PC Software Workshop: Word Processing

Moderator:
Larry Welke

Recorded: May 6, 2004
Needham, Massachusetts

CHM Reference number: X4311.2008

Table of Contents

PC Software: The First Decade – Word Processing Workshop

Conducted by Software History Center—Oral History Project

Abstract: Seymour Rubinstein talks about how his early experience with word processing while at IMSAI led to the development of WordStar for the microcomputer. Changes to the distribution channel during the early years of microcomputers are then discussed and the competitive word processing programs are identified. Connie Galley presents her experience with the Duns Plus system that integrated word processing with other applications on a microcomputer. The significant effect that changing printer technologies had on word processors is explained followed by how the market changed as a result of an increased focus on the needs of the users. The participants then talk about the effect of having venture capitalists in their business and the process of going public. Finally, they discuss the impact of selling their products internationally.

Participants:

Name	Prior Affiliation
Connie Galley	Duns Plus, tsi, Mercator
Mike Maples	IBM and Microsoft
Seymour Rubinstein	MicroPro
Janet Abbate	Virginia Tech, historian
David Grier	IEEE Annals E-I-C, historian

Larry Welke: I would ask everyone to go around the room and identify yourself for the recording. I'll start by saying I'm Larry Welke, the moderator.

Seymour Rubinstein: I'm Seymour Rubinstein, an invited guest.

Connie Galley: I'm Connie Galley, and I think I'm representing Duns Plus here in the meeting.

Mike Maples: I'm Mike Maples. And, I'm not sure if I'm representing Microsoft, but I joined that company after the time we're discussing.

Janet Abbate: I'm Janet Abbate, a historian.

David Grier: I am David Grier, the Editor of the *IEEE Annals*.

Larry Welke: Thank you. I would like to ask Janet to start. You probably have a couple of things that you want to find out, and maybe we can start with some of your questions and use them as a springboard for the rest of the conversation.

Abbate: We might start by having each of our industry guests recap the main software they were involved with.

The IMSAI Computer

Rubinstein: I was the founder of MicroPro International Corporation. I started the company in the middle of 1978, shortly after I left as director of marketing for IMSAI Manufacturing Corporation, the company that made the IMSAI 8080 computer that some of you may remember. From IMSAI I went to the house of a programmer who had left IMSAI two weeks before, John R. Barnaby, and I made an arrangement with him to go into the software business together.

Abbate: How did you think you could make money doing that?

Rubinstein: By selling software. As director of marketing for IMSAI, I certainly saw the potential of microprocessor computers. I signed the very first contract with Digital Research for CP/M. I signed the very first contract with Bill Gates and Paul Allen for an OEM version of a FORTRAN compiler and an assembler and link generator. All of that was done while I was at IMSAI.

Larry Welke: When you say you signed contracts, you signed contracts with them to deliver the product to IMSAI?

Rubinstein: Yes. In fact, if IMSAI were still in existence, I think Bill Gates would still be paying penalties because he never delivered the software to us. But in any case, I had about a year and a half's experience in this fledgling field before I started MicroPro.

Grier: At that point, in 1978, were the IMSAI computers still selling kits that were hand assembled by buyers in their garage or basement?

Rubinstein: No. We were definitely delivering fully manufactured machines; all you had to do was just plug it in. But that's not the way the company started. What you're saying about how IMSAI's initial models were put together, that's accurate; and sometimes they weren't fully

assembled, and most of the time they didn't work right away. They still had to be worked on afterwards to actually get them to operate properly.

But we were delivering some very innovative computers at the time. Our most innovative one was something called a VDP80, which was actually an all-in-one computer. It was about 2-1/2 feet wide, about 2 feet deep, and maybe 18 inches or 20 inches high. It had a screen, a keyboard, a hard disk drive made by Pertec and it had a floppy-disk drive. They were really floppy—the disks were 8-inch things, like a piece of paper. That was the whole machine—it was totally integrated and totally assembled in the factory so that when you took it out of the box and plugged it in, it was ready to go.

Welke: How did you get from that raw definition of a piece of hardware to the conclusion that anybody could use that machine as a typewriter replacement, which is what word processing was all about?

Rubinstein: Well, actually, it was a little more than that, but that's a good question.

Galley: Who did you sell that machine to?

Rubinstein: We had approximately 200 dealers who had opened up fledgling computer stores, many of which had the term "Byte" in the title, the Byte Shop this and the Byte Shop that, and so on. Others were simply retailers. There was also another entity that was started by the enterprising CEO of IMSAI that was called Computer Shack, later renamed ComputerLand. These were all the early retailers, and they sold primarily to people who were technically savvy.

The initial customers were people who didn't mind using a soldering iron and who had an oscilloscope and were prepared to put together whatever came out of the box and make it work. But then other people became interested because we started to put on some application software but nothing of consequence. It was mostly an assembler and a compiler and a few things like that, but it did include Basic. We actually wrote our version of Basic in-house; we didn't get it from Bill Gates. The FORTRAN compiler, of course, was a big addition. There were many more people who didn't really know much about hardware, but who were prepared to use something like the Basic that they had learned at Dartmouth or some other place; they really understood that language and could use it for their own applications. And so the early dealers were in business to sell the VDP80 computer that came with Basic. They opened up just about anywhere because their investment was rather minimal to get in on the ground floor of what looked like would become a very interesting business. These types of dealers were IMSAI's original customers. There were even some corporations that found their own uses for the VDP80, using it to develop in-house applications of various kinds.

MicroPro and WordMaster

When I left IMSAI, it was my intention to start a company that would develop professional-level microcomputer software. Professional level meant to me that it would do business applications. That's why we chose "Micro" and "Pro"—we wanted to produce microcomputer software for professional use. And the company's applications were to go down two paths. One was word processing, and the other was data management.

Grier: Why did you think word processing was going to be more valuable?

Rubinstein: I knew what the capability of these machines was, and I also knew that there were corporations out there selling word processing—IBM, Lanier, Vydec, Xerox, and a number of other companies. Their computers—they didn't call them computers, but they were—began at $15,000 and went up from there. I knew then that this was an area that could prove very important because, as far as I'm concerned, word processing is *the* fundamental application. I don't know of anyone who uses a computer who doesn't use it for word processing. That's not to say that they don't use it for other things, but word processing is still the main application.

Abbate: Did you feel that you had to sell or educate your users on word processing, or did you think they already knew about it and were just waiting for an affordable version?

Rubinstein: We were only selling to users. I already had the means to deliver to the marketplace through the dealers I had met through my experience at IMSAI; I knew the dealers on a first-name basis. Once I had products to sell, I went to some trade show exhibitions and sent them all a letter—my first mail merge letter. By the way, the term mail merge does not belong to Microsoft. It really belongs to me. I invented it—it's just that nobody gives me credit for it.

Abbate: So that was in an early version of MicroPro?

Rubinstein: Oh yes, of course. If you look at some of the old ads when we first had mail merge, you will see a little copyright symbol next to it. It just didn't get enforced.

Grier: What's the connection with products like Lanier?

Rubinstein: While at IMSAI, one of the things that Barnaby did was take the CP/M editor called ED, and make a new version of it which we called NED—new editor. What was different about it was that it had a screen interface rather than a command line interface. ED used a command line interface but with NED you could actually see the document on the screen and you could type, but that's all—it really had no word processing attributes whatsoever, and it also didn't have any printing facilities. What it did was to produce an ASCII file. That's all. It didn't

have a real keyboard design—the only things that really were effective were the arrow keys and what you could type. Then you'd press the escape key and you were in command mode. Then you could see what it looked like on the screen. It was primitive but it was still an advancement over what existed at the time.

