



Oral History of Werner Frank

Interviewed by:
Jeff Yost

Recorded: February 14, 2006
Mountain View, California

CHM Reference number: X3457.2006

© 2006 Computer History Museum

Table of Contents

BACKGROUND AND EDUCATION	4
FIRST EXPERIENCE WITH COMPUTERS	6
WORKING AT RAMO-WOOLDRIDGE	7
STARTING INFORMATICS	9
EXPANDING INFORMATICS SERVICES	11
INITIAL INFORMATIC PRODUCTS	13
GOVERNMENT CONTRACTS	14
STARTING EQUIMATICS	16
EQUIMATICS ACQUIRES INFORMATICS	17
RELATIONS WITH WALTER BAUER	18
MICROCOMPUTERS	19
WORK WITH ISRAEL	20
CONSULTING AFTER INFORMATICS	21
FIRST RELATIONS WITH STERLING SOFTWARE	22
BECOMING A STERLING SOFTWARE EXECUTIVE	23
ACQUISITION OF INFORMATICS BY STERLING SOFTWARE	24
ADDITIONAL ACQUISITIONS	26
CHANGING ROLES AT STERLING SOFTWARE	27
CONCLUSIONS	29
ACHIEVING THE AMERICAN DREAM: BECOMING AN ENTREPRENEUR	31
INTRODUCTION	32
PIONEERING IN THE COMPUTER INDUSTRY	32
ON BEING A NUMERICAL ANALYST	35
FORMATION OF INFORMATICS, INCORPORATED	39
FORMATION OF EQUIMATICS, INCORPORATED	51
THE MERGER OF EQUIMATICS AND INFORMATICS	53
INFORMATICS GENERAL INC., RESUMES PUBLIC OWNERSHIP	55
MY EXPERIENCE AS A COLUMNIST	57

MY COMPUTER RELATED EXPERIENCES IN ISRAEL	60
ENTERING THE AGE OF THE PERSONAL COMPUTER.....	71
BECOMING AN INDUSTRY CONSULTANT.....	76
MY CAREER AT STERLING SOFTWARE	80
STERLING SOFTWARE INC. ACQUIRES INFORMATICS GENERAL INC.	81
MY GROWTH IN STERLING SOFTWARE.....	84
(SEMI) RETIREMENT AND BEYOND.....	85
MY ROLE AS AN INVESTOR.....	88
MY RETROSPECTIVE	92

Werner Frank

Conducted by Software Business History Committee—Oral History Project

Abstract: Werner Frank discusses his emigration from Germany to the United States as an 8 year old and his educational background. He covers getting involved with computers while in the US Army. He then applied his mathematical skills to a variety of projects at Ramo-Wooldridge and later at TRW. He reviews some of the major military projects in Washington, DC and on the west coast. He then joined Walter Bauer and Richard Hill in forming Informatics as a subsidiary of Data Products. He describes some of the US Federal government projects he managed and how he started writing articles for Computerworld. Werner Frank then details how Equimatics was initiated as a jointly owned company with the Equitable Life and Informatics and how Equimatics purchased Informatics and changed the company's name to Informatics General. He continues with how he developed an interest in microcomputers and tried to get Informatics to invest money in microcomputer products. Later, he left Informatics, was a consultant for less than two years and then became an executive with Sterling Software. He discusses the unfriendly acquisition of Informatics by Sterling Software and how the two companies were merged. He reviews some of the principal acquisitions that Sterling Software made and how successful (or unsuccessful) they were. Attached is a copy of a chapter "Achieving the American Dream: Becoming an Entrepreneur" from his book: "Legacy: The Saga of a German-Jewish Family Across Time and Circumstance" published in 2003.

Jeff Yost: I am Jeff Yost from the Charles Babbage Institute. I am interviewing Werner Frank, software and services industry pioneer, as part of the Software Business History Committee Oral History Project. We're at the Computer History Museum in Mountain View, California on February 14, 2006, Valentine's Day. Werner, I'd like you to begin with a little biographical information. Can you discuss where you grew up and your early education?

Background and Education

Werner Frank: Sure. I was born in Germany in 1929. My family lived in a very small community, a farming-based community, and I spent the first eight-years of my life in Eppingen. It's a location in the southwest part of Germany, south of Heidelberg and towards the French border. I started my schooling in kindergarten and then advanced to the Volksschule, the

grammar school, which I attended to the third grade.

Yost: Were there particular subjects you found especially interesting, or special aptitudes?

Frank: In those days, not particularly. I have to tell you, though, I had beautiful handwriting because there was a tremendous emphasis on that in the German schools and if you look at my handwriting today, you wouldn't be able to read it.

Yost: When did you come to the United States?

Frank: Well, as a result of what was going on in Germany with respect to the Nazi movement, my family was lucky to be able to leave in 1937. I left with my father and mother and my sister and we came to the United States and ended up in Chicago.

Yost: And later you decided to attend school at the Illinois Institute of Technology. Is that correct?

Frank: That's correct, but that's because I got a scholarship. In those days, we didn't have any money and my parents certainly couldn't have sent me to college. And in fact, it was a big question - should I/can I go? The only way open to me was to compete, and I did win two scholarships - one to Roosevelt College, as it was then known, and the second to the Illinois Institute of Technology. I selected the latter.

Yost: You majored in mathematics and minored in education and economics. What led you to these particular fields?

Frank: Mathematics was a clear choice. I wasn't too engineering oriented, which was the emphasis of the school, but I had done very well in high school in math. I had participated in a special mathematics club and won second place citywide in a math contest, and so that was kind of my aptitude. Of course in those days, choosing math typically meant you went into teaching or maybe into an insurance company; there weren't too many opportunities other than that.

Yost: So were you thinking of those as potential careers?

Frank: I didn't give it much thought, but if I had to, perhaps it was education because I did minor in education and that was kind of a fall back position.

First Experience with Computers

Yost: In the summer of 1952, you began military service in the army and as I understand it, you were stationed at Fort Meade and later at Fort Bliss in Texas. Were you exposed to computers and automation equipment at this time?

Frank: Yes, and that was, of course, what kicked off my career. I owe everything that I am today to the United States Army for that reason. I was very fortunate in finding a unit that was looking for math-type individuals to help debug electronic equipment for an air defense system. I really didn't know what I was getting into. I had no knowledge, no understanding, of what a computer was at the time. But underlying the technology was a computer and fortunately, they chose me and I became part of that unit. And that led me to be reassigned to Fort Bliss in Texas subsequently where there was a computing lab. I was attached to that unit and that's what got me started in computing.

Yost: Do you remember what computer or computer systems were at the lab?

Frank: Yes. This was, of course, before mainframes. This was the early, early, early period in time. To the best of my knowledge the only other computers existing at that time were the Von Neumann machines, the IAS (Institute for Advanced Study) machines in the various universities. But the military had a Bell Relay Computer in our lab and an early IBM 604 and a very interesting computer at the time, an externally programmed one called the CPC - Card Program Calculator, which was really a printer-enhanced machine to do some logic and do some computing.

Yost: After leaving the Army in 1954, you worked a summer at Statistical Tabulating Services in Chicago as a punch card operator. Can you describe this experience, and did you enjoy this job?

Frank: Well, it was a matter of earning some money during the summer period, waiting to enter the University of Illinois for my Master's program. Having just come out of the Army with a modest amount of skills wiring 604 boards, I thought that I had the capability and went to Stat Tab and they hired me. Unfortunately, I did have a mishap that summer in that I was given a weekend job to sort what looked like a million cards; maybe it was just 10,000 cards. But I botched up the job and somehow put the card decks in the wrong hopper after sorting them and on Monday morning, I discovered that I was fired. However, a few days later, they called me up and said, "Come back." So I did go back and that was my first experience in a service bureau environment.

Yost: So as you said, you decided to go to graduate school and that was in mathematics at the University of Illinois that fall. Was the fact that Illinois had the ILLIAC a major factor in this decision?

Frank: Yes, even though I didn't realize the importance at the time of what I was about to start. I applied to several places, including UCLA which had the SWAC, the Western analogue of these IAS type computers and wasn't accepted there. I was on a wait list and I did get a research assistantship in the computing lab at Illinois. So with the GI Bill of Rights funding plus the small stipend from the assistantship, I had enough money to go to the University of Illinois and get a Master's Degree in math. Incidentally it was math, not computer science because in those days there was no such thing as a computer science department. Those people in my category had to get a math degree.

Yost: Can you describe that course of study and the level of work and instruction that you got in computing as part of that math program?

Frank: The program was a standard math kind of Master's program with a number of specialized courses that had to do with logical design of a computer, which is more engineering oriented and then supplemented by a numerical analysis course. There was no such thing as a systems software course. So it was either hardware oriented or specifically numerical data oriented and those are the courses I took.

Working at Ramo-Wooldridge

Yost: And then in 1955, you got married and moved out west to begin a job at Ramo-Wooldridge in Los Angeles to work on the UNIVAC 1103. Can you describe the factors that led you to take that decision? I understand a number of companies were possibilities.

Frank: I interviewed with a number of organizations, starting with IBM and a number of other academic areas and organizations such as the automobile industry area and Philco. But I was attracted to Ramo-Wooldridge because, first of all, it was on the west coast and I had enjoyed my trip to Los Angeles while serving in the Army. I felt it was a fabulous opportunity. Secondly, the gentleman who interviewed me, Walter Bauer, was someone that I felt I could work for and I had identification with him because he had written some papers in an area that I was then studying at Illinois.

Yost: And what was your original position or job title?

Frank: It was as an entry level numerical analyst and programmer. We had the UNIVAC, the early UNIVAC machine, which later on was supplanted by the IBM 704 and later by the IBM 709. But it was basically programming in machine language and one or two years later I became the lead in moving the programming from assembler language to FORTRAN.

Yost: You became head of the Numerical Application Section of the company and moved into a managerial role.

Frank: Right. That was my first managerial assignment. I had something like eight people working for me. My supervisor was Dr. David Young who had done some yeoman work in differential equations and that was our meal ticket because what we were doing was solving differential equations that related to the Space Program: where do you aim and how do you propel a rocket to various parts of space?

Yost: In the late 1950s and early 1960s, you published a number of articles. Was this encouraged by the company?

Frank: I think so. The company was very academically oriented. They were really the grand manager for the Air Force of the Space Program. We didn't actually produce the end results ourselves. The company was managing other companies in the aerospace industry, in that pursuit. So research into techniques for dealing with computers, the numerical aspect was a focus point and I was very fortunate in being given machine time especially because machine time was a very valuable quantity in that day and hard to get because everybody wanted to get on the machine. To be able to make runs that were strictly research oriented was a luxury. So, I was fortunate.

