perfectly.

Morgenthaler: I hoped it was going to work so I told my father's partners that I had a lot of job offers, and they had a lot of candidates. But I had only one father, and that was an important relationship to me. I suggested that I consult to them for a while and see how we liked it. No deposit, no return, and if they weren't happy, that's great. If I wasn't happy, to please understand. I consulted for about six months. At the end of it, I said, "This is great!"

Johnson: Terrific.

Morgenthaler: So I set up the West Coast operation and two-thirds of what we do now as a firm is out of this office.

Oh, one last epilogue. In 1991, Mike Stonebreaker and I got together over dinner and talked about some of his research. He was researching this thing called POSTGRES, for post-Ingres, and he had some very interesting and novel ideas. I looked at this and said, "Tell me more. What's this written in?" He told me it was written in LISP. I said, "See ya."

Johnson: Do you have any idea why he chose LISP?

Morgenthaler: The grad students were familiar with it and they were just trying to get the research done fast. You know, we're not trying to build anything, we're just trying to get a degree. So I said, "Mike, if you're serious about this, get some money and some people and re-implement it in C and then I'll talk further with you." So Mike came back the spring of 1992 and said, "Guess what, Gary? It's in C now."

I said, "Well, that's a nice piece of work, Mike. Took you about four months. So who again are you going to sell it to?" He said, "I'm going to sell it to engineers and scientists." And I said, "Okay." I told him I would consult with him for free. He was my friend. I didn't want to be CEO of this thing and I couldn't advocate that our firm put money behind it, because I had never seen a successful engineering database company. It's a small segment of the marketplace and he was taking on the big players here. But I was really intrigued with the idea. Are you familiar with POSTGRES at all?

Johnson: Is that what became Illustra?

Morgenthaler: Yes.

Johnson: Okay.

Morgenthaler: Let me step back, again, for a second. Not one person in 1,000 understands fundamentally what a relational database is. A relational database is a systematic software implementation of mathematical set theory.

Johnson: Okay.

Morgenthaler: It is neither more nor less than that. Or, at its core, it is neither more nor less.

Johnson: Okay.

Morgenthaler: There are obviously many other aspects.

Johnson: Sure.

Morgenthaler: But this is mathematical set theory wrapped in software. And why is that important? Well, set theory is really about groups of things and it's about the attributes of those groups and it's about how you compare and contrast, how you intersect, join, take the differences, take the unions, take the outer joins, how you look at the intersection and the interaction of different groups of things. Well, that's what database is about. And this was Ted Codd's brilliant, fundamental, theoretical insight in the late 1960s. And, to this day, I challenge you to go up and down the Peninsula and ask anybody if they can tell you what the foundation for relational database is. They don't know.

Relational is a fancy mathematical word for a two-dimensional display of data in row and column forms. And a database is a collection of these two-dimensional tables. This all was stuff that you learned in seventh grade and then diagrammed.

Johnson: Yeah, right.

Morgenthaler: So, as implemented, INGRES, Oracle, DB2, were products of their time; they were creatures of their time. The data that people had and could manage, usually with computers, was alphanumeric data. So anything that was not alphanumeric data -- there weren't good techniques for managing it and people didn't have all that much of it anyway, because it was hard to manage and expensive. And storage was expensive, and computing was expensive, et cetera, et cetera. But heading into the 1990s, with Moore's Law making processing cheaper, plus disc drives manufacturers making disc storage incredibly cheap, it suddenly became possible to manage all these new kinds of data people were calling multimedia. I said down with Mike in ’91, ’92 and said that I thought that the decade of the '90s was going to be all about multimedia. It was all about complex data types. Mike agreed. That's why they had designed POSTGRES. I said, “Well, let’s talk about this.”

He said, "Well, INGRES has thousands, tens of thousands of places in the code, where there are specific algorithms and instructions that have hard knowledge of the kinds of data that you're dealing with. If it's an integer, do this. If it's a character string, do this. If it's date, time and money, do that. Six intrinsic data types, hard wired 10,000 plus times throughout the code." I knew this to be true, because I'd done code inspection at Ingres, and I said, "Yeah, that's true."