Of course, it only worked on the IMSAI version of CP/M. We had our own version of CP/M because we had bought an unrestricted license from Gary Kildall of Digital Research. And, one of the things I did with Rob—Rob was Barnaby's nickname—is that I had him totally discard anything and everything he did with NED because, after all, that belonged to IMSAI. But, of course, he still had the knowledge in his head. We wrote a new program entirely, which we called WordMaster.

WordMaster was like NED, but it had improvements. For one thing, it had much better keyboard use in the sense that it was really designed for a touch typist. By hitting the control key with your left pinky, you were in a position to type and use the commands without looking at any function keys, without taking your eyes off the screen or the paper you were copying. But it was still a video text editor. We made it possible to put commands in that text editor to drive a printing program. I acquired the right to distribute a program called Tex, so when we sold it, we sold it as a bundle. WordMaster and Tex gave you a word processing system that was roughly equivalent to what was being sold in the marketplace—crude, but that's what they were selling.

Welke: When you say "was sold in the marketplace" and "roughly equivalent"—what else was being sold in the marketplace?

Rubinstein: IBM, Wang, Lanier, Vydec, and so on.

Galley: The word processing systems.

Grier: With dedicated hardware systems.

Rubinstein: Yes. We also came out with another program in the data management area called SuperSort. We did some things later with data management, but the overwhelming demand was for word processing. The response to our early product was outstanding. What all the dealers wanted was to have some way of doing integrated printing. That's when I made the big step of purchasing the DataPro reports on word processing. There, beautifully tabulated, were all the manufacturers and all the features in the current word processors, and I said, "This is where we're going to start in writing our spec."

And we implemented *everything*, and beyond. For example, we were the first to show the page break on the screen. No one could see that before. With any word processor that existed then, when you typed something you had to print it to see where the breaks were, and then make

changes to the document it until you got it to look the way you wanted. But that was word processing then—for $15,000 and up. So we implemented the appearance of a page break that showed you exactly where things would fall. And when you tabulated and you had set tab stops, it actually stopped in the right places.

We also implemented, for the first time, in-line help screens. Not only did we have help screens, we had help screens with a built-in heuristic capability so that for double keystroke sequences, if you knew what to do, you didn't see the second screen. But if you hesitated, it displayed the second screen. So, you got a little reward if you really knew what to do because you didn't have to bother seeing the next screen. We had many other innovations like that.

Grier: And all of this worked only on IMSAI equipment?

Rubinstein: No, no. One of the things that we did with WordMaster right at the outset was to make it CP/M compatible. In so doing, we made it compatible with Processor Technology and Cromemco and other machines that ran CP/M. There were many people making S100 computers.

Grier: How hard was it to make it just CP/M compatible?

Rubinstein: It was nothing. It was really not a difficult task.

Mike Maples: There were virtually no problems in doing that. You would just use CP/M to load the program. You did everything in the program.

Rubinstein: But it had some drivers after the hard drive.

Maples: But it really didn't have very many calls in the operating system.

Grier: Were there any issues about keeping the program portable?

Rubinstein: We did have to write our own printer drivers, for example, but we would have to have done that in any case. As the company developed, we had a room filled with printers because after a while the printer manufacturers would send us the printer to ensure that we had an adequate way of supporting it.

WordStar

There were many innovations that we added, even in the very first version of WordStar. It became the reason that the Intel-based computers were sold. People were able to come in and

buy an application-ready computer for $5,000—an IBM XT with WordStar on it. That gave them a complete system. And, not that I want to take credit away from VisiCalc because that program was certainly extremely innovative for the time, very imaginative, but I do take issue of its being the sole reason for founding the software industry. I think that's wrong, and I know that's wrong. First, I started first. And second, we all know that the Intel platform was much more popular than the Apple platform, and that's because WordStar was on it.

Abbate: Do you have any sense of what percentage of people bought WordStar at the same time that they bought a computer to run it on?

Rubinstein: One hundred percent, practically. The reason I say that is because it's not that the engineering and hobbyist type element wasn't there, but they became so minuscule it didn't matter.

Galley: When was WordStar actually released? You said you formed your company in 1978.

Rubinstein: We showed WordStar for the first time at the West Coast Computer Faire in April 1979, and we delivered it in June.

Galley: So that was long before the XT or IBM had even announced their platform.

Rubinstein: Right; it was under CP/M running on the hardware made by many computer manufacturers.

Galley: But not Apple?

Rubinstein: No.

New Speaker: But CP/M did run on the on Apple at some time.

Rubinstein: Yes, but that was not until a couple of years later. There was no CP/M on the Apple at the time. They didn't put the CP/M card on the Apple until probably the end of 1980.

Grier: So what was the hardware they were selling?

Rubinstein: There were Processor Technology, Cromemco, and Lear Siegler. A big one was the Xerox Alto. I even still have that Alto computer around someplace.

Grier: Radio Shack?

Rubinstein: Radio Shack's TRS-80, yes.

Grier: So it was as much an Intel compatibility as a CP/M compatibility issue.

Rubinstein: CP/M only ran on Intel platforms.

Grier: Right, and you were still making a fair amount of use of Intel.

Rubinstein: The whole program was written in assembly language.

Grier: Can you talk a little bit about what sort of influences there were on the company? Who was on your board?

WordStar Pricing and Sales

Rubinstein: I didn't have a board. It was just me for the first two and a half years. I took in a venture capitalist in about March 1981. I'm not sure now if it was 1980 or 1981. I can figure it out if I use our financial history. The first year of business our gross revenues for September 1, 1978, through September 1, 1979 was just shy of half a million dollars—about $480,000 or something like that.

Grier: And that was just software?

Rubinstein: Well, yes; that's all we had.

Grier: Can you say what the price per unit was? And how many units was that?

Rubinstein: No, because we did sell wholesale as well as retail. I'm sorry. My memory just isn't that good. But the retail price for WordStar was $495, and it was $250 for WordMaster with Tex, and SuperSort was also $250. It was interesting—we had a Japanese contingent visit us and they were much more interested in SuperSort. That was because word processing to them means something entirely different because of their language. It wasn't until many years later that we had a version that supported the Japanese language.

Anyhow, you asked me about the board. The whole process of having a formal board with a C corporation and all the trappings that went with it began in the third year of the company's operation. It did a half million dollars the first year, $1.8 million the second year, and $5.2 million the third year, and that's when we took in the venture capitalist. As it turns out, it was a great error—quite a great error.

Grier: You were growing rapidly. You started with $500 for your expensive product and $250 for your inexpensive one. You sold a couple thousand units your first year.

Rubinstein: No, wait a minute. We sold wholesale; we sold the program at 50% off to the dealers.

Grier: So you must have sold over 10,000 units your first year.

Rubinstein: Probably.

Welke: Did you bundle? Were there any hardware bundles?

Rubinstein: No.

Grier: But then sales clearly did go up and you had, what, $1.5 million in revenue?

Rubinstein: $1.8 million—those numbers are emblazoned into my mind.

Grier: You were selling almost a hundred thousand units at that point?

Rubinstein: We were getting up there. Altogether we probably sold over 12 million units, and God knows how many more were copied.