Yost: Can you talk a little bit about the community of programmers in the aerospace area and the role of user groups in the late 1950s and early 1960s in building and growing this community?

Frank: Sure. In those days, computing was kind of an open community. There was no such thing as proprietary software other than that provided by the manufacturers who typically provided the system software, not the application software. So whatever we did was shared among other companies or among other people. In fact, the first user group, the IBM user group's name was "SHARE" for that very reason. I was involved with the UNIVAC user group, which was called USE. These meetings took place quarterly at different locations and were primarily for the exchange of information among programmers or systems people in a very open environment. Information and code would pass from one to the other without any qualms, which is what really led to the evolution, at that time, of the so-called software industry. We were all learning because there was no formal training available at the universities at this point in time,

and we were essentially pioneers. So it was open season to figure out how to do things and to let others know what was available and to share with them.

Yost: Were you aware of any significant differences between how SHARE and USE operated or the different levels of involvement of IBM and Remington Rand in these user organizations?

Frank: Not really. I don't think there was a substantial difference between the two companies in how they looked upon the user groups. They wanted to encourage them, to leverage them for the obvious reasons; the stronger the user group appeared, the more likely they would get more contracts for their hardware among other companies. So the user groups became a very strong element from that perspective.

But they also had another role, which was to influence the direction of the hardware and the way the hardware companies related to the customer. Certainly, when displeasures occurred, the hardware company was there listening and typically reacted most of the time favorably to make sure that their users were satisfied.

Yost: In 1961, your team won a major DOD contract and you relocated to Washington, D.C. Obviously, this was a major career accomplishment, but did you want to move at this time and what exactly was that contract you received?

Frank: Well, before that happened, there were some changes at Ramo-Wooldridge, which led to the establishment of another subsidiary company and an acquisition by Thompson Products of Cleveland of the company. So it became known as TRW. The division that I happened to be in at that point in time was devoted to building military systems that were man-machine oriented -- displays and online interactive work that involved decentralized multi-computers -- total systems. It was that system together with a large screen projection system, which, to the best of my knowledge, was never duplicated again. But it literally created an online real-time, in color, large screen - and when I say "large screen" I'm talking about a 10 by 20 foot, or something of that nature - dynamic, pictures of intelligence information, superimposed on geography. That system was sold to the National Military Command System and since I was the key software engineer I was asked to temporarily relocate to Washington, which I did. As a matter of fact I moved several times; one time taking my family for three months.

Starting Informatics

Yost: I understand it wasn't long after that that Walter Bauer approached you about a proposal for forming a software services firm. Can you discuss that, what he proposed to you and what was going through your mind at the time?

Frank: Yes. Walt increasingly felt that software, as a business, was not appreciated in the large systems hardware-oriented companies; that we were kind of the last ones, so to speak, in the pecking order. It was his belief that we should have a more important role - that we were the glue, we were the means for the hardware to work. So this under appreciation perceived by him led to the notion, "Gee, why can't we sell ourselves as professionals to industry and offer ourselves as employees of a company that was solely oriented to software and where we had control?" At that time, there were one or two such entities starting up, some in Washington and one in Boston. I think of CUC being one example, Computer Usage Corporation.

Yost: Was C-E-I-R the other?

Frank: C-E-I-R was in Washington or in Arlington, Virginia. Basically, thinking that we could do something similar, Walter began to investigate quietly the opportunity, talking to individuals, and some of these other companies to see if there was a liaison possible or a west coast branch possible. And pretty soon he decided to be more aggressive and he approached me and Richard Hill, a colleague at our company. At a lunch, he asked me if I would be interested in leaving the employ of, at that time it was called the Ramo-Wooldridge Division, a TRW subsidiary, and join him in a brand new entrepreneurial adventure. Well, having been a technical person up to that point in time, although with some skill in writing proposals and selling ideas, this was kind of a scary proposition to consider leaving the womb of a company where I had become a member of the Senior Staff, and not know how long this might last. So I went home and I talked to my wife, Phoebe. Her reaction was immediately, "Of course you'll do it," because Phoebe is inclined to act and not let anything inhibit her or limit herself. So she encouraged me. It wasn't just a matter of saying yes. It was also a matter of doing a little bit of investing in terms of purchasing some initial stock and taking a salary cut of about 10%-15% so that we would be viable. But we also needed some more money. We wrote a business plan, which called for approximately one year of funding until we saw a positive cash flow in the second year. Walt Bauer approached Erwin Tomash, who was just forming a new company called Data Products. We're talking about 1961. He was very much in favor of the idea and understood what we were talking about and offered for us to become a wholly-owned subsidiary where we would actually get founder shares in Data Products and not in the company we were about to form (that still did not have a name) and Bauer saw the merit of the proposition and accepted it and we elected to join him. So the three of us - Richard Hill, Walter Bauer and myself - plus the secretary, Maria - started the company, as a matter of fact, in my empty house in Woodland Hills in California because at the time, I was serving my employer in Washington, D.C.

Yost: Do you remember if there were multiple funding operations? Was it difficult to get funding at that time and would you have preferred to be a wholly-owned subsidiary, or independent?

Frank: Well, first of all, we were naive. We didn't really understand all the ins and outs of wholly-owned subsidiaries versus being on our own, etc. So I can't say that we were that knowledgeable. Yes, we were looking for alternatives. I believe Walt also approached SDS, Max Palevsky, for funds and didn't get any. There probably might have been other opportunities, other ways of doing it. But we felt very, very close and warm with Erwin who became a mentor to all of us. He had much more business savvy than the totality of what we presented. And so it was more of a safe haven and even though Data Products only put in a modest amount, around \$20,000, into the venture, we knew there was more money potentially available if we needed it. So we felt comfortable with that and went with it.

Expanding Informatics Services

Yost: The firm focused on the western region initially. Did you do that because it seemed safer, and how long was it before you looked to contracts nationally and was the 1963 ONR contract your first move out of the west, so to speak?

Frank: Well, it was quite natural for us to be focused on the west coast because that's where our friends, our contacts were. And we did get contracts, for example, at JPL and through SDS at one of the remote sites in the desert and some assignments with the aerospace industry. Subsequently though, we broke out, mainly because of my earlier contacts with Washington where I had worked in the Pentagon for the National Military Command System. They approached us at this point for me to go back to Washington to work on a very large contract that I had previously been on. So that gave us (George Stock and myself) an opportunity to leverage and pay for moving and creating a local presence in Washington. The minute we did that it opened up the opportunities on the east coast. You mentioned ONR. That came about a year later. It was a very large contract for us, at that time, of a million dollars. A million dollars in those days; that's like \$10 million today and it was for a small company that was scratching for revenue. It became an opportunity and I took the leadership and made the proposal, saw it through and we did win a very large contract for naval tactical data systems planning for the future. That really kicked off our east coast presence, especially in the Washington military complex.

Yost: Were you running that contract and did you relocate to D.C. at that time?

Frank: Well, I had already relocated as part of the NMCS work, and we were already on the march and getting other contracts. I did not run that contract. It was partially brought back to the west coast and the focus was in Los Angeles, but I had people in Washington also. So it was half-and-half. But I had a lot of other things going on, plus the creation of another new office outside New York City, in the New Jersey area, which then became a very large activity itself.

Yost: Was Walter Bauer supportive of the geographic shift that was taking place?

Frank: Oh, absolutely. He saw the need for that, and I forgot to mention I also, at that time, had responsibility for overseas operations. So I made trips to Europe and pursued business in Germany and the Netherlands and we actually got some work there.

Yost: Can you discuss your work with Philips in the Netherlands?

Frank: Philips became our first major customer in Europe. We were doing some compiler work for them, on a new computer. At that time, there was a brain drain, if you will, from the United States to Europe because there weren't enough trained systems analysts available in the early 1960s. So Americans would relocate and we put a team together of about six to eight people that ended up in Holland with Philips. That led to another business opportunity, which ended up on the wrong side of things. We thought that it would be interesting to consider, with Philips being the very large international enterprise that they were, creating a joint venture with them in Europe. So we pursued that and that was one of my tasks. I did negotiate with one of the members of their board of directors to meet that very objective. We actually reached a pretty good understanding, even a name for the company - Informatica. But, unbeknownst to me, another competitor - Computer Sciences Corporation - was also talking to a different group in Philips and they suddenly grabbed the lead and ended up with what I thought should have been ours. So that was one of our early defeats.

Yost: Did you see that as a learning experience?

Frank: Oh, yes. I learned that you've got to cover everything, everybody and know whatever you can of what's going on. You can't afford to be limited to dealing with only one individual in a company.

Yost: In the mid-1960s you continued publishing a great amount of technical work. How important was this to the development of your career?

Frank: Well, I'd like to believe it was very important. Let me try to answer that by telling you why I did it. I observed a number of things in the course of my entrepreneurial career, having to do with the technology, the marketing and the customers and so forth; many of which I felt had to be clarified, explained and brought to the attention of others. I found that writing them down was the best way for me to articulate the point. I'm a great believer in recording in writing. That is why I wrote a book about my family history because if it isn't written, it doesn't exist. At least that was the theory in the back of my mind. And I think my bosses over the course of time, like Walter Bauer and Sterling Williams of Sterling Software, had the same kind of belief and so I

was a writer. My monthly reports were always on time and I made sure to reflect whatever it was that happened, and so there was a compulsion, if you will. The way that those articles got initiated was as follows. I was driving from San Francisco to Los Angeles on Highway 101 with my wife and we were talking and she said, "Why don't you write a column?" And I said, "Oh, no, no. Too much pressure." Well, before we knew it, we had the name for the column. It was going to be called "Softline" and I started to think as I was driving. She was writing down ideas. I started to rattle off titles and before a number of miles passed, I had about 20 titles of ideas that I could articulate further in the course of writing them up. With that, I think I wrote one or two and sent them to *Computerworld* and they grabbed it very quickly and I even got paid a couple of hundred dollars an article, which wasn't bad. And there I was. I did that for two or three years.

Initial Informatics Products

Yost: What was your reaction when Walter Bauer told you of the possibility of acquiring Hughes Dynamics and the possibility of moving beyond being just a service company into the software products area?