He said, "Oracle's just the same. What we've done in the POSTGRES project is to abstract that out, and we do an operation that has, as an operand, a data type which is not type specific but is runtime executable. One step of indirection, a slight degree of overhead, but Moore’s Law is fixing that. Now you have the flexibility of performing these set theory operations on any kind of data. So you can enter photographs or video or array data or satellite imagery data or engineering matrices or anything. Anything. Financial data, time series data, anything."

I realized that that made relational databases available to everybody who couldn't use them before. And I'd called on all these guys -- people using geographic information systems. Wall Street The best the industry could come up with was binary large objects known as BLOBs. So I basically said, "Look, if we focus on this extensible data typing system… (Mike, by the way, was still running QUEL, the query language. I said, "Mike, have you learned nothing? The market wants SQL. It does not want QUEL.”)

I basically said, "If we can focus this on multimedia data, not in exclusion of, but in addition to, engineering data, and if we can reorganize this, rewrite it in C, reorganize it for SQL data query, we have a chance to wrong foot Oracle for a change. We have a chance to come back and say, “No, the standard is not SQL. It's not even SQL II, which is what you're running. The advanced standard, going through the ANSI committee, is SQL III.'" And SQL III had extensible data types. Everybody thought this was kind of a slow boat to China. Nobody had implemented SQL III in the marketplace; it was just a bunch of academics jawboning. But we were going to implement SQL III. We were going to wrong foot Oracle on the standards issue and they were

going to be behind on the standard. We could get it passed through the standards committee because I had figured out the politics of this. We could get this done.

And we did. We implemented SQL III and came back with an extensible data typing system, and the database wars were on again. It's fun. In the summer of '92, Mike and I reached agreement on terms of financing. Mike talked me into taking the CEO role, which I did half-time, and I said, “This time, I keep my day job.” I didn't really want to be CEO. I mean, I had sort of done that. But I was really passionate because I was thinking. “This is a transformational idea and it's a good investment for our firm.” And it proved to be a very good investment for our firm.

So we formed Illustra in the summer of '92 and I stayed as the CEO through 1995. Same drill. I assembled a team, hired the people, set up the management infrastructure, engineering management, marketing management, sales management, and finance management.

By the end of 1993, it's suddenly a full-time job. I kind of had to choose as to whether I would stay on as CEO or not. I told Mike, "Look, I've done this. I think it's time to get somebody else in." So we agreed and we started a search. We recruited in Dick Williams, to be CEO of the company. I stayed on as chairman. Dick's a wonderful guy, did a superb job as CEO of Illustra. He is an excellent leader, a good manager of people. He became a true believer and he will tell you this was one of the high points in his life. Dick had been a very senior executive within IBM; he ran, I believe, the DB2 operation for IBM for a while, and ran various other things for IBM. He ran Digital Research many years ago. Then became executive vice-president at Novell for some years, and then joined Illustra out of that. He retired at the ripe old age of 51 or something.

Johnson: We're covering Digital Research. One of the other people working on this project is organizing a meeting where he’s going to interview a whole bunch of people. I think Dick Williams is on that list.

Morgenthaler: Great. Well, he's a good friend of mine. I think the world of him. Super high integrity guy, lovely human being and great leader. He's running a company called Wily Technology right now and he's doing a pretty good job. Dick came in in December of 1993. We had the first customers, we had the team in place and this time I didn't want a job. I had done this. I did ten years of this. That's enough, thank you. So Dick signed on, took it on, and we began the product launch.

It was a chance to go tell the story, plus it was kind of a chance to resume the battle, to create a fundamental new battlefront with Oracle. Database Magazine, the top publication for that segment of the industry, chose Illustra as the most important database for 1995. Number two was Oracle. The most important database in 1996 was again Illustra. Illustra was acquired by Informix for $400 million in 1996. We had $5 million in bookings that year, no revenue. We

were acquired for 80 times bookings and infinity times revenue. That was the high water mark for any sale in the mid-1990s.