Welke: You need to remember in that time frame there weren't millions of computers; there were only hundreds of thousands of computers being sold.

Rubinstein: By the middle of our third year is when we made the Osborne deal. And when you got one of those little Osborne things WordStar came with it. That was an interesting deal.

Grier: You mentioned that the venture capitalist was a mistake.

Rubinstein: Yes. He contributed only to the company's detriment.

Abbate: Is there a story you want to tell?

Rubinstein: I'd be here all day if we did that. We are talking about a span of history where there are a lot of facts, and there is a reason why WordStar is barely heard of today. How did we go from having 72 percent market share to virtually zero? How did that happen? It wasn't just simply because we were overwhelmed by Microsoft. The company had a fantastic franchise, and it threw it in the toilet.

Welke: But there was at least one intermediate stage before Microsoft: WordPerfect.

Rubinstein: Exactly, yes. Software was a very competitive business. And it turns out that if you don't pay attention to the business or you make deliberate attempts to do terrible things, almost anybody can become a major competitor and even overwhelm you. There was a period of time, for example, that WordStar was not advertised or promoted or even talked about for three years. Think what can that do in such an exciting industry as the software industry if nobody markets the product, and you only want to take orders over the phone for three years.

Distribution Changes

Abbate: I wanted to ask who did marketing. Did you do that or did your distributors do it?

Rubinstein: That's another interesting question. MicroPro in 1984 did over $72 million worth of business, surpassing everyone. It was the largest revenue-producing microcomputer software company in the world. And the company's revenues plunged the following year to about $42 million. The most important thing that happened to create that decline was the decision by people—I say "people" because I no longer controlled the company, but that's another story—to do away with the over 1,500 dealers we had and instead give all the business to just a few distributors—Ingram, Micro, First Software, and there was one other one. It was a deliberate but disastrous decision. I mean, we were telling dealers to get lost. Can you imagine? It was crazy. There were people wanting to buy. So the dealers retaliated and said, "We're not going to buy from you anymore. We're only going to buy from you when the customers ask for it. Other than that we're going to go to another company that we can deal with directly." That was the first major misstep that happened.

Galley: Were the big guys already distributing most of the product so you moved to them exclusively?

Rubinstein: Exclusively. But don't say "me" because I didn't do it.

Galley: Those nasty VC people were controlling the company. Originally you were selling to everybody but they changed it?

Rubinstein: We were selling to everyone who could afford the price of entry which was to buy a minimum number of copies and pass a certain set of tests to determine that you were a legitimate dealer rather than a quantity buyer.

Galley: And then you cut them all out?

Rubinstein: They were cut off, yes.

Abbate: So the small ones had to buy from the big distributors?

Rubinstein: No. Almost all of them had to buy from distributors. The company just simply stopped doing business with everyone; even ComputerLand had to buy from the distributors.

Grier: This is 1984?

Rubinstein: Mind you, in their heyday, ComputerLand was buying over half a million dollars a month in software from us.

Maples: I think you need to remember it was kind of a three-tier market. There were manufacturers; there were distributors; and then there were resellers. Today there's still kind of that situation, but the big resellers all buy direct from the manufacturers.

Rubinstein: By the way, the justification they gave was that they couldn't handle some of the orders. So, rather than dealing with the problem of handling some of the orders, they decided to cut back on the quantity of orders so they could handle it. That was the decision from Glen Haney, the CEO of the company; that was his justification for doing this.

Competitive Word Processors

Grier: From knowing a fair bit about that period, both first- and second-hand, it's apparent that by 1987 and 1988 WordPerfect was starting to take over a substantial chunk of the marketplace. And there was a feeling among some users that it was a more sophisticated product than WordStar.

Rubinstein: I would challenge that.

Grier: Did you view them as a competitor at the time?

Rubinstein: Do you mean when it first came out or later?

Grier: WordPerfect version 4.2. Version 5.1was the dominant version of WordPerfect for two or three years during that time.

Galley: There was MultiMate in between, too.

Maples: The world kind of bifurcated somewhere in the early 1980s into the compatibility guys. MultiMate was compatible with Wang, and so a lot of corporations bought it because their Wang word processors were being replaced by the PC word processors. There was a company called XyWrite. They were compatible with the Linotype machines, so they captured the newspaper market. And then there were the PC guys and a whole series of programs like Software Arts and a number of other companies with word processing programs that were easier to use.

Rubinstein: Yes. By the way, I'd like to say something about "easier to use." WordStar, I think we all agree, had a lot of depth to it. But, of course, as you got into more depth, it got more complex. I remember when someone—probably a member of the press—came to my office and I gave him a one-on-one demo and showed him some of the things that it could do. He said, "That's very complicated; you'll never sell that." I said, "Why not?" He said, "Because it's much too complicated." I said, "Well, don't use it all. Just use what you want to. Do you want to use it as a typewriter? Then just type" It was very simple at that level. But if you wanted to format tables and include photographs and stuff like that, certainly it was going to be complex – and that's true even today.

Grier: Even more so.

Rubinstein: Right. That was always the competition's theme song: that WordStar was very difficult to use.

Maples: I think the other thing that WordStar got painted with was that it was regarded as a programmer's word processor because the command set was very much like the editors they used. It had embedded commands and the way you used the commands was based on the heritage of the editors. As a result, people thought of it as more of the programmer's word processor than the secretary's word processor.

Grier: There was a period afterward that editors would promote themselves as knowing the WordStar command set.

Rubinstein: There's a reason for that. One of the initial design parameters was to make the program as easy to use for a touch typist as possible. There was a period of time—nearly five years after the time I lost control of the company – when the company woke up again to the fact that this was an important original design parameter. WordStar even today still remains the only program that a touch typist can use without having to take the operator's eyes off the paper or the screen and look at the keyboard. With other word processing programs, you'd have to look at the keyboard to hit function keys or a lot of the other combination keys, because you can't aim your fingers that well. But if all you have to do is find the control key, then everything is at your disposal. That's been a fundamental design parameter of the program from the outset, and that's why it had so many imitators that the company never pursued.

Galley: That's why when people once mastered it, they never wanted to leave it.

Rubinstein: Right. It had certain virtues that were part of its franchise that were disregarded after I lost control of the company. By the way, I couldn't begin to say these things if I didn't have the validation from the feedback that I got when we were really selling the heck out of it, but I got a lot of positive feedback and that's how I formed my opinions. They're not made up out of my dreams; they're made up from real input that I got from users.

Abbate: I was going to ask you about customer feedback, and if you got that directly or through your computers or other ways.

Rubinstein: We got it all ways. We had lots of correspondence from people. One of the things that the dealers liked about WordStar was they called the program "bulletproof" because when they sold it, it never came back because of defects but only for technical questions—it was bulletproof. We really tested it and the dealers really believed in it.

Abbate: Did you get feedback asking for new features?

Rubinstein: Oh, sure. We used to come out with updates regularly, and we had a great revenue stream there. But, again, during that crazy three-year period, they somehow forgot to write down or keep track of all the names on all those registration cards.

The Software License Concept

There's something else I think is very important. People give me credit for WordStar, but, from my point of view, I'm really much more proud of something else I did which is developing the concept of the software license. MicroPro was the first company to sell software by license. We sold use licenses. I know that because I invented the concept and wrote the first license. There were no attorneys qualified to do that; I wrote it. And, in the early days of WordStar, when you bought the program, you actually had to sign something and send it back to us. Otherwise, you didn't have a legal copy. When we sold WordStar, it came with an agreement on NCR ["no carbon required'] paper, tell us who you were and you had to sign it, agreeing that what you were doing was purchasing a license to use the software.