Frank: Software products? It didn't mean much to me at the time. I was not a devotee or a person in our company who was striving to sell software as a product. That was Walter Bauer. That was his idea and passion. I was off getting these contracts, doing projects, doing applications. Even though later, some of the things I did, and maybe we can talk about that later, ended up as potential products. But at that time, the software products industry was in its infancy and there may have been just one or two products already being sold for money. This was the time when IBM was giving away software for free and so no one thought that they could package software, sell it and compete with IBM. That was a very strange idea.

Nevertheless, Walt thought enough of this idea and even more after having met John Postley who was the head of Hughes Dynamics. This was a Howard Hughes subsidiary and Howard Hughes was unhappy with running this so-called software company and a number of other divisions and he wanted to get rid of them. Well, he offered us John Postley's operation and we accepted the deal on the basis we wouldn't pay anything for it. In fact, we got some money because there was some debt. So it was kind of a zero out-of-pocket of situation. It was just a matter of taking on people and maybe you can do something with them. Well, John Postley had great passion. At that time, he had Mark III and Mark IV was about to be born. He had this wonderful belief. Well Bauer told him that we're not going to put any money into this, as wonderful as it may sound. By the way, we're talking about a database management system which was more of a reporting system, more of a very simple but stylized and pretty sophisticated way of getting a variety of different kinds of reports out of a database. Later on, the word "database management" came about. In those days, it was strictly database. The word "management" didn't play a role. At any rate, Bauer told them, "Well, we could maybe sell

such a thing, but we're not going to pay to have it developed. If you can find money from potential users who would subscribe, would pay for such a product, we'll do it."

Well John Postley wasn't about to be put out to pasture and he took the challenge and he found five companies which were willing to put up money-- Four of them put up \$100,000 each - Prudential, Kraft Foods and I can't remember the rest. And then one company gave essentially \$100,000 worth of machine time. It was a company in Wisconsin. Anyway, he got five companies that, in essence, put up the equivalent of a half a million dollars and that's what produced Mark IV. They would, in turn, get the product for free. That was a pretty good deal, and the rest is history in terms of the great success of Mark IV. Hundreds and thousands of these products were sold. Users around the world are still using it. By the way, today, I am sure that the ultimate successor to the Informatics/Sterling Software, which we'll come to, Computer Associates, which is today's owner, is still generating revenue from that product which was created more than 40 years ago.

Government Contracts

Yost: I understand in the late 1960s you had a fixed price contract with HUD that didn't go well. Was that the end of fixed price contracts?

Frank: That was a horrible disaster. We had a contract to build a general ledger system for HUD, Housing and Urban Development. I think it was on the order of \$500,000-\$600,000. It was fixed price. We had a sort of belief in those days that for that much money you could write any kind of program, any kind of application. How hard can it be? Well, it turned out to be a disaster, it was very hard. We were not about to complete the project, no way, for the amount of money contracted. We were in trouble. That led to some very agonizing moments. In those days it was a question of trying to convince the government that there was a change of scope; that was the secret term, change of scope. That was the reason for the over run and therefore Mr. Government, you're to blame and we're off Scott free. Well, there's some truth to everything and there certainly were some issues having to do with scope but for the most part, it was our own ineptitude and naivety. Ultimately, we negotiated successfully to extricate ourselves from the contract in its entirety. They didn't want to have anything to do with us. We lost some money but not a terrible amount as a result. But that kind of put the nail in the coffin for fixed price contracts. We would not accept them any more. It was a matter of time and material or cost plus fixed fee, CPFF, contracts as it related to the government that the company pursued from that point on.

Yost: Was it easy to convince customers to accept contracting on one of those other two models as opposed to fixed price?

Frank: It wasn't too bad because one can convince the government or any other customer pretty well that fixed price, while it may guarantee the customer a limited exposure, it also constrains the customer. In those days, we were not good at specification, at coming to an agreement as to exactly what the job was, what the requirements were, and what was the definition of a completed product. That was still some years away in terms of the then technology of systems application development. The astute customer understood that he couldn't extract out of some third party a willingness to accept this high risk and likely end up with the supplier walking away or a serious controversy, etc. So the concept of the time and material and CPFF contract was well accepted. It also led to another kind of approach and that was to break up a problem into stages with requirements, specifications and development into three or four stages so that you would contract for the first stage, which might be a study, which is time and material; then to a second phase, which might be a very tight specification; and then finally to the third stage, which could maybe lend itself to fixed price. But even in that context, requirements change over time and change of scope constantly occurs. I don't know how the government fares today because I'm not into it today but those were the issues of the 1960s, 1970s and 1980s.

Yost: Were other companies in the services industry evolving in the same way?

Frank: Absolutely. However, there were some that had their own proprietary software that might apply to a particular application and they were the ones with an advantage, with leverage on occasion. That's what really led to the concept of the database management system, which was a system that already had in it all the hooks and features, the functions that were necessary to manipulate data and reporting.

Yost: You won a major contract for Informatics from NASA in 1968 that was in the library science field--doing that type of programming and work. Can you discuss that a bit?

Frank: That was called STIFF-- I can't remember what the acronym stood for. In College Park, Maryland and in NASA Goddard, there was a very large library archival system that supported the space program. It was a multi-year contract that was held by a competitor. It was up for renewal. Typically, once you get into one of these things, you win the first year and then you have options for continued operation. A contract like that can run three, four, five years. If you're really great, you can go beyond that. This one was coming up and we had our tentacles out thinking why not? Why shouldn't we try for something like this? But we didn't have any experience in the area. One of the gentlemen who was working for me, Richard Lemons, had some experience along these lines in his prior employment at General Electric. But we needed more credibility, so we found a little company in the Boston area that did have some library experience. We certainly had the guts and the where-with-all to approach the NASA management with the notion that we're a great company and we're going to do a better job for you. We're going to be very efficient. We will make this a key item in our company. In fact, not

only that, we're going to set up a subsidiary that's going to be devoted to this project. We're going to put Richard Lemons in as President. We also engaged a senior technical person who had retired from NASA and who would come back as a consultant. We put together a very attractive package. But of course, at the bottom line, the pricing had to be exceedingly competitive against the incumbent. Lo and behold, we won. We had a 5 million dollar deal and we held on to that contract for a good number of years. Again, it was a victory in Washington.

Yost: Did techniques from that work fuse into the broader library science field within universities?

Frank: We tried to pursue that technology in other areas such as the legal retrieval area. But we never really made it. We did have a unit that was seeking that business. Later on we closed it down and we sold it. No. We never were able to turn that into a bigger and broader base.

Yost: In the late 1960s there was tremendous excitement in the investment community about the software and services area and Informatics stock shot up to a ratio of 90 times earnings, an unheard of level. Did you look at that and did you think the company's capitalization was over valued or did you think the growth justified such evaluation?

Frank: Well, we had our noses pressed to the grindstone doing our job. We did not spend time thinking about stock prices and getting rich. We were very naive guys. That wonderful bit of news didn't turn us one way or the other, other than perhaps to say that we were in a better position to make acquisitions, which we did and which got us into trouble on occasion, more often than not. We certainly didn't count the dollars, the value of our stock. We didn't have that much stock. When Informatics was formed, the major management personnel had very little stock. Remember, we were part of another organization, Data Products, at the outset. We were not big investors. Data Products made its money because they owned the majority of the company when it went public. We always had relatively small holdings for people who had founded the company. None of us were really that well off in terms of stock value. It didn't play much of a role. There was great disappointment later when it dropped and the eventual consequences of that. But at that point, I don't think it was very important, other than giving us a way to acquire other companies.

Starting Equimatics

Yost: In 1971, Informatics formed a joint venture with Equitable Life and formed Equimatics and you were appointed CEO of this division. Is that correct?

Frank: It wasn't a division. It was a separate company. Remember I was still on the east coast.

The Equitable approached us. At the time they wanted to acquire us. The insurance business at that point in time got a free rein by the New York State Insurance Commissioner to broaden its business. Prior to that, they were limited to insurance. Now they were able to go into more of the banking type things and brokerage and whatever. So they saw the opportunity that they could take their in-house data processing and communications system, which was massive, and leverage it and play a viable data services role in the broad economy, really a complete new business. They figured they needed people because in those days there was a great shortage of technical people and one way to get people was to buy a company that had such people, so they approached us. Walter Bauer said "No, we're not going to sell but we'd like to talk to you about becoming a partner." That evolved ultimately into the idea of forming a joint venture partially owned by Informatics and partially owned by Equitable. I was appointed to be the Informatics key executive working with the Equitable executives on developing the business plan over a period of a half a year or so. This then led to the creation of a brand new company called Equimatics, headquartered in New Jersey. I moved from Bethesda, Maryland to New Jersey to be President of that company.

Yost: In the early years, how large a company was Equimatics?

Frank: Equimatics started out with a 360/145 IBM computer and with a data center and a few, maybe 30 people. We had one major contract with Home Life Insurance to build a life insurance system for them. We had an operating contract with the Equitable for processing some Medicare claims. The company was aimed to build in a 10 year period to be a hundred million dollar business as best I remember. It was an ambitious project. About a year into it or even less than a year into it, a company became known to me in Dallas, Texas, which was in the business of providing life insurance software for what was called the back office, handling the claims. It was called USI. I approached them with the idea of acquisition, which then took place. Right away, within a year or two, we were way ahead of what we had as a business plan and were really rolling.

Equimatics Acquires Informatics

Frank: Now, I was still on the Board of Directors at Informatics and Walter Bauer was on the Board of Equimatics. Informatics stock took a plunge in the market. The next thing that happened was that I thought one way for me to achieve my numbers was to acquire Informatics. I was no longer an employee of Informatics. I had left to go to Equimatics. So I approached the Equitable management with that concept and they were very agreeable to the notion, subject, of course, to the principals at Informatics agreeing. They encouraged me to pursue it. I did so with Walter Bauer. There was a lot of talk and a lot of gaming, but bottom line there was an agreement that this little company, this little two-year old upstart, would acquire Informatics. Technically the money would funnel from Equitable to Equimatics and then to the shareholders of Informatics and then Informatics would become a subsidiary of Equimatics. And then we

would do a reversal. We would change the name of Equimatics to Informatics and on goes the show. In actuality, the old Informatics, which was born in 1962, ended its life at that point and Equimatics changed its name to Informatics and became the new Informatics primarily owned by the Equitable. So, at that time the company went private.

Yost: Were there any reservations in your mind on this?

Frank: Well, yes. I wanted to protect my interests. The agreement with Bauer in a private meeting was that I would be Executive Vice President of the new entity. He required that I move back from the New York area to Los Angeles, which was not very difficult to sell to my family or myself. So we had a deal.