Johnson: Is that what ended up going to IBM then?

Morgenthaler: Yes.

Johnson: Yes. I had never quite figured out what IBM acquiring Informix was all about. Maybe it was Illustra that they were after.

Morgenthaler: I think Illustra is the one product that they've continued to bring to market. I've always been a little mystified at that, too, but Illustra is the technology that they've carried forward.

At any rate, the sad story was Dick Williams went to Informix with the acquisition with the understanding that he was to be given free reign to run Illustra and immediately that was reneged upon. Dick was going to be made a member of the board. That didn't happen. And it became very clear that Phil White was running a private fiefdom. As it happened, he was fraudulently running a private fiefdom and we had some of our shares sold before it ended, but not enough. I led a class action, which I hate. I hate litigation, period. And I think class action is the worst of the worst. But I have to say there is a place for it when there is fraud upon the market. When the final accounting was done, Phil White had misstated revenues by $276 million, which inflated profits by $236 million. He had abused shareholders to the point where billions of dollars were lost. Ours was part of that, you know. We won the court case. It was the largest single fraud upon the market ever committed in Silicon Valley, certainly in the recent days. It was knowing and willful, in my opinion. I had conversations with Phil and watched it firsthand. Dick Williams will give you chapter and verse, because he was there. I wrote a six-page letter to the board of directors of Informix, which is not my habit to do, outlining all the reasons why Phil White needed to be removed as CEO. They failed to do that. The fraud was discovered not too long thereafter. It wasn't a pretty tale nor a happy ending to Illustra. We made a very good return on our capital, but less than we might have. It was 10X not 100X.

So it was a good outing for our firm. It was a great experience. I have enormous respect for Michael Stonebreaker who, by the way, has his own point of view about all of these things, which is different than mine. So those are the facts, as I recall them. What questions haven't I answered?

Johnson: Well, really very little. Short of the nitty-gritty questions, who else do I need to talk to besides Michael Stonebraker?

Morgenthaler: The most factual and least personally clouded point of view will be Gene Wong.

Johnson: All right.

Morgenthaler: Gene served on the board of directors. Mike, Gene and Larry took turns serving on the board of directors. Mike, by the way, spent one year as VP of engineering along the way and Larry Rowe spent a year as VP of engineering, so they were both close to the company. Larry gets credit, by the way, for all the application development software and much of the user interface software. Mike is the principle architect and author of the architecture of INGRES and, later, the architecture of POSTGRES. Gene designed the query language and some of the early structures around query execution. We sort of viewed him as the editor of ideas, you know? As I said, he's the guy that sees clearly and finds simplicity and unity in things that look very complex. It's as if he's saying, "No, no, all this complexity is not necessary. Here is the solution." He has an apartment in San Francisco and a home over in Berkeley. By the way, he's had an interesting career. He was a professor of electrical engineering/computer sciences/mathematics at UC Berkeley. He became chair of the Electrical Engineering Department. Then he went to the White House Office of Science and Technology Policy. To the best of my knowledge, he is the person who persuaded NSF to allow commercial traffic on the Internet. You might ask Gene about that. He's a very modest guy. A certain number of my colleagues and partners will not stint on inflating their roles. Gene will not. Gene will tell you exactly what he did and didn't do. If anything, he is the model of humility. Lovely guy. So what else can I say here?

Johnson: This is great. You've told me the whole story about how Ingres had this great technology and then there was all this screw-up in the management process that ended with the company getting sold to ASK and how the VCs had a different agenda.

Morgenthaler: Well, there's nothing wrong about that.

Johnson: Correct.

Morgenthaler: You know, to me, these are milestones in my life. At Tymshare, I had the right answers but I wasn't able to persuade people that they were the right answers, so I had to leave. And, at Ingres, for all my exposure to venture capital, I missed something basic which was that my VCs needed liquidity.