Grier: How did the idea come about? Why did you think this was a good idea?

Galley: What you're saying is this is the first PC software that was sold with a license; mainframe software was always sold with a license.

Rubinstein: Well, that's not really true. I'm not saying there wasn't any license concept, but there was also the ownership concept. In other words, when you purchased something from a company, you owned it.

Galley: No, it was just a software use agreement.

Maples: IBM never let you purchase software.

Galley: No, neither did tsi in the1970s.

Rubinstein: Is that right?

Galley: Oh, never. It was a software use agreement.

Rubinstein: Well, that's news to me. I didn't know that.

Grier: What makes this interesting is that it seems to be an independent idea; it's probably the same idea.

Rubinstein: I didn't know that, but I know that I independently came up with the concept that what I was selling was a use license. Having worked for many years as a programmer, everyone's attitude when they paid for software was that they owned it. They could reverse engineer it and make changes to it because they owned it and you couldn't stop people from doing that. That's why I came up with the idea of a license.

Abbate: What was the market for upgrades like?

Rubinstein: It was outstanding.

Abbate: What was the marketing structure? Did you inform everyone who had registered that there was an available upgrade each time?

Rubinstein: Yes, and they were then able to purchase the upgrade for a significantly lower price than the typical $500 retail price – usually in the neighborhood of about $100 or $150. And the features that we included—the new features—were sufficiently compelling for users to buy it. But then there was that three-year dry period.

Welke: You yielded market share first to WordPerfect?

Rubinstein: I would use the word “yield” if there was real competition, but there wasn’t any. MicroPro was giving it up. There was no yielding. They were just giving it up.

Maples: I think there were a lot of guys before WordPerfect, a whole bunch of people that rose up before WordPerfect kind of consolidated the market.

Welke: Which muddied the water, if nothing else.

Rubinstein: I can tell you, though, that WordStar had a 72% market share going into 1984. That’s what our market research people told me.

Welke: But then the next year you fell down.

Rubinstein: I didn’t; MicroPro did, yes.

Maples: The reason market share changed so radically during that period is that the number of systems changed radically. It went from 100,000 systems to a half million systems to 1 million, to 5 million, to 10 million. If you had 72 percent of 100,000, it was a lot different than 72 percent of 10 million. So if you lost the momentum …

Rubinstein: Then the result was even more devastating.

Maples: It wasn’t like a substitution market where everybody that had WordStar went out and bought something different.

Galley: When did the XT came out?

Rubinstein: It came out in November 1981. And by 1982 WordStar was the most popular application on the XT.

Maples: In 1982 it came out on the IBM PC. Did WordStar at that time come out with PC/DOS, or did they stay with CP/M? Do you remember?

Rubinstein: PC/DOS. We still sold CP/M because it was still the same, but it was also PC/DOS.

Duns Plus

Abbate: Shall we move on to Connie and Duns Plus?

Galley: WordStar was a really important innovation and, as you said, it was big and it was first, so that's an important story. Microsoft is certainly an important story. And what I have to talk about is one opportunity that didn't became a success, but there's a second one that did become a success, although the market was tiny.

Rubinstein: Mind you, you haven't even asked me half the questions yet, but I'll stop.

Galley: No. I think it's a very interesting story, so maybe we can get back to that. I think you mentioned that 1964 was when IBM announced the S/360. I was at IBM then and one of the big features was the 3270 monitor that was coming out with the S/360.

Maples: The 2260, actually.

Rubinstein: The big difference was that the 2260s still had discrete components, while the 3270 was solid state.

Galley: I was with a mainframe software company, tsi International, when it was bought by Dun & Bradstreet. A couple of years into that acquisition, Lee Keet, who should be here speaking about Duns Plus, had a concept of an idea that since IBM had announced the PC, executives needed an executive workstation: "This needs to be used by executives, not techies." And he formed a company around that idea called Duns Plus; it was funded by Dun & Bradstreet. I think they put $5 million into this new company. And it was actually an "intrapreneurial" startup within Dun & Bradstreet. I became part of it because of my interest in PCs.

The idea was to provide a fully equipped PC for someone's desk with word processing, a spreadsheet program, and, of course, online access to all the Dun & Bradstreet databases like the *Official Airline Guide*. It was all fully integrated and easy to use, and you never saw the technology. The idea was to make it simple. Well, it just illustrates that everything is kind of an evolution. When you look back it seems kind of simple, but at the time it was an innovation.

I don't really know what the contracting process was. I'm sure that Lee Keet may have approached you about WordStar; he approached VisiCalc and I know we talked about using VisiOn as the platform. None of that happened. The ultimate contract was to use MultiMate, Lotus 1-2-3, which was in beta test at the time and used the XT platform, and then the rest was going to be written by us. The whole program was written for this fully integrated platform where you could download from OAG, you could put the data into a spreadsheet, cut and paste it over to word processing, and so forth. And it really was a pretty nifty system doing Windows type integration as well as everything else.

Lee Keet, if you don't know him, was very interested in protecting against software piracy. He ultimately wrote a book about it. But for this product he had the IBM manufacturing unit down at Boca Raton put a wire on the printer board that could be tested by software. And Lotus wrote into their software to test that the copy was being used on the platform it was sold with so it couldn't be pirated and taken off this platform. It was a fascinating concept. But it took a couple of years to develop and get out the door with full documentation and education – the complete package. But things had changed by the time it came out the door—the company was probably formed in 1982, if I remember right—and the product probably was released in late1983.

By that time the IBM PC was becoming so popular – it was bought by the thousands and being bought by every part of an organization – that the IT people in the companies felt they were losing control. They put a stop to it and said, "No, we're going to grab hold of this and we're going to buy our PCs centrally." So there was a period of time where they wanted to control the purchase of PCs. And, of course, they didn't want to buy anything that was not mainstream that was going to be supported by somebody else and not by them. That really was what put a halt to the sales of Duns Plus, and it ultimately did not succeed.

KeyMaster

But, the second story I have to tell involves a different type of product. I went back to the mainframe software company from Duns Plus and the business I was in was spun out from Dun & Bradstreet. We took a product that at the time was the first to use an IBM 3270 terminal with a mainframe that allowed data entry operators to key into a screen. I don't know whether you know what a data entry operator is—if you didn't deal with mainframes, you don't know about keypunches.

Rubinstein: What year was this?

Galley: Well, KeyMaster had been around for about five years when we spun out of Dun & Bradstreet, maybe more. This was in 1984.

Rubinstein: Okay, because I used 3270s for data entry in Switzerland in 1976.

Galley: Well, that's probably when KeyMaster actually was invented and released as a mainframe software product. It replaced keypunches where people had huge documents, repetitive keying, form after form after form, and you could design an entry screen on a 3270 and key the data there.

But to bring the discussion back to the PC: We then took the data entry application and rewrote it for the PC so that it was still fully connected to the mainframe because that's where the data had to go. But now a PC replicated data entry machines much the same way that you replaced

the single-purpose machines to do word processing. We replaced thousands and thousands and thousands of key-to-tape, key-to-disk, and keypunch machines to do data entry on the PC. And KeyMaster really became the leading product for data entry—not a big market, but nonetheless pretty exciting when you were the only game in town.