Relations with Walter Bauer

Yost: You had been the Chief Executive of a company and now were working directly with Walter Bauer again. Can you discuss your relative managerial philosophies and were they similar?

Frank: Similar and not similar. We certainly were both aggressively trying to build the company. We both were hard workers. Walter had a very good analytical mind and business sense. He required formality in terms of structure and personnel matters and I was in accord with that. Possibly the big difference between us, if there was one, was my more technical skills and inclination versus where he was. He never had the kind of programming background that I had. I'd like to characterize myself as the idea man and thinking out of the box in terms of the business opportunities. He was more, call it straight-laced, or more focused. Although, you've got to be careful about that because he also saw opportunities for broadening the Informatics business, which got us into trouble in terms of leaving certain areas and building and concentrating on new businesses that never succeeded.

Yost: There were things other than the move into software products?

Frank: Right. For example, we hired some guys to look at traffic automation. We bought a company that did business data processing, general ledgers. We bought some service bureaus. We branched into insurance data processing. We acquired maybe six or eight companies none of which ever matured. Manufacturing information processing was another area. He was ready to do these things but quite frankly none of them were proven out. Maybe restricting me from everything I wanted to do was good because then we couldn't botch that either.

Microcomputers

Frank: Our big parting of the ways later on was my belief and commitment to the direction of desktop computing. At that time, it wasn't called personal computing. It wasn't PCs. It was more of the first stages away from minicomputers into microcomputers and the power of the microcomputer, which then later on became the desktop computer. I wanted to, either by buying a company or by having a project, build a system that essentially involved man-machine communications through a monitor and terminal device and put those in front of our mainframe software that was batch oriented. And so I was given some leeway and I was set up for this project. At that time, as Executive Vice President, I was also something called Chief Technical Officer. I did have the mandate to look for new opportunities of which this was one. There was also an attempt to create a deal with some Japanese companies and an English company. There were a whole bunch of things I was following up. My favorite one was towards the microcomputer and how that was going to change the world and how we could get to ride that horse and find a way to do it.

Yost: That was fairly unusual for someone who had been in the mainframe software and services business to be thinking about desktop computing as a new business opportunity, wasn't it?

Frank: Yes. But I think the origin of my interest and why I thought it was feasible and something that we ought to explore was the very project that I was involved in with the military in Washington where the focus was on man-machine interaction for military intelligence. We built a software system at that time that facilitated the definition of screens and the actions that take place by a man with a terminal. It was a dumb terminal or a semi intelligent terminal in those days like a 3270. But nevertheless, it was a dynamic way of interacting with the mainframe or if it's not a mainframe, a large computer or a minicomputer. When, in the period of time that we're talking about, the microcomputer came about and allowed one to actually have an intelligent device do some of the things that we were doing or could be doing on the mainframe, I saw that as an advance, putting a new face in front of old software, making it look like it's real time, making it interactive. It was based on some experience I had.

Yost: Did you follow developments and keep involved in this?

Frank: Well, I had a little lab that actually created a first product along those lines. It never amounted to much. We had it operating. What we did was put intelligence on a desktop computer and then it fed to a mainframe where a Mark IV system, which was batch, operated. It was what you might call pseudo batch. It looked like real time to the individual who was manipulating screens locally but it really went back to the mainframe to pick up data and bring it down to the desktop. It was a cheap early version of what today is common among anybody

who goes into a query system and makes a demand of a database. We created a prototype but it never amounted to a firm commitment by the company and that ultimately led to me being unhappy and leaving because of the environment at Informatics.

Yost: Do you remember when that was?

Frank: I think it was around 1981.

Work with Israel

Yost: In the mid 1970s you did some work in Israel. Can you tell me how that came about and what you feel the impact was on IT policy development of that country?

Frank: I was involved with some individuals in Israel who were government officials and had responsibility for information technology, and was also involved with the local Israel computer committee that was formed to study and determine the impact of computing and data processing for their emerging economy. As a result, I made a number of trips to Israel. I was involved with setting up conferences there and giving talks. I met a good number of the local people in the industry. I was asked, at one point, to spend several months there to study and make recommendations as to how computers could be exploited. I did that for two and a half months. With permission, I took a leave of absence from Informatics and worked with a small group and interviewed a lot of government and private industry individuals and wrote a recommendation. I don't know if that work ever amounted to a hill of beans, or whether or not it influenced anybody or anything, but it certainly changed my life. In fact, my notion of the microprocessor came from there. I learned two things in going there. One was that there was such a thing as a bank terminal. It was the first online bank terminal that I ever saw; my friend went and took cash out of a machine while the bank was closed. I never saw that in the US. And two, a young man who was in the forefront of technology, showed me a microprocessor chip on a little board and wanted to have his unit buy him a couple more for, I don't know, \$5, \$25, or \$100 because he saw the opportunity of making it into some sort of a gismo. That blew my mind. That's when I learned or appreciated, that there was a new technology, and a new opportunity to be exploited. That's when I went back to the U.S. and that's what led to the creation of that micro lab that I discussed earlier.

Yost: Were you aware of the type of research that was going on at Xerox PARC?

Frank: Yes, very much so. I have to make a confession. I scoffed at the Mouse. I was so used to keyboards that I couldn't believe anybody would take advantage of or would relieve themselves of the key board and turn to a Mouse. Of course, that's all I do now. Enough said.

Consulting after Informatics

Yost: When you left Informatics you went into consulting?

Frank: Yes. I spent a year and a half as a private consultant, which immediately put me in the forefront of the microprocessing industry. I thought that because of what I had done and everything I had learned, I could become a valuable asset to these little emerging companies that had a technology understanding but didn't have a sense of marketing or where to go with it. I identified myself with about a dozen such companies in a very short period of time. I brought to them something they didn't have, the skills from a software company. I developed either a position with them or a consulting role and more often than not they didn't have any money. They might give me some stock. One of them turned out to be a winner. That was MultiMate.

Yost: In 1983, you published a book "Critical Issues in Software" that was published by Wiley. Can you talk about the book a little bit and the degree to which the book, as well as the exposure you had in writing columns for the major trade publications, was a positive force in marking you as a consultant?

Frank: The book was about the new economics of software and it came about because of the large number of business plans I was writing at Informatics. Every opportunity required some sort of business plan and I had to translate what I knew or perceived to be the P&L and cash flow implications of product initiation, product conception, development, marketing, and distribution. I was always building these models. That was combined with the articles that I wrote, which picked up on various topics related to software, its development and its use. Another article I wrote for *PC Magazine* was my looking to the future ten years out, something like that, as to what's going to happen in the business. I wrote something about the myths surrounding software. All those things were gathered together and I wrote this book. It never was a great success. I thought it would become the kind of a book used for teaching a computer science course and the economics of software. That was my dream. I think it was used at one or two schools. It was hardly a best seller. But it gave me image, it gave me an opportunity, and every time I went on an assignment, I gave a copy of my book to whomever. That was one of my sales tools. I think that today it's history. But if anybody wants to go back and figure out what the economics were in those days, it's there. I dare say the economics haven't changed very much.

Yost: Were most of your consulting assignments in the PC hardware and software products and services businesses or were you also working in the mainframe and mini area?

Frank: Almost 100% was in the PC hardware and software area. One of the things I did was evaluate the software. I would get beta copies and feed back comments. That was a key item.

Another thing I was doing was reviewing the man-machine interaction from the human factors point of view. On occasions, I looked at some hardware issues. That was on the hardware, software side. Then I had a completely different angle, which involved bringing the product to the attention of other companies from a marketing and distribution point of view. I knew a lot of folks in the industry and was able to make introductions and be a front guy and help these small companies in the process of getting attention and making sales.

Yost: So in that sense, you had a role somewhat like Larry Welke in promoting software products?

Frank: There's a big difference. Larry offered a compendium, a magazine that listed products. He didn't get involved, to the best of my knowledge, with the construction and the adequacy. I was doing quality control. I was actually involved with the product itself, helping to define it in many cases.

First Relations with Sterling Software

Yost: One of the companies you were approached by and started doing consulting work for that wanted to get into the microcomputing market place was Sterling Software. Can you talk about working for Sterling--first as a consultant?

Frank: Well, I was still in the waning days of my employment at Informatics, when I met Sterling Williams, my good friend today, who was then CEO of Sterling Software, at an ADAPSO meeting in San Diego. He asked me what I was doing. I told him that I had one or two months left at Informatics and then I was going to be a consultant. He said, "Well, I'll be your first customer." That was nice. I then left Informatics, on good terms by the way--there was no non-compete agreement restricting me from doing this. In fact, I consulted for Informatics as well in those days. So, on the day after I left Informatics, I took on an assignment from Sterling to help in the development of the business at Sterling Software.

Yost: Was it easy to make the decision to accept the offer from Sterling Software when they asked you to be Executive VP and President of the Systems Division of Sterling?

Frank: Oh, that came much later.

Yost: How much later?

Frank: It was probably about six to eight months later. My first assignment at Sterling was to do

a dump of what was on my mind. How do I see the industry? What should they do? It was the same line that I gave Informatics, which they sort of did not take. Well, Sterling didn't take it either. It was a business plan of how to get into the microcomputer area. I guess the truth of the matter was that guys that came out of the mainframe area as typified by both Informatics and Sterling Software hadn't quite arrived at the place that I was. They weren't ready to jump in at that moment. But that's okay. It didn't have to happen. That was, as I say, my first assignment. Then I started to work with them on other venues, which ultimately led to the request by Sterling that I assume an acting role as President of an acquisition that was not operating well in Sacramento. That was my major role then. Still not as an employee, but as a consultant although I was running a day-to-day operation.

Yost: In talking about the consulting work you were doing for Sterling and the experience you brought to that company, as it was getting involved in a new area and becoming interested in the new area of microcomputing, can you go on with your discussion of the nature of that consulting work?

Becoming a Sterling Software Executive

Frank: Well, the ongoing activity at Sterling was all mainframe oriented. They had acquired four companies which gave birth to Sterling in 1981 and they were in database management and data storage management and communications and it was all mainframe and so I was back home in an environment that I was quite familiar with. Basically I helped them in that activity plus in looking at other potential acquisitions. And there came a point in time when Sterling approached me and said, "Why don't you join us permanently?" At that point there were two major business efforts in the company. One was the systems software which is where I was involved and the other was banking and they already had an executive in that area. They asked me to take over the systems software which I eventually did. So I became a vice president of the company and ran the systems software activity which included domestic and international operations. It was a pretty small activity and I would say between \$5 and \$10 million and growing and that placed it about 1981, 1982.