The whole thing about finding a CEO and so forth was really about how do we get liquidity? How do we exit our investment? Here I was, thinking I'm building a company that's going into a multi-billion dollar industry. This is one of the great franchises on the planet. Every shareholder here is going to be wealthy beyond their wildest dreams. Look at Larry Ellison. Operating systems and databases are the two big franchises in software. Period. When Oracle tumbled in 1990, it was there for Ingres to just take, but there was nobody home. All the talent… when ASK acquired it, these people said, "I don't want to work for a company where nobody knows

anything about databases. This is not going to succeed. Let's go do something different." I did. Everybody else did.

Johnson: I think that telling this part of the story is critical. You don't get the whole story until you get exactly the kind of stuff you've been talking about, all these other factors that come in, explaining why some technologies end up being dominant. It's not that the technology is best, it's all these other factors.

Morgenthaler: It's all the people. There are Silicon Valley personalities and legends here. One of the Silicon Valley legends now is the competition between Oracle and PeopleSoft. Craig Conway's a friend of mine. We competed every year. Tom Siebel is a friend of mine, too. I can't say that I'm friends with Larry Ellison. But the competition right now is between Larry and Craig. Craig was a loyal lieutenant while he was at Oracle. He left to join PeopleSoft and now is competing with Larry. Larry feels that's sacrilege. Larry began making comments, to the effect of, "I hate dogs, and if I had one bullet and there was Craig Conway and a dog, the bullet wouldn't be for the dog."

So Craig Conway comes out, at the next PeopleSoft meeting… It was a brilliant moment in marketing. Craig Conway comes on the stage and he takes off his jacket, and he's wearing a Kevlar vest. Then he says, "I'd like to introduce you to my dog," and he pulls out this dog, the dog's wearing a Kevlar vest! Craig says, "I know the bullet wasn't meant for the dog, but we're taking no chances here."

It's a little bit of showmanship, a little bit of jujitsu for him to jump back on Larry. It's a fun industry. The industry is built of people, of flesh and blood people with personality quirks. There seem to be many people of great good spirit and the desire to compete and the desire to build something valuable and important, that has lasting significance, and to work together in teams to succeed. There are some number of people with questionable ethics – let's say that's part of our industry and there's lots been written about that. I don't need to go further on that. Generally, it's a privilege to be part of it. That's my view.

Johnson: Another thing that I think it's important to record is that many of the great technological advances have been done by people who were in salaried positions at the time, in universities and great research labs such as AT&T, IBM, and so on. Brilliant inventions but they didn't have to take personal risks. But many of the people who built companies, they did as you did. They gave up their day jobs.

Morgenthaler: Yes, they did.

Johnson: I was in the software industry in the '70s and I saw this going on all the time. There was a big ramp up in real estate values in the '70s, as there has been lately. People were

getting second or third mortgages on their houses to build their companies. Risking everything because they believed in an idea.

David Morgenthaler's Contribution to the Venture Capital Industry

Morgenthaler: Let me tell you one more story that's not at all well known, but is important to the Silicon Valley success story. My father, David Morgenthaler, as I have mentioned, was a successful entrepreneur working for Jock Whitney and Company. Having been an entrepreneur and having returned 100 times capital directly to the Whitney family, he decided that, gee, it looked easier on Whitney's side of the table. And he thought he should go be a venture capitalist himself. So he did and, in 1968, he formed Morgenthaler Ventures. He has said that for the next two years, everything he touched turned to money, turned to gold. Then came 1970 and there was a severe recession; all these companies suddenly couldn't stand on their own, couldn't sell things, and they couldn't get financing. It was very hard for awhile. Things began to rebound by 1975. He'd invested in, and became chairman of a company called MDSI, which I've mentioned. Still managing Morgenthaler Ventures. In 1978, he invested in this young, upstart company, Apple Computers.

So he has one of the single best investment records of anybody in the history of the venture business. Long-term capital gain returns in the mid-30s, very creditable batting average. But along the way, in 1975, he joined this fledgling little organization called the National Venture Capital Association. NVCA at the time was a gentlemen's club for playing golf and fixing prices on entrepreneurs.