Grier: But it was still a time when there were huge key entry shops, so the large organizations did have large staffs.

Galley: Large staffs down in the basement, lots of people doing data entry.

Software Integration with Duns Plus

Grier: The one thing out of what you've said that I'd like you to go back to is Duns Plus. I vaguely remember the system. And it's the integrated side of it with all the different pieces of software—I wonder if you can talk about how that decision was made, the benefits and drawbacks of the decision, who championed it. Was there anyone who thought it was not a good idea?

Galley: Not a good idea to have it integrated? No. The whole idea from the beginning was to have it fully integrated. That was the concept: integrated with the hardware, integrated with the various components of the system, integrated with the online services that Dun & Bradstreet offered.

Grier: In many ways, though, it's a system that has taken 20 years to get to.

Galley: Right. I think the decision along the way was to make or buy the integrated platform or buy something like VisiOn because VisiOn was then providing a platform that, I think, could have been called an early competitor to Windows.

Maples: Well, it was a predecessor. It was kind of a rip-off of Apple's stuff.

Rubinstein: Which was a rip-off of the Xerox stuff. I actually met with Bill Gates during one of the Comdex shows where Xerox was showing their great iconic platform. And, you know, we sat and stared at it together in awe.

Galley: Actually, I wasn't a part of making that decision. I think that was the development group's decision, but I was a proponent. We met with Dan Fylstra at the time and looked at VisiOn, and I was a proponent of using somebody else's platform, just like you would use somebody else's operating system. That made a lot of sense to me so our developers would be able to work on what was unique to this system. But we had some pretty strong

developers who wanted to write it themselves, and I think that's probably how that decision was made.

Abbate: Did that mean that someone who already had a PC couldn't purchase the software alone; they would have to buy an entire system?

Galley: They would have to buy the total system because one of the things that was integrated was the support for the product. We actually had a contract with IBM for the IBM customer engineer to go in and install the XT on somebody's desk so when they walked out of the room there was nothing to be loaded. You couldn't do that, of course, if you didn't sell the same machine every time. It wasn't for everybody. It was meant to be a totally bundled package.

Maples: I have kind of a diverse history, and I guess I'm kind of a gadfly in a lot of these areas. In the early 1970s, or through the 1970s, I was the product manager at IBM on displays. I was there through the last of the 2260s and all of the 3270s. The 3270 was a field-oriented columnar—kind of like a punch card—device. We even built some word processing things in at the end—word wrap and a few things hardly used by any customers. After that, I went to be director of development for one of the groups in IBM. The group that I was in had the printers and the typewriters and they had the Displaywriter products in Austin, Texas, and had the PC and intermediate systems.

So I was peripherally involved with all those guys. At the time, I think that what was happening was the word processing industry was moving from typewriters and/or mainframe-generated output where you entered a lot of text and the mainframe would process it and print the books or whatever to specialized devices. There was the Xerox Alto, whose claim to fame was WYSIWYG but it was very expensive. IBM had the Displaywriter—moderately expensive. And Wang had the Wang system, which was probably the biggest seller, primarily because it was less expensive. Ergonomically it was a disaster. It had a huge fan and you couldn't even put a plant next to it—it would burn the plants up – but it sold a lot of products because it was relatively inexpensive. You had a whole series of people building products that were unique to word processing.

And along comes the IBM PC. At IBM I became the director of software strategy and all the stuff that had to do with software for the PC. IBM's strategy at the time, around 1982, was to license other companies' software. There were a lot of PC people who added word processing to their systems, but they were PC companies—small, you know—and WordStar was the volume product. I don't remember all the products that IBM sold; I think they sold WordStar. They sold a number of products.

Rubinstein: I could tell you about IBM's attempt to create a liaison with MicroPro.

Maples: I remember the ones it sold best were the $20 and $30 ones that had limited functions. The next phase, I think, in the word processor/word processing area was “let me emulate the word processors that have done well; let me emulate Wang; let me emulate Displaywriter; let me emulate Xerox.” So you had MultiMate, which got a lot of corporate contracts because Wang had been the dominant seller there. You had IBM that was selling the DisplayWrite software which tried to emulate a Displaywriter System. And you had VisiOn and a bunch of others.

Changing Printer Technologies

The subtle evolution that happened with the PC was with the printer support. It was a terrible problem to get printer support. There were a lot of printers. People were innovating; the command codes were weird. And people were trying to do things like subscripting, superscripting and all kinds of little weird things that made printer support interesting.

Along comes the Apple. I don’t think the WYSIWYG screen was the thing that really brought the Apple into word processing; it was the Xerographic printer. Apple was the first to really sell the HP LaserJet printer. It brought a whole new set of interesting problems for the word processor designer because now you had WYSIWYG characters and you had a series of things that weren’t natural for the PCs of the day. There were a lot of monitors that weren’t WYSIWYG. Most of the programs used fixed-character width and so forth.

So you had a series of things to deal with, and I think that’s the time that both Word and WordPerfect broke onto the scene. About that time, I was leaving IBM and I went to Microsoft. So I’ll comment from that perspective. What the original versions of both Word and WordPerfect did was try to create on the screen something similar to what you’d get on your laser printer, or more similar than what you’d get on your laser printer than from just a character-based system. I think that that’s what made them successful: WordPerfect had a very unique file organization which let them embed command codes that would let them change fonts and things rather interestingly and quickly. Word tried to do a WYSIWYG thing on the screen. Then the Macintosh comes along, and people get better printers. They also start falling for WYSIWYG. Charles Simonyi who was at Xerox and designed the Xerox Alto, which was the first WYSIWYG word processor editor, went to work for Microsoft and did Word. And then you get Mac Word and later Windows Word. It has kind of changed back to what the word processors were in the early 1980s: unique, specialized machines.

The other interesting note through this history is what happened to the typewriter. The typewriter went along—it was *the* word processor of the world for a long time. And then in the early 1980s the PCs started coming out with dot matrix technology followed by a few technologies, based on the typewriter, that printed fonts that looked more like the letter fonts; this was before the LaserJet. Even with all this, in almost in every office you still found many typewriters, even if people were using PCs for word processing, because you couldn’t print forms with the PCs; you

couldn't skip them; you couldn't do tabs. There was a whole series of things you couldn't do very well. There was this grand prediction all along that the typewriter would just go away, and it didn't seem to go away for a very long time. It was maybe 1987, 1988, 1989—along in there—that in one year the volumes went down by 80 percent. They've gone to virtually nothing now. You almost can't buy a new typewriter. It used to be that everybody had a typewriter, then most people had a word processor and a typewriter in the back, and now there are just no typewriters anymore. People have designed their forms and everything to work on a computer, not on a typewriter.

Galley: It's interesting to tie that to the laser printer.

Maples: Yes. I think the laser printer had a dramatic impact on word processing. It's the thing that made everybody be able to produce as good a document as the best word processor could produce. Nowadays the printer is the operating system's responsibility. You talked about what is the service of an operating system. You can kind of think of an operating system as having five services; they are: job to job transition, memory management, device management, and so forth. But the early operating systems didn't have anything. They didn't do printers; they didn't do memory management. Whoever took over the system owned it—so, one application, one computer.

The operating system essentially did job to job transition and reading and writing to disk. In the broad sense, as an operating system, it really wasn't an operating system. It was a monitor—a job monitor.