Yost: When that offer was made, was it an easy decision for you? Did you think it was a great opportunity or not?

Frank: I thought it was pretty easy. First of all, I liked Sterling Williams and respected him exceedingly and it was a tie to Sam Wyly who was behind all this and I found that to be a very comfortable and agreeable relationship. So they were about to move and I thought that it was the right place for me to be and I never regretted it.

Yost: How active was Sam Wyly in the day-to-day management?

Frank: He wasn't at all. He made his appearances at board of director meetings and occasionally poked his head in, but this was Sterling Williams' show.

Yost: Can you describe Sterling Williams a bit as a manager and why you and he got along so well?

Frank: Well, first I guess we got along because we had mutual admiration. He is probably the brightest and most perceptive business guy whom I have ever met. He asked the right questions, pursued the right things and had the gut feel about what inherently was going on in the business. He had a great sense of direction and was very conservative in his decision-making, but it was well founded and I don't think that he and I ever had a point of difference in our association. I highly admired his fantastic people skills. He was very tough but he had a very tender aspect to him, a very compassionate aspect to him, and he was just very endearing and from my perspective very likable. He was a very determined guy, knew where he was heading, and was highly organized; he was on top of what was going on, and I admired him greatly and tried to emulate a lot of his strong points.

Acquisition of Informatics by Sterling Software

Yost: Interestingly, you say that Informatics and Walter Bauer came to Sterling to inquire if they would be interested in taking over one of the divisions of Informatics. Can you discuss that a little bit and what transpired?

Frank: Well, actually Bauer called me, I was his conduit, and asked if we'd be interested in perhaps acquiring the Answer Division. The Answer Division was the organization that was local to where I was living in the Los Angeles area but when I was at Informatics I was never directly involved with it because that was John Postley's domain and I was off doing other things. But I knew it, I knew the structure of the organization and the products, and that was of course where the Mark IV product line sat. However, at that time it wasn't moving well and in fact probably was losing money; actually I know it did lose money. And Walt, I guess, looked to see if there was an opportunity and there was. Sterling had acquired another company in the Los Angeles area called Dylakor that had a somewhat sister product of Mark IV, not as strong but in the same area. So, maybe in Walt's mind he thought, "Gee, maybe there's synergy here." At any rate, he called me and I then communicated to Sterling that there was this interest, and asked if I should pursue it, and he said "Oh, by all means."

I set up a dinner for Walt, Sterling and me, a three way dinner, at Walter's club in west Los Angeles and the main purpose of the dinner was to discuss this subject. Well, one thing I have to mention, there had been, prior to this, a change in the management at Informatics in that Walt decided to move himself a little bit out of operations and bring in a new man, Bruce Coleman,

and groom him to become the president. That was just before I left but I throw that in now because it turns out that Sterling was also a candidate for that position but was turned down when they selected Bruce Coleman. So here we are at this dinner, the three of us, and before the conversation went too far in the direction of would we be interested in acquiring the Mark IV product line, Sterling turned the whole conversation around into how would Walter feel if we acquired all of Informatics? Well, that didn't go over too well that evening and in fact not at all subsequently.

However, it gave the initial thought to the powers that be at Sterling Software, namely Sterling and Sam Wyly, that here's a sitting duck, and the timing was such that the Informatics stock price wasn't doing anything. Sterling Software had a business plan for that fiscal year for \$19 million and Informatics did approximately \$190 million so we were about a tenth the size of this giant software company and the juices started flowing with Sam Wyly because this is exactly the kind of opportunity—and the kind of leverage in the business world-- that he finds the most satisfying to accomplish. And pretty quickly the idea came about to let's make a tender offer, unfriendly as it will be, and go for it. Clearly, we had to raise one hell of a lot of money but the connections that Sam had with the financial community which ultimately led to Michael Milken and the junk bonds, paved the way and we were ready to go with a strong package of selling Sterling preferred shares and making a stock purchase offer of around \$23 a share, but that wasn't enough, and the war started. Informatics executives were going to do a management buyout, Bauer and his cohorts, and a third party dark horse was coming out of the woodwork that was going to challenge us and there was a lot of acrimony and there was a lawsuit threatened with one page Wall Street Journal ads challenging each other. And then a suit was filed in Delaware and so there was a lot of bad feelings that were gathering especially with Walt Bauer who thought it was an affront for somebody to dare take his jewel away from him. But we prevailed and did buy Informatics for I think \$27 a share or something like that; we upped the offer a bit, and took over.

Now before all this we did a painstaking business plan gathered from publicly available documents, the K-1s and the annual reports and whatever was available to us on an absolutely above board basis, to model the three or four major businesses plus the four or five questionable businesses that Informatics was in like insurance and general ledger and data services and so forth that were marginal. And we knew where we would cut and how to make this thing work. The great fear that everybody had on Wall Street was that you could not do an unfriendly takeover of a service oriented or people oriented company because the assets walk into the business in the morning and they walk out in the late afternoon and there's nothing there at night and if you make an unfriendly takeover you're going to buy nothing, you'll end up with nothing.

Yost: What percentage of the company was in the products area and what was in services?

Frank: I don't remember exactly but my guess would have to be that of the \$190 million or so in revenue that the products was on the order of 30 or 40 million dollars but the products also needed technicians and people who knew the products so everything was people oriented. Anyway, the onslaught occurred and we experienced some memorable days and nights in the process and we prevailed and took over the company. And the day we essentially took over the company we wiped out the corporate office. We didn't do any mass layoffs but began sharpening up all the operations and within one calendar quarter turned the business around and everything was profitable. Within one year we eliminated the junk bonds and the heavy debt by reissuing convertibles and the whole thing was (or should have been) a business school textbook example of a very successful, highly leveraged purchase.

Yost: Can you assess your role and your knowledge of the people and processes at Informatics in helping this great turnaround?

Frank: Well, probably the major change in going from the Informatics style of management, which was highly centralized and limited in terms of what individual local managers can and should do, was to the more laissez faire Sterling style of giving individuals responsibility, having them develop a plan that they will own and buy into and then let them carry it out and that's what happened. We decentralized and for the most part all the key managers stayed with the operation. They didn't leave as was suspected or was considered a possibility and the few that weren't deemed appropriate were let go. So the new regime of Sterling, the new philosophy of operation, worked and that's what made it successful.

Yost: This made the company far more innovative? Would you say?

Frank: Later on, all the peripheral nonproductive units were sold to raise some money to help offset some of the debt. I should have said that earlier, since that was in addition to the convertible bonds we issued.

Additional Acquisitions

Yost: Can you discuss Sterling's subsequent acquisition strategy and the role you played in that strategy and its execution?

Frank: Well, once we solidified this major acquisition, we created three businesses. We already had a banking business, which was not really touched by all this, but now, with Informatics, Sterling created a systems software business which was my domain and a business commerce division which was a new, to be grown, enterprise headquartered in Columbus, Ohio, and that was headed by Warner Blow who had been the chief of that operation for Informatics. So now

he suddenly became the president of an entity in its own right. We also created an international organization for marketing everybody's products overseas. So we reorganized and then we thought we were so good and so clever in consolidating Informatics that we could buy anybody and make it a success.

We took another major step, another big bite, in looking at a company, VM Software, Bob Cook's company, and it was also large- I can't remember exactly but certainly \$100 million. It was a big company that we acquired and we used a similar approach in terms of studying it, organizing it in advance and this time it was a very friendly acquisition. Bob Cook was a willing seller. That was a wonderful acquisition as well. It was smooth; it was friendly. We essentially kept most of the management team that wanted to stay and it brought some nice, new products into the company in communications, the VM operating system which we never had and several other products and one storage management product and so that was another major accomplishment that enhanced the systems software side.

At that time the old communications operations in Informatics that was part of Sterling and the new communications from VM were merged and put into the Commerce Division because of the dependence on communications in that arena.

There were some other minor acquisitions and the next major one that took place turned out to be an unhappy situation and that was with respect to the company in Atlanta that was in the business of application development headed up by Fran Tarkenton. The company was in trouble. It had big losses and it was oversized, it ran out of steam and as we later found out had some unscrupulous people at the helm who were actually misrepresenting revenues. But we went ahead with the acquisition of Knowledgeware. We suffered through a lot of agony in bringing it into Sterling and making it a viable operation and it probably never got to a level of adequacy in terms of performance before we then tackled one more very large acquisition which was a unit of Texas Instruments in Dallas, Texas. This large division was dealing in the same area of application development as Knowledgeware. And that also was a megabuck acquisition. We probably had \$100 million invested which was very sizable and that grew Sterling into having a very large application development area. The consequences of all that was that it set aside application development as a new division apart from systems software. So that was kind of the evolution of Sterling software over that period of time.

Changing Roles at Sterling Software

Frank: We're now talking about me getting close to 65 and considering retiring or at least at that point in time relinquishing my role running an operation on a day-to-day basis and becoming more of a planning officer and working behind the scenes which I did approximately in the period of 1996, 1997 and 1998 and participated but didn't run any of the operations. And

then ultimately a moment came when Sterling Williams and Sam Wyly made a decision to sell the entire enterprise. Prior to that point in time though some new organizational changes were made. It was decided to spin off the Sterling Commerce division that was involved with the distribution marketplace, and give essentially a benefit to shareholders of Sterling Software shares of this spin-off. And this created a new independent entity, Sterling Commerce, and now there were two companies, Sterling Commerce and Sterling Software. Both had Sterling Williams as the CEO, but Warner Blow was the president of Sterling Commerce and Sterling retained the presidency of Sterling Software. These two companies then were on their own and the idea was conceived that they should be sold and sure enough in the year 2000 Sterling Software was sold to Computer Associates and Sterling Commerce was sold to SBC.

Yost: Before we go into the Computer Associates acquisition of Sterling, could you talk a little bit about how the opportunity to acquire Texas Instruments software unit brought you out of semi-retirement?

Frank: Oh. Yes. After the Knowledgeware escapade, I had dropped to working behind the scenes, but then the Texas Instruments opportunity became available and Sterling asked me to become part of the team that would investigate it and do the acquisition, negotiate the acquisition and do the transition. So that's how I became very active again.

Yost: You said that Sterling Williams and Sam Wyly by the late 1990s or 2000 were definitely interested in selling the firm, what led them to this decision?