Well, that's the way he tells the story, and I don't doubt it. He suggested to his colleagues, some of whom were pretty high-minded, that NVCA wasn't what it should be. We have something in common other than the fact that we would like to understand how best to do business and share deals, because it's a syndication business, very much so in those days. During that period they were really coupled, only two dozen firms working in the business. The entire venture capital industry was about $200 million a year of investments and $100 to $200 million capital flows into the venture capital industry for a decade, the 1970s. Our last fund was twice that.

So, in '75, '76, my father began to recognize that big business has a voice in Washington. Small business does not. Entrepreneurs, most particularly, absolutely don't. Small business is not underrepresented, it's unrepresented. At the same time, small business is a large part of the economy, and it is the part of the economy that's actually growing and adding jobs. But it's starved for capital and it's unfairly set against with a variety of restrictive regulations. So he proposed to make it a charter of NVCA to fix that.

My father flew to Washington, interviewed staff, and recruited a full-time president of NVCA. He became chairman of the industry organization. He then said, "Okay, now that we have an

organization, let's get clear on what our agenda is. Our agenda is to create incentives for entrepreneurship: number one, to give people a reason to leave their day jobs and take a risk with their career, to go take the risk to champion an idea that will move society forward, and that will create a new product, a new business, a new industry. This agenda has a venture capital angle as well, because it makes people more willing to come take these risks and more willing to join as management for these young companies." Although his proposal was not entirely selfless, I think my father did that because it was the right thing to do. So that was the first agenda item.

The second agenda item was based on the fact that the venture capital industry was being funded by the capital of private families: The Whitney family, the Rockefeller family, our family -- a handful of families that had made fortunes of various sizes and it was their own personal, private money that was available to them. So they said, "That's not right. This country has massive pools of capital, but Congress has legislated that this capital will not be available to small business." Personally, I can understand why it should be limited, why there should be restrictions placed on it. But anybody who knows anything about portfolio theory says you want to diversify, and risk is something to be managed. Diversification manages and mitigates risk on the one hand, but this is also a sector which is returning very high profits for the successful companies. There's no reason why public investors, public market investors or pensioners shouldn't be able to benefit from that.

So Dave Morgenthaler flew to Washington. He walked the halls of Congress. He persuaded Congress to pass two pieces of legislation. One was called the_____ amendment. I think it was passed in 1978, and created a differential in the rate of taxation for capital gains versus ordinary income. It stands today, all these years later. That had not always been the case. Before that passage, capital gains were taxed at the same rate as ordinary income, and had been throughout the 1970s. As part of the Great Society, in all his infinite wisdom, Johnson passed earlier legislation; David Morgenthaler got it reversed.

Then, there are two other people, Reid Dennis and Ed Zschau. All three walked all over Congress together, but it was David's leadership. David Morgenthaler received the first lifetime achievement award from the National Venture Capital Association for this contribution.

The second thing that happened was, he went back, after that passed, and he decided that the project was half done. We had incentives for investment now, but there was no capital to fund those companies, even if you wanted to take a risk. Pension funds, corporate, private, and public pension funds, needed to be freed to allocate some percentage of their portfolios for private equity.

There was a piece of legislation passed called the ERISA legislation, in '79, I think, which put in place the so-called prudent man rule, by which a prudent person could diversify a percentage of their portfolio, some percentage of the assets, into different asset classes. This affected

other asset classes, oil-and-gas among other things. You could diversify into non-public stock as part of your holdings. So with those two changes, venture capital went, in 1977, '78, from one to two hundred million dollars in capital a year, to two and then four billion dollars of capital within the next three to four years. They realized a 20 times increase in the amount of capital available to form their companies. That is the story that's built Silicon Valley, that I believe is not understood by people.

Johnson: Thanks, Gary. These have been great stories that reveal a lot about a very important time in the software industry. I appreciate your spending the time with me.

Morgenthaler: Thank you. It's been fun.