Abbate: Do you remember at what point the operating systems took over the printer driver function?

Maples: Almost every application worried about printer drivers for Windows and the graphical interface systems. The strategy in the early PC days was, "The printer manufacturers are responsible for the printer drivers." It was a moderate disaster because the manufacturers were interested in selling their hardware, and if they could get just one or two good applications to support it, then they'd just throw the driver out there but none of the other applications could support it. So the printer manufacturers would be talking with different companies to try to get WordStar to support it, try to get VisiCalc to support it. Once you had two or three companies that would support it, you built a driver for them or worked with them or got them to commit to build a driver. You'd throw it out there. Customers would get a new printer and it would work with one application but it wouldn't work with the other 20 applications they had.

With the early Mac, you had to buy an Apple printer; they had two or three models available. So Apple solved the printer support problem by just not supporting many printers. In the early days of the PC, when WordStar was first out, printer support was relatively easy because the Epson

MX80, or whatever it was, was *the* printer everybody had. So the first PC that hit the street supported the MX80.

Rubinstein: But there were also the Centronics printers.

Maples: There were a number of them, but the volume was hugely slanted to the Epson.

Grier: There was a period when other printers were saying they were Epson compatible.

Rubinstein: I could have sworn it was Centronics, not Epson.

Maples: Epson was the one that was the standard. Centronics may have been the standard before the PC, but the PC came out with a cheap version of the Epson that came with the system. And along with the Hayes modem, the industry kind of focused around what IBM had packaged together in the 1982 time frame. That became a standard. In fact, I think modems still talk about Hayes-compatible code sets. That was the one the PC gave you support for in the early days.

Growth of the User-Oriented Environment

Grier: One of the things that has sort of come out of all this is the difficulties of integration and the complexity of managing who is responsible for the printer driver—what layer takes what part in that. I was wondering if you could talk about how that was sorted out—how people, faced with the problems, said, “Well, we’re not going to take responsibility for it,” and then eventually you got stuck with it. Or, you were responsible for it and eventually saw yourself letting it go, like printer drivers.

Galley: Personally, I’ve seen that happen in a lot of software products that I saw being built. What I’ve seen many times is that it comes down to the brilliance of the person doing the design. If you’re talking about a new software product being developed, the best way to design it is so that it can be layered so that things can be generically done as opposed to building anything in.

Maples: I think it’s kind of an evolution based on the market size. In the early days of the PC, the attitude was “We’ll try and make it as cheap as we can, but we’ll make it as cheap as we can by transferring to the user a whole lot of responsibilities.” Therefore, there were a small number of users who were technically oriented and liked it as a hobby and would buy the product anyway. They were willing to do it. They were willing to learn. The attitude was, “We’ll

teach people how to use the computers. And, in the long term, as kids grow up they'll learn how to use computers and everybody will become computer literate."

As the market grows, you have to shift the attitude—computers have to work like the people, so the computers have to become people literate. And as you want to enlarge the opportunity of selling, you have to do more and more that the user doesn't have to learn. Ultimately, you want to fit into their world—which isn't computer oriented, isn't command lines, isn't all those things—and work like they think.

Probably the attribute that Connie is talking about is that with a great program, you have a feeling that when you try something, it's going to work like you think it ought to work without your being a computer person. So you talk to somebody, and they say, "Well, that program is elegant". What they generally mean by that is that they can sit down without a manual, without any instruction, and it starts working; and it works in the framework of the way that their mind works, not in the way the computer works. The clever programmer has moved in and taken over with this approach: "Let me understand how the people think and how they work and what's intuitive."

There are some really interesting examples. This is pretty much off the subject, but in the early days of the graphics programs, you'd have a toolbar of things you could do. You could select to draw a circle or a rectangle and you could size it. Every time you'd draw, say, a rectangle, you had to go back to the toolbar to select it in order to size it, or you'd have to get text to put text in it. People observing users could determine that 80 percent of the time the next action was going back and sizing it, so they would just automatically leave it set up to be sized. If you look at a good drawing program now, the assumptions of what you're going to do next make the user about 40 or 50 percent more productive. Just understanding what the user is thinking about doing next, or combining many functions into one function, is much more based on what the user thinks than what was easy for the designer. I think that's true across word processors and lots of other things.

Abbate: It sounds like the Duns Plus was actually thinking about—at least in some way—online services. To what extent was that a context for any of your thinking about the PC industry?

Maples: The problem that Duns Plus had was the same problem that Lotus had with the product Symphony: The hardware wasn't capable of keeping up with the design that the people applied to it, so the systems got sluggish and constrained. And because of that, they didn't sell very well. Speed is one of the most important factors related to ease of use. When you slow the speed, it doesn't matter how integrated it is—people don't want to use it. I think that the limits on hardware capability at that time meant that in order to integrate the system, you had to slow it down to the point that speed related to ease of use was no longer acceptable.

Rubinstein: In fact, MicroPro came out with a product during its three-year hiatus called WordStar 2000 which resembled WordStar only in name. It was quite a totally different program written in a different language. We sold it based on the strength of the name, but as a program it was terrible, full of bugs, and it was totally incompatible with anything else the company had ever done. And on top of that, it was very slow. It had at least four strikes against it.

Maples: There were dramatic market shifts that happened in the industry on two or three occasions that generally resulted from an underlying change in some basic technology. In almost every case the leading company for a particular application at the time screwed up. I think Microsoft gets unfairly blamed for putting a lot of companies out of business when they just kept fighting the war until the other company really screwed up. I can look at most of them and tell you the day they screwed up.

Rubinstein: How about in a three-year period they screwed up?

Maples: It was just one day, and it lasted three years.

Grier: Microsoft has always had the financial staying power.

Maples: It just kept doing release after release after release when it didn't make economic sense.

Rubinstein: Well, during that three-year period, one of the things that MicroPro did do was amass an incredible amount of cash for its time. There was over $40 million sitting in cash in the company, but it was discharged.

Grier: One of the things that the spreadsheet crowd was heavily influenced by was the look-and-feel suits—there was so much focus on who's copying who. That issue never seemed to touch word processing in the same way.

Rubinstein: Well, in the case of WordStar, to the extent that there was infringement, the company behind it wasn't willing to fight for any perceived infringement.

Grier: Would there have been any benefit in infringement—the fact that the WordStar command set has been so heavily copied?

Rubinstein: It's hard to say; it wasn't done.

Maples: Yes, it probably would have been a very difficult suit because that command set partially existed prior to WordStar.

Rubinstein: Well, in this case, though, Mike, I'm talking about the keyboard layout control keys. That did not exist then, and that was really the touch typist thing. There was certainly nothing unusual about the command set. But the company could have filed design patents on the usage of the keyboard layout but it didn't.

Maples: In the long term it would hardly matter because that didn't end up capturing the market.

Rubinstein: Well, there was no marketing.

Maples: No, I'm just saying that even if you owned those patents today, you wouldn't have any value.

Rubinstein: Oh, they would be worthless.

Grier: The shifts from very different forms of word processors seemed to happen much more easily than from different spreadsheets. People seemed to be able to go from WordStar to WordPerfect to Word relatively easily.

Rubinstein: Well, even today there's another spreadsheet out there that lots of people use, and that has a very different command set. It's Quattro Pro.

Maples: But one would argue Quattro Pro is still wanted for its command set. At least Lotus argued that in court for a long time.