Frank: Well, they have never revealed their secret, but if you look with 20/20 hindsight we all know what happened after 2000 in terms of the stock market. So maybe it was absolute vision and the ability to see the future that made them decide or somehow they saw the peak or maybe for other reasons they wanted to retire. Quite frankly we were all very surprised not so much at the sale but that the sale, at least of Sterling Software, would be to CA because heretofore it was always said that we'd never become part of CA because CA had a bad reputation in making big acquisitions and takeovers.

Yost: With many of CA's acquisitions they made very sizable cuts to the staff of these companies and it seems that they were taking over products more than people. Was that in their thinking with Sterling or how did this come about?

Frank: There were quite a number of cuts but I don't think in retrospect it was as bad or as deep but nevertheless there were cuts and I think a good number of Sterling individuals ultimately left CA not because of the early cuts but simply because they didn't fit or they left on their own volition or there were subsequent retrenchments.

Conclusions

Yost: You titled a chapter of your book, your memoirs, which you have here, "Achieving the American Dream, Becoming an Entrepreneur." How did entrepreneurship change in the IT area during your career? Do you see the notion of how to be a successful entrepreneur changing significantly as these different businesses evolved and different industries evolved from the mainframe era to minicomputing and microcomputing, from software services to software products?

Frank: Well, I'm not sure I know how to answer the question so let me ramble. First of all, I didn't know what an entrepreneur was when I started and that was the least of my expectations in life. My parents were workers and we didn't have any concept as I grew up of ownership and wealth and any of these trappings and so when I got my first job I was a worker and things just happened not because I pushed for them but they were delivered to me. And that's the way it's been pretty much through my career. The last thing that I would have wanted or expected in life would be to be a salesman or a marketer or an executive or anything like that. I didn't have any of those notions. So when they did come they came naturally to the extent that I succeeded in what I was doing and one thing then led to the other and gave me more responsibility. So that's part of the answer but that's not what you asked me. I think you wanted to know how entrepreneurship changed from one epoch to the other. Is that what you asked me?

Yost: Yes, did you see the necessary skills to be successful change?

Frank: I always saw the greatest skill to be honest and tell it like it is and not make up stories but to convince the customer what I knew and believed and could support or could see as being realistic. I never painted pictures or led somebody down the rosy path or any thing of that sort. It was all the real stuff and I think my strength to do that was because I was grounded in the technology and in the programming as opposed to some individuals who arrived at a level of management who didn't pay for the lunch so to speak, experience the tribulations of the trenches, and didn't know what they were talking about or couldn't ground it in something that they personally had their fingers on, understood, knew. So whenever I was confronted in a proposal situation in front of a customer to sell an idea I didn't waver. I couldn't. It wasn't speculation on my part. It was the real stuff. So if I had a success it was because of that, people believed me and I came through.

Yost: Did you feel the knowledge flow was both ways, and your technical expertise allowed you to learn more from the customer about what they really needed and how it could happen than someone without a technical background?

Frank: To tell you the truth, no. I knew more at that time. I don't think that I could say that

today, but the customer didn't know anything about computing in those days. I knew more than they did and I believed it and I wouldn't let them tell me because they didn't understand. Does that make sense?

Yost: Yes. It seems like it's a fundamentally different era from today.

Frank: Oh, I couldn't get away with that today but in those days we knew more than the customer even though the customer may not want to have admitted it but we did, we knew more, and by the way that's also why they took us, that's why they paid us, because they realized that we were bringing something to the table. So maybe it was a golden age for me to have been there at that point in time, but I really believed at that point that I was making the contribution, I knew what I was talking about and I was genuine enough that they believed it and that's what they bought. That's why I was called back to Washington to the Pentagon after I had left that project. Otherwise they wouldn't have had me because I was in a competitive environment.

Yost: Are there other topics I haven't brought up that you feel are important to discuss?

Frank: Well, yes, one subject, at least one. All of this was very hard on my family because I traveled a lot. I spent lots of hours working. It was seven days a week, and every night to do these things. I had to move the family. We moved from L.A. to Washington to New Jersey and back to L.A. All this took its toll and although I think in the end everybody was happy, nevertheless it was hard for my wife to be home alone and to deal with the kids growing up while I was traveling or having dinner with customers and things like that. So, you pay something for all this, but I wouldn't at this point have had it any other way.

Yost: Great. Thank you so much for doing this interview. It's been fascinating and a great pleasure.

Frank: Thank you.

[Werner Frank has written a book on his family history: *Legacy: The Saga of a German-Jewish Family Across Time and Circumstance*, published in 2003 by the Avotaynu Foundation Inc. of Bergenfield NJ. With his kind permission, we have attached a copy of Chapter 22 from his book to this oral history transcript. The Chapter is called *Achieving the American Dream: Becoming an Entrepreneur*. Please note that this Chapter is copyrighted as part of the book and cannot be quoted or used without written permission from the author. Also note that the figures referenced in the text have not been included in this transcript.]

CHAPTER 22

ACHIEVING THE AMERICAN DREAM:

BECOMING AN ENTREPRENEUR

Copyright 2003: Werner Frank

Introduction

In my senior high school year, I began to consider my future career options. Should I plan to go on to college or should I join the work force upon graduation? I was torn between these alternatives but I was leaning towards taking a full-time job because I felt the need to help support the family. My wage-earning parents surely could not afford to underwrite my higher education.

My mother thought that I should learn a craft or trade. Our immigrant experience motivated us to highly value the ability to readily earn a living, no matter where we might find ourselves. She thought I might become a cook or a butcher because we knew such persons and they were earning good salaries. This did not appeal to me. I considered becoming a teacher, rather than acquiesce to the conventional wisdom of the time which advocated careers in medicine, law or accounting. The decision ultimately resolved itself in ways that were beyond my fondest expectations.

I applied for several Chicago area college scholarships, one to the Illinois Institute of Technology and a second to Roosevelt College (now Roosevelt University). I took written qualification examinations and fortunately won a first-year stipend from each of these institutions. The entrance applications forced me to make a course selection and I chose mathematics, a subject area in which I had always excelled.

As reported in Chapter 17, I chose to attend the Illinois Institute of Technology, selecting mathematics as my major and carrying two minors, education and economics. I did well in my class work, attaining recognition on the Dean's List and membership in the honor society, Phi Eta Sigma. My academic choices stood me exceedingly well in the future, first during my military service and subsequently during my civilian career as an entrepreneur in the yet-to-be born computer software industry.

Pioneering in the Computer Industry

When I began my military service in the summer of 1952, I had no idea about computers. At that time, the word "computer" usually referred to a Marchand calculator. The operator of the calculator also was known as a computer (verb form), or sometimes as a computer (noun form). This profession came about in the 1930s when the Works Project Administration (WPA) hired hundreds of unemployed mathematicians and other scientifically oriented persons to manually generate tables of data listing all kinds of physical measurements. One such example was the computation of the Circular Probable Error (CPE) to which I was introduced while serving in the U.S. Army (Chapter 20).

Actually, in some obscurity, digital computers had already made their presence felt towards the end of World War II. The U. S. Army had sponsored ENIAC, the first general-purpose electronic computer, which became operational in 1946.ⁱ Research continued in a number of quarters leading to next-generation computer improvements such as the one-of-a-kind MARK I (1948, Manchester University), EDSAC (1949, Cambridge University) and EDVAC (1951, University of Pennsylvania), as well as the first commercial effort by Remington Rand, the UNIVAC in 1951. Also, special purpose computers suitable for real time process control were emerging. One example was the application of computers to military command and control.

Thus, I found myself in an Army environment where I was introduced to this new world of computers and automation. At Fort Meade, Maryland, and subsequently at Ft. Bliss, Texas, I had the good fortune to become trained in the earliest commercially available computers. Details related to these activities have been discussed in Chapter 20.

Upon my discharge from the army in June 1954, and before beginning the fall semester at the Graduate School of the University of Illinois (U. of I.), I held a summer position with the Statistical Tabulating Services (StatTab) company in Chicago. I was a punch card operator, hoping that my army experience in wiring plug-boards would be sufficient to qualify me for an EAM (electrical accounting machine) position. So did StatTab. Little did either of us realize that I still had much to learn. After a number of poorly executed jobs, and having studied the manuals and asking for on-the-job help from the more experienced operators, I finally got the hang of wiring the various boards.

At the end of the summer, I was ready for the big time in computers. I was about to be introduced to one of the most advanced large-scale computers in the world, the ILLIAC.

My year at U. of I. was exceedingly fruitful. The academic portion focused mostly on advanced mathematical courses, the computer science curriculum having not yet been formalized. However, I did take a number of computer-related courses including logic design, programming and numerical analysis. My primary exposure to the ILLIAC computer came through hands-on assignments in the computer laboratory.

At the University of Illinois, I had the opportunity to work with some of the earliest computer pioneers. I was associated with Dr. Jack Nash, the laboratory director, who later became head of computing at Lockheed Corp. in Sunnyvale, California. Dr. David Muller was my teacher and laboratory instructor under whose guidance I produced a number of tightly-coded subroutines.ⁱⁱ

I was especially lucky to have been influenced by the work of three giants of computing from the U.K.: Maurice Wilkes, David Wheeler and Stanley Gill. Each of these luminaries had spent time at the ILLIAC laboratory prior to my arrival. They left a substantial mark at Illinois by launching the programming methodology to which I was subsequently introduced. The first single-address symbolic programming notation and the utility of subroutines were due to their work.ⁱⁱⁱ

During my year at U. of I., another Brit, Dr. Sandy Douglas, contributed to the advancement of my capability, as did fellow Research Assistant and fast-developing friend, Dr. Robert Gregory. Finally, I was introduced to the ground-breaking work of Dr. John von Neumann, whose seminal paper on digital computers underlay the logic design of the ILLIAC, as well as a host of IAC machines that were built in other universities.^{iv}

My early experience with ILLIAC provided a basis for my participation in the evolution of the computer software industry. I had the opportunity to learn how to bootstrap a computer from a zero state to an operable state. I learned how to punch paper tape with hexadecimal notation (Figure 22.1). I was able to assemble fragments of custom computer code and pre-coded subroutines to produce a complete application. I learned to carefully code and minimize use of storage and memory given the limitation of available hardware resources.^v I learned to carefully place data at selected drum storage positions to maximize access and thereby gain performance. I learned to desk-check my code to be more efficient in actually running the program on the valuable and scarcely available machine time. I also took advantage of the first visual representation of the computing process by using the real time plotting capability of the electronic scope that monitored the execution of the computer program. Finally, I was able to hear the signature of a particular program from the audio transmission of the change in state of bits in selected memory positions.

The most important lesson I learned at this stage of my involvement with computers, was that mistakes or incorrect results were never caused by faulty circuits or incorrect hardware logic. Problems were always due to human beings and the errors they created in the design and logic of the authored program.^{vi}

In early 1955, in anticipation of completing my Master's work, I began to seek employment with a number of organizations. I was in contact with IBM, Westinghouse, Sperry Gyroscope, Hughes Aircraft, Cornell Aeronautical Institute, Lockheed Aircraft, Burroughs, Arthur Andersen, U.S. Naval Postgraduate School, Remington Rand, General Electric and Sandia Corporation.

I received encouragement from all quarters, with the notable exception of IBM. I thought that I had been rejected at IBM because of a poorly answered qualification question. I was asked, "If

offered a job, would I plan to stay at IBM for the rest of my career?" My reply was an honest, "Don't know." This apparently did not pass the screening filter. I later learned that a less qualified colleague, who had replied to the same question with a more politically correct answer ("Yes, as long as I am treated well"), was accepted. In all modesty, given my later successes, I believe that IBM made a colossal mistake.

An important turn in my business life occurred when I met Dr. Walter F. Bauer. He was the recently appointed director of the Computation and Data Reduction Center at Ramo-Wooldridge Corp. (R-W), a newly formed aerospace company, in Los Angeles, California. Bauer was interviewing on various campuses in order to hire graduates with computing experience and Dr. Nash had referred him to me. I was anxious to meet him because of his graduate work in differential equations at the University of Michigan. I had been faced with a similar mathematical problem in my class work and sought further understanding by turning to a published authority. While my quest for clarification on this matter was not successful, I did end up with a job offer as a numerical analyst at a starting salary of \$6,786 per annum, plus paid relocation expenses.^{vii}

I readily accepted the position at R-W since the compensation was attractive and I looked forward to working on R-W's Univac 1103A. Also influencing this decision was the lovely prospect of a summer 1955 marriage to Phoebe and the pleasant honeymoon we would have traveling west, expenses paid for by my new employer.

On Being a Numerical Analyst

I began my first full-time job right after Labor Day, 1955, at the Bellanca Avenue facility of Ramo-Wooldridge (R-W). This company had been started a few years earlier by two engineers, Simon Ramo and Dean Wooldridge who had left Hughes Aircraft to form their new business. R-W was a fast growing company that had won the contract for U.S. Air Force's entire systems management and integration effort for development and deployment of the nation's Intercontinental Ballistic Missile Systems (ICBM) program. My role was to provide numerical analysis and programming services on behalf of the R-W engineers who monitored the contractual efforts of the various aerospace suppliers to the Air Force.

I was one of a small number of mathematicians and engineers who already had a few years of data processing experience, typically received at other Los Angeles-based aerospace companies such as Lockheed, North American, Northrop and Douglas Aircraft. We had skill in using the large-scale commercial computing machines of those days, IBM's 701 and Electronic Research Associate's 1103 (later the UNIVAC 1103A). I was destined to start my industrial career with the UNIVAC machine and some years later moved on to the IBM 704 and 7090 machines.

At the outset, I began to program in symbolic assembler code, as close as you can get to what we called machine code, the native computer instructions. The two-pass assembler was second-generation technology that was soon surpassed by third-generation compilers, such as FORTRAN for scientific and engineering applications. In fact, I pushed the use of FORTRAN in days when it was still viewed as an imperfect way to code an application. However, I soon won my staff over to this new productivity tool.

My earliest programming assignment at R-W dealt with boundary value problems arising out of the simulation of earth launches to distant planets as well as computing trajectories for orbiting space vehicles. In particular, I worked on the Venus shots. It was at this time that I learned to be extra careful in my work. A serious mishap occurred during one launch when the lifting missile suddenly arched over and dove into the ground. It was later discovered that an engineer had mistakenly placed a negative sign in front of his equation.

The differential equations involved in missile flight required finding roots of complicated sets of equations. One of the techniques used for efficiently achieving this objective was the relaxation methodology developed by my new boss, Dr. David Young. David had come to R-W from the University of Maryland where he had a distinguished career in mathematics. He was a wonderful leader from whom I learned much.

David Young appointed me to my first management position as head of the Numerical Application Section. I had a half-dozen people reporting to me. One of the benefits of this position was that I could conduct basic computer research into alternative techniques for solving mathematical problems. This research was related to our company mission that included solving a large-order non-linear equation or a set of simultaneous linear equations.

In the course of the next few years, my numerical analysis unit became a center of major research into the behavior of finite state computers in solving simultaneous linear equations. The problem was heightened as the order of the equation increased, causing a high degree of sensitivity (round-off errors) and unstableness in finding the roots, also known as eigenvalues. It was the job of the numerical analyst to stabilize the processing and to produce accurate results.

Under the guidance of David Young and other key consultants to R-W, such as Professor George Forsythe of UCLA and Dr. John Wilkinson of the National Laboratory of the U.K., I produced a number of groundbreaking papers that were published in prestigious journals, including:

“Finding Zeros of Arbitrary Functions,” *Journal of the ACM*, 5(2), April 1958.

“Computing Eigenvalues of Complex Matrices by Determinant Evaluation and by Methods of Danilewsky and Wielandt,” *Journal Society Industrial Applied Mathematics*, Dec. 1958.

“An Algorithm for the Determination of the Polynomial of Best Minimax Approximation to a Function Defined on a Finite Point Set,” (with P. C. Curtis, Jr.), *Journal of the ACM*, 6(3), July 1959.

“Solution of Linear Systems by Richardson’s Method,” *Journal of the ACM*, 7(3), July 1960.

In the course of this work, much of the experimentation in applying machine solutions to complex equations was conducted by constructing appropriate test matrices that exhibited certain unstable properties. In particular, I defined two such families of matrices that became quite well known in circles of numerical computing. In fact, these matrices often were called the *Frank Matrices* in recognition of the pioneering work that I had performed (Figure 22.2).

In 1955, I became a member of the Association for Computing Machinery (ACM) and attended many of its annual conferences. I also joined the Institute of Electrical and Electronics Engineers (IEEE) and attended the important annual meeting known as the National Computer Conference. Later, I was active in the Los Angeles chapter of the ACM and, in 1977, was elected the founding chairman of the newly formed San Fernando chapter of the ACM. I presented a number of papers to these and other more specialized forums.

I was appointed the R-W representative to the UNIVAC Users Association, USE. The membership of this organization was composed of companies that were Sperry Rand customers. We met several times during the year, the event typically hosted by one of the UNIVAC customers. At a later time, after R-W moved from the 1103A computer to the IBM 704, I began attending meetings of SHARE, the organization of IBM users. These meetings led to the first of many business trips that took me to Seattle, Denver, Washington, D.C., and other locations. I soon qualified for the various airline mileage recognition programs such as United Airlines’ 100,000 Mile Club in 1961 and TWA’s International Ambassador Club award in 1963. Those were still the days before jets, when trips across the United States took over eight hours.

Participation in computer user organizations motivated me to write a number of papers about the development of software. My first such publication appeared in the March 1956 issue of *Computers and Automation* with the title, “The Organization of a Program Library for a Digital Computer Center.” This was followed in September 1957 by the article “Mathematical

Subroutines for the Univac Scientific Computer, A Survey.” In December 1957, I also prepared a comprehensive report entitled, “Evaluation of Share Subroutines Dealing with Matrix Algebra.”

My hands-on experience in numerical analysis and my familiarity with computer processing made me attractive as an instructor in the extension programs at some of the local universities. I began to offer evening courses in numerical analysis at the University of California, Los Angeles (UCLA), the University of Southern California (USC) and the California State University at Northridge (CSUN). I enjoyed this teaching experience. In addition to augmenting my earnings, it provided me with a stimulating platform on which to exhibit my data processing skills.

In 1958, Thompson Products Inc., of Cleveland, Ohio, acquired R-W.^{viii} The resulting combination then became known as Thompson Ramo Wooldridge and somewhat later as TRW. At a later time, the R-W unit was renamed Space Technology Laboratories. This renaming created quite a joke among us since “space” was not yet a household word. So, we dubbed ourselves “space cadets” and acted like we were part of a Buck Rogers escapade.^{ix}

In 1959, further changes were made and I transferred to a new organization that took on the name, Ramo Wooldridge (RW) Division of TRW. This organization relocated to the Canoga Park area of Los Angeles and led to our household move from Palos Verdes to Woodland Hills. I was promoted to the position of associate head of the Information Processing Section, reporting to Marvin Howard, who in turn reported to Walter Bauer. I was appointed to the Senior Staff of the Thompson Ramo Wooldridge Corporation in 1961.

The business objective of this new RW division was the development of specialized computer systems for the military. Three important product lines emerged: the militarized AN/UYK 1 computer for the Navy’s Polaris missile guidance system, the RW-85 high performance display system and the RW 400 Polymorphic System for the Air Force’s Strategic Air Command (SAC). I became involved in the early programming of each of these systems.

Our team reached a pinnacle of success in 1961 by winning a contract with the Department of Defense Damage Assessment Center (DODDAC) for a full-color, real-time, computer-generated large-screen projection system. The combined hardware and software effort became the most advanced on-line visual presentation system under procurement by the DOD at that time. This RW system was to be integrated with the CDC 1604/160 computer already established in the National Military Command System (NMCS) data center located in the Pentagon, as well as at a mirror image facility at one of the hardened alternate command sites located in the underground of a distant mountain complex.

DODDAC was a key project of the federal government during the time of heightened concern about the possibility of a nuclear exchange between the U.S. and the Soviet Union. The Center's mission was to survey the likely domestic damage that would be sustained as a result of an attack. I was the project leader for the software side of the RW project and therefore needed to be on site at the Pentagon for an extended period. In early 1962, my work dictated that I relocate my family for temporary duty to the Washington, D.C., area.

Formation of Informatics, Incorporated

In January 1962, my boss Walter Bauer at RW invited me to lunch and during the course of our meal, presented a breath-taking scheme. He suggested that we should leave our present employment and form an independent company that would provide software services. At the time, there was a severe shortage of trained computer personnel and major companies were farming out some of their programming tasks to small consulting firms. Walter believed that software would become a business in its own right and that software practitioners should shape their own destiny. He believed that software would always take a secondary role in companies dedicated to hardware.