Rubinstein: I didn't know that there was a lawsuit like that.

Maples: Oh, yes. I think Quattro Pro ended up losing, or it was overturned? I don't remember exactly what.

Grier: And there was a clever finesse they tried to do by, in effect, including a layer of code that made it possible for you to emulate anything, and hence they weren't breaking any copyright.

Marketing Focus

Abbate: Were word processing products actually marketed to women? It seems like a lot of the other applications probably would have been mostly marketed to men, but this seems like something where women would be the market.

Rubinstein: That's an interesting question, because at the outset we certainly targeted women because they were predominantly the word processor operators. And part of the promotion was to improve office efficiency and end a lot of the tasks that formerly were really drudgery tasks.

Galley: I wonder who bought the Wang word processors. Was it the women who were going to use them, or was it a techie purchasing manager or someone else?

Maples: I think that probably having women as a target market was the result of IBM typewriter salesmen—there were a lot of them. They gave roses to operators and they paid attention to the secretaries. That probably was the last really good marketing to women. Then they went into a phase where they marketed to the office manager and emphasized productivity.

Abbate: I'm thinking about advertising. Who was featured in your ads; what did they look like?

Rubinstein: There was a period—I had nothing to do with the management of the company at that time—that the company really started to promote the touch typing aspect. They came out with that showed like fingers touch typing. It was definitely done with many of the pronouns of the female gender. So I would say that it was targeted to women, but it was nothing like what IBM did. We didn't hand out roses or anything.

Maples: Typewriters were sold one at a time. You hired an executive secretary and if she said she wanted an IBM Executive Selectric, that's what you bought because cost wasn't that big of a deal. But as soon as you got into efficiency and the office manager was involved and the issue moved to "How do I get rid of the secretaries," things changed. If you look at the ads for word processing today, I think you'll see them aimed at the professional, whether that's man or woman. There are not nearly as many bays of secretaries or secretarial kinds of things anywhere. If you look at Microsoft's ads today, you'd see men and women in the office. There wouldn't be any differentiation.

Galley: Today there is no secretarial pool, just like there are no data entry shops.

Maples: I think the women are included in the advertising, but there's nothing unique about the gender, just that they're in the office doing the job.

Rubinstein: It's evolved to that, in any case.

Providing Customer Support

Abbate: What kind of technical support did you have?

Rubinstein: In the beginning, when we were selling to dealers, we qualified them because we expected them to provide support. We not only trained them but we even gave them tests. They could only become dealers on the basis of the test results and they got a discount. We thought that we would only have to provide second-level support when they had a real problem that couldn't be solved by ordinary means – maybe they even found a defect, God forbid!

Those dealers became quite successful, so much so that they became the bosses and they hired new people, but they retained their dealership then without us having trained the new people. As they brought on more people, the new people coming on were less and less trained until today we have a retail establishment that sells based upon their knowledge of how to read what's on the box, but not having any knowledge beyond that.

The company continued to give discounts to the dealers, thinking that the dealers were going to provide customer support when in fact they didn't. A major early failing of MicroPro was its inability to provide a relatively decent level of end-user support—it just didn't.

Maples: I think that was one of the reasons WordPerfect grew. At a time when things were really complex and hard to do, WordPerfect featured free support—lots of it—and all their ads were built around that.

Rubinstein: MicroPro made attempts to fix their support problem. It tripled the staff, did better things.

Grier: But also as part of this process, training got pulled out from standard support. That was not only not done by dealers, but it was done some by completely independent people.

Rubinstein: Yes. There were in fact companies that just specialized in teaching word processing.

Welke: The books about how to use the word processing programs are no longer published by the manufacturers of the products but by third parties.

Rubinstein: That's correct.

Welke: Is there a sense of how that came about?

Galley: Market opportunity.

Welke: Oh, it was a market opportunity, yes. But who saw it; when did they recognize it?

Rubinstein: Oh, it happened quite early, actually. In fact, Adam Osborne, who as you know did the Osborne computer, but he also founded another company: Osborne Publications.

Welke: That got bought by Microsoft, didn't it? He was head of publications for Microsoft. They still do it, but Osborne actually was VP for publications.

Maples: I don't know. That was before my time.

Rubinstein: In addition to that, there's also Sybex and Howard Sams. They all started to come out with books on all the software products that were out there including, finally, the Dummy series of books.

Maples: I think what has evolved now is that those kinds of organizations primarily support small and medium businesses and home users. The large companies have their own classes and their own online training and so forth. If you look at ExecuTrain and other companies that do classroom training, or even the resellers that do it, it's primarily the small and intermediate business customers who use these services.

Rubinstein: Yes. One time we actually had an educational division that put together training courses and provided them to educational institutions for no cost.

Grier: Yes, and there's also been a shift to high schools that are all wired.

Rubinstein: In fact, I think the Bill and Melanie Gates Foundation has contributed enormous sums of money to fund computer education in charter schools. I know of one such school, in Vallejo, California, where the students go from classroom to classroom, and in each classroom every student has a computer at the desk connected into the central server so they can always get to their work. It doesn't matter which terminal they sit at. And virtually everything is computer oriented in the whole school; this was all provided by the Gates Foundation.

Maples: In 1995 we started a program with the schools in Bellevue, Washington. The program was to teach the teachers about computers. And the students taught the courses. The high school students taught the teachers how to use computers.

Abbate: Seymour, I know you have more untold things that you had wanted to get back to.

Welke: One thing that is particularly interesting is the relationships with other companies, companies that were doing the same things and those that were doing different things. Try to talk about the integration process. What were your relationships both with competitors and with other small firms doing software?

Rubinstein: We had a very good relationship with Microsoft.

Welke: How did that develop? Who approached who?

Rubinstein: I met Bill Gates originally while I was the director of marketing at IMSAI. As I mentioned before, we had a contract with Microsoft. We spoke to each other fairly frequently and we met at virtually every trade show; we had lots of conversations. I maintained my relationship with him for many years. It's only in the last maybe two or three years that it sort of tapered off.

Microsoft came out with a sorting program. I don't remember what it was called, but it was their first competitive foray into something that was competing directly with us. MicroPro had SuperSort, and Microsoft came out with a competing program. There have been many books written about this time and I think this particular story is actually documented. Gates attempted to do something that was competitive and probably was urged by his people to do something competitive, and it wasn't very good. Their product was not very good and he knew it. So we kind of laughed about it, not that either of our sort programs was ever a big seller. It was just simply the fact that we were competing head on at something. Even after I was out of MicroPro entirely and before Microsoft came out with Excel, I approached Bill to buy what later became Quattro Pro. He was very interested in it, but even as I was in his office telling him about it, there were people coming into the room shaking their heads and saying, "No, no, no, no." So of course that did not happen, and that's really how Borland got hold of it. In any case, Bill and I had a very cordial relationship for quite some time.

I certainly was on the phone many times with Mitch Kapor. Obviously what we were doing dovetailed because he was the spreadsheet company; I was the word processor company. We wanted also to present a unified front when it came to piracy. That was certainly an issue on which we all wanted to collaborate to the maximum extent that we could. I came very close to doing a deal with George Tate of Ashton-Tate and in fact may very well have, but he died. It just got too much for him, I guess—it almost got too much for me, too.

Venture Capitalists and Going Public

In fact, that's really how I came to give up control of my company because on January 7, 1984 I had a heart attack. To allow the public offering to go forward, I signed all kinds of horrible documents while still in the intensive care unit at Marin General Hospital that converted all of my

shares to restricted nonvoting shares that could only become regular common shares if I sold them. Basically it meant that even though I held more than enough to control the company, I was giving up control so that I wouldn't appear as a major shareholder on the S1.

Galley: Who was the beneficiary of all of those actions; who retained the voting shares?

Rubinstein: Well, basically all the other shareholders. My percentage was taken out of the voting pool, and while it didn't give Fred Adler absolute voting control, it certainly left him in a position where he could control the actions of the company. He was the VC that I brought in.

Galley: Was he the person that stuck the piece of paper in front of you right there in the hospital?

Rubinstein: No. There were other people who acted as agents, but he certainly was the instigator. The thing about Mr. Adler is that he was one of the original venture capitalists who believed that entrepreneurs are only good to start their companies but not to run them; and that the sooner you got rid of them, the better. He was with a company called Adler and Company. At one time he was the premier venture capitalist. Now I think he's close to 80, so I don't think he's doing anything like that anymore.

New Speaker: It probably allowed you to sell your stock easily.

Rubinstein: No. I had still the same 144 restrictions as anybody else. And by the way, this was a pattern. I didn't know this but apparently Fred Adler did it in virtually every company he was involved with when it went public. He had a way of doing this. He's a lawyer by profession, and I had to become well versed in the law to really understand what my rights were because no one was on my side anymore. Originally there were all these people doting on every word that fell out of my mouth—and suddenly they were all gone. It was an amazing transition: my fall from grace.

Welke: Are there other major lessons that you've learned in your business career that have contributed to your success?

Rubinstein: Probably, but they all pale by comparison.

Grier: So this is a period of just a month or so when all of a sudden you go from a central position to a personal role.

Rubinstein: That's correct. It was devastating. And the heart attack wasn't anywhere near as severe as impact of this change.

Abbate: I don't know if you're the only one in the house who took a company public, but I am interested in any others.

Galley: The company that owned KeyMaster is what I was running at the time. The big threat to data entry was called electronic data interchange which meant you didn't have to enter the data the second time because you were just going to exchange the documents themselves. We got into that and then the big problem with electronic data interchange was reformatting the documents. We came up with one of the leading products for mapping the data from one format to another called Mercator. So we went public as Mercator Software. It didn't have anything to do with the PC or word processing.

Rubinstein: I could tell you about going public. I know enough about going public now that I wouldn't need a VC and I wouldn't even need an investment banker.

Abbate: That's what I was going to ask about—the decision to go public. Today the public knows all about IT stocks for better or possibly worse. But back in the early- or mid-1980s, what did the public know about IT stocks, and what was the environment like for a company going public?

Rubinstein: It was actually pretty hard. We were not the first to go public by any means.

Galley: When did Microsoft go public?

Maples: 1987.

Abbate: So, you [referring to Rubinstein] were before them.

Maples: I think there have been three bubbles of companies going public. In the 1980s there were a number of companies that went public, and then the early 1990s, and then the late 1990s. I think that they almost correspond with bubbles of investment bankers, too, or the VC community—the whole investment community. You know, the VC community at one time invested in trains and meat packing plants, and they really weren't venture-risk kind of companies. They were just an extension of a bank investment company. And in the early days, I think in your time frame, they really weren't early-stage investors, either. They came in a little bit later and tried to help the company grow. In Microsoft's case, Microsoft took a VC investment a month before it went public. It didn't even need or want the money. It just wanted the guy to get on the board.

Rubinstein: I talked to Bill Gates about it, in fact. He even asked me whether he should take a venture capitalist. So, I said, well, you may want to, but only for the exposure—don't sell them too much.

Maples: One person who sold $1 million worth of stock is Dave Marquardt. He's still on the board.

Abbate: And what was your experience, Connie? Did you have a venture capitalist?

Galley: Yes, we had venture capital when we wanted to get into the electronic data interchange market. Warburg Pincus had an interest in that market, and they were really an excellent venture capital company; they were very good partners throughout that period of time.

Rubinstein: Actually, they are very good. Bill Janeway is running that.

Galley: Yes, Bill Janeway was on our board for a while, and then Stewart Gross, the last one to be on our board, was really terrific. He was a cool head on the board; it was a very good experience having him on our board. But we really did it to get into the EDI market, although it never really materialized for us. It had good growth, but it never really materialized as a software market. We wanted to release a product that that was a generic data mapper—not just for electronic data interchange formats, but for any kind of format. That was really a much bigger market than just the EDI market. It became such a big market so fast that IBM and the bigger companies took the market over within the space of maybe five years. There are still companies out there that do it, but it doesn't have the same kind of potential anymore. But, we went public during its early phase, so the VCs actually still owned a piece of us by then but were not actively involved in the company. And they never controlled the company and that was unique. We were the only company that Warburg Pincus invested in where they did not run the company. And I do think VCs have the inclination to replace the entrepreneur if anything goes wrong. I don't think that's necessarily the right thing to do; I think it always should be looked at. You should be looking at it yourself all the time.

Rubinstein: For them, it's an automatic response rather than looking at the situation.

Galley: Yes, it's an automatic response rather than an evaluation of the situation on what has to get done. And so, the fact that they did not control the company was a good thing. The ownership was quite broad; I didn't own enough to control the company, either.

Selling a Product Internationally

Rubinstein: Well, that's helpful because then you have the collective intelligence. By the way, we have a question you never brought up. Maybe it's not germane to this session, but that [question concerns] the marketing reach of these early stage companies. MicroPro was the first PC application software company to promote its products overseas. There were only two PC companies – MicroPro and Microsoft. Microsoft was selling its language products and MicroPro was selling its word processor.

Abbate: Did you have non-English versions?

Rubinstein: Well, that was the whole point. In fact, I went to France and I wound up picking a French distributor. I stayed with him for three weeks during which time I sat in his office with the help menus and told him what the help menus were. He told me what to say in French and I typed it in; we just made a French version on the spot. The English version could sell—certainly in Great Britain it was not a problem. It could sell well into the Benelux and Scandinavian countries because of the prevalence of English in the business community there; it's very high. But in France they have an institution called the language police, and everything must be in French. You can't even sell it if it's not in French.

Galley: And, that's kind of part of the answer to your earlier questions—what gets done by what pieces of the software. And you were talking about market drivers. One is when you go international, you look at your product and you say, "Whoops." If you're at an early stage, you might have to restructure it if the help screens or the error messages were built in and they weren't put into a file so that you could have them translated easily.

Abbate: Did you have to restructure it that way?

Rubinstein: We didn't have to restructure it, but the help menus had a little interpretive language all their own, so I just simply had to replace the English text with French text – which I did by hand, typing it in.

Maples: Most programmers just embed those commands right in the program so they were hard to find to translate. When you start restructuring, you want those to be separate so they could be worked on easily.

Grier: And you never moved beyond the Roman alphabet, did you?

Rubinstein: That's not true. We had 43 languages, including Greek, Arabic and Hebrew.

Abbate: How did you do the distribution in those countries?

Rubinstein: Basically we picked a distributor. In some cases, we picked a distributor who had an exclusive license at the time with certain revenue goals; that was the typical arrangement. But in some countries we had our own office and we did our own distribution.

Welke: We'll end the session now and go to lunch. Thank you very much for participating.