Bauer was ready to strike out on his own and was looking for a small start-up team and some initial capitalization. My imagination was fired by this proposition and I replied positively, contingent upon knowing more about the overall deal. Bauer held a similar session with another colleague, Richard Hill, who also agreed in principle to join such a new endeavor.

I went home to talk with Phoebe about the opportunity that had been offered. I was truly petrified, being a real conservative when it came to issues of financial security. I saw all kinds of pitfalls, wondering what would happen to us if the venture failed. Phoebe, on the other hand, had nothing but positive and encouraging thoughts. She was ready to take the ride and accept the risks that came with it. That was all I needed to go ahead.

Once the management team was signed up, the next step was to produce a business plan and to seek a sponsoring organization. Our business plan was called "Prospectus for Corporation D" and had the following mission statement:

Corporation D will be formed to provide services in the data processing field, specifically computer applications, systems analysis and development, computer programming and computer time sales.

Our analysis led to revenue forecasts of \$180,000, \$400,000 and \$800,000 for the first three years respectively. Losses were determined to be around \$100,000 in year one, with an

expected operating profit of \$35,000 in year two. We thought that the company should be capitalized at \$250,000.

Several alternatives were pursued and we ultimately availed ourselves of the opportunity to become a wholly-owned subsidiary of a newly launched Los Angeles based company, Dataproducts Inc. The president of Dataproducts was computer pioneer Erwin Tomash, who had experienced the start-up of Engineering Research Associates in Minneapolis, Minnesota, and knew of us as early users of the 1103A computer. Dataproducts was in the business of developing and marketing computer peripheral devices, focusing on drum storage units and line printers.

Informatics actually was capitalized at \$40,000, half of which came from Dataproducts, \$10,000 from Walter Bauer with the balance split between Richard Hill and me.^x In return, we received stock options in the yet-to-become publicly owned Dataproducts. In addition, the three of us took salary reductions of around 15 per cent during our first year of operation. Dataproducts was prepared to lend the company additional funds, to the extent that they thought prudent, based on our ongoing performance.

A first order of business in forming the company was to select an appropriate name. Phoebe had suggested Systematics, which may have triggered Walter Bauer's creation of the new and catchy word, Informatics, a term suggesting the science of information handling. The company name of Informatics, Incorporated, remained with us until May 1982. In the meantime, the word "informatics" was becoming a popular term to describe the entire technology of computers. When it reached widespread use throughout the world, we were beseeched to relinquish our rights to the name. We finally accommodated ourselves to the reality of the world and changed our company name to Informatics General Corporation.

The first day of operation of Informatics was 19 March 1962 and took place in our Woodland Hills home at 4617 Larkwood Avenue. Three individuals were present: Walter F. Bauer, Richard H. Hill and our highly efficient secretary, Marie Kirchner. I was still in Washington, D.C. They remember well that auspicious day since it became necessary to build a fire in the fireplace because of the outside cold and dampness. I had turned off all the utilities of our home when we temporarily relocated to the Washington, D.C., area to work at the Pentagon on the DODDAC project.

While fully committed to the start-up of Informatics, I could not join the team immediately. I had the lead management responsibility of an important RW project and just could not walk away from this obligation. I submitted my resignation to Ramo Wooldridge on 15 March 1962,

indicating that I would continue my service until the beginning of the following June (Figure 22.3). The management of RW accepted this arrangement and I did remain on the assignment in Washington, D.C., until the indicated termination day.^{xi} Upon my formally joining Informatics, my family moved back to Woodland Hills.

My initial assignment at Informatics put me on the road again, this time to provide programming design skills in implementing a real-time control system for client General Electric. I went on-site at their facility in Utica, New York, accompanied by colleague Willard Gardner.^{xii}

Subsequently, the National Security Agency engaged Walter Bauer and me as high level consultants on a classified study. On the strength of our work on DODDAC for the Joint Chiefs of Staff, we were invited to review the NSA plans for a gigantic computer system. We were to review and analyze their large-scale data storage needs and make recommendations with respect to alternative hardware solutions for on-line access to massive storage devices.

Others in the company were occupied in the design and implementation of a real-time data collection system on behalf of the Jet Propulsion Laboratory at California Institute of Technology. This system was operational in the desert at Goldstone, California, and gave us new experience with emerging minicomputers such as the SDS 910 of Scientific Data Systems.

During our first year of operation we made ourselves known to the marketplace by publishing papers, speaking at various conferences and public forums, and undertaking media campaigns which were unique and quite eye catching (Figure 22.4). We also came through with the numbers. The first year came close to our forecast, producing \$150,000 revenue with an operating loss of \$64,000.^{xiii}

In early 1963, the management of DODDAC initiated feelers with respect to my possible availability for further service at the Pentagon. My prior work with Captain Arthur Deverril and Colonel Roy Morgan had been very positive and they were eager to regain my participation in the project. Accordingly, a contract was written with Informatics that called for George Stock and me to resume work on the project that we had originated at the NMCS a year earlier. This agreement then led to my permanent relocation to Washington, D.C., and the opportunity to open an eastern division for Informatics.

I took on the responsibility for development of the man-machine interface for the query and reporting aspect of the DODDAC system. In the course of time, I was allowed to add additional personnel so that ultimately I had a team of experts reporting to me including George Stock, J.

Roy Morris, Keith Curtice, Warren Polk and Julian Morgan. Most of our work was carried out in secure spaces of the National Military Command System center located in the Pentagon.

On occasion, we also were required to check out equipment and participate in drills at the Joint Chiefs of Staff's command and control underground site located near Fort Ritchie, Maryland. This was exciting stuff since we literally lived in a city built within a mountain. Once we passed through the giant entry doors we were in a deep hollow where actual buildings had been erected. There was no sunlight and the place buzzed around the clock. It was a weird and eerie experience, to say the least.

The contract with DODDAC required my participation on a full-time basis. Working extra long days on this project allowed me to take occasional time off to pursue other business. My greatest single achievement at this time occurred in the fall of 1963 when I began to pursue a large consulting study with the Office of Naval Research (ONR). The contract was to analyze the Navy's advanced naval tactical command and control (ANTACCS) automation needs for the decade of the seventies.

Walter Bauer tried to dissuade me from pursuing this opportunity but I persisted. Working hard to influence and please the government project officer, Mr. Ralph Tuttle, I provided rapid responses to all questions asked during the qualification period, as well as after the proposal had been submitted. In particular, I remember well the 1963 Christmas and New Year period during which I was closeted with the Navy buyers instead of vacationing as my competition was doing.

The effort yielded results. Our company was awarded a prestigious contract that would continue for a period of five years during which time the scope of the work continually expanded. I reveled in the pure joy of winning, a satisfaction that grew stronger with every new contract. I felt that nothing could stop me from writing winning proposals or from being a convincing advocate in the oral presentations. I did my homework and always found interesting and exciting ways to impress a prospective client with the on-line, display-oriented technology that had become our hallmark. This message was captured in one of a series of successful "message" advertisements shown in Figure 22.5.

I suddenly realized that I had become a successful salesman. This was not a vocation that I would have consciously chosen but combining my technical skills with the ability to sell an idea and manage it to fulfillment would make me a successful entrepreneur.

Walt Bauer, to my disappointment, insisted that the focal point for the ANTACCS effort would be in our Los Angeles office rather than in Washington, D.C. We hired aerospace engineers and ex-military personnel to staff the project in the West, maintaining only a small liaison team in the East. Ultimately, the project included some twenty participants, almost equally split between both coasts. In 1965, this work was substantially expanded by a \$1 million contract to encompass the tactical automation issues of the U.S. Marines with the additional scope of the Marine Tactical Command and Control System (MTACCS).

A most memorable experience occurred while I was involved in the ANTACCS and MTACCS projects. In September 1965, my colleague John Lytle and I joined the aircraft carrier *USS America*, sailing in the Atlantic Ocean, off the eastern shores of Virginia. The carrier served as the command vessel of the deployed task force that was on tactical maneuvers. Our mission was to spend a week on the high seas, observe all of the carrier's shipboard computerized operations, including the command Flagplot, and use this information as input for the requirements phase of our long-range planning document.

I arrived on the carrier as a passenger on a COD aircraft, experiencing an abrupt deck-top landing as we were snared by our trailing tailhook. We were quartered in facilities that ranked us as junior officers. Our days were spent investigating all facets of the ship's operation. We also spent time with key personnel to solicit their perceived needs and their suggestions for further automation. Finally, we presented our mission and preliminary findings to the task force commander.

At the end of this fabulous adventure, John and I had yet another thrill. We returned to the mainland, catapulted from the deck of the *America* by experiencing the thrust of more than two Gs, pinning our bodies firmly to our seats. Imagine my excitement upon coming home and telling these escapades to my five-year-old son, Daniel. I was one proud dad. Years later, when flight officer Lt. Daniel Frank served on the *USS Nimitz*, this experience forged an even greater bond between father and son.

Upon my move to Washington DC in 1963, the company operation was divided into eastern and western operations, the former headed by me and the latter by colleague Frank V. Wagner. Frank had joined Informatics in August 1962, coming from North American Aviation Corporation where he was a leading figure in the evolving IBM community of computing.

Eastern Operations also included the opportunities that were presenting themselves in Europe. Thus, I began my overseas travel to England, France, Holland and Germany. One of the interesting contracts that I managed to negotiate was with Philips of the Netherlands. I put in

place a team of American programmers in Eindhoven, where we undertook the development of the operating system for a forthcoming Philips computer manufactured by its subsidiary, Electrologica.

The relationship with Philips led to meeting a member of its Board of Directors who became interested in our work. Soon, I gained his confidence and we began to have strategy sessions of how Philips and Informatics could exploit the burgeoning computer market in Europe. These discussions led to building a business plan for a joint company that we would call Informatica NV. Everything looked solid and we appeared to be headed towards a roaring business success. However, at the eleventh hour, Philips pulled away from us and announced a joint venture with our Los Angeles-based competitor, Computer Science Corporation (CSC). Unbeknownst to my colleagues and me, the power of decision on this matter had been moved from Eindhoven to nearby Apeldoorn, the place where the Philips computers were being manufactured. We felt betrayed. I learned the hard lesson, that all roads to a business decision must be carefully uncovered and tracked. I was not going to make that mistake again!

We also had our domestic disappointments. On one occasion, I sought to obtain another slice of business at the NMCS, a contract renewal for efforts in information storage and retrieval. This was the province of IBM's Federal Systems Division, the provider of the well-known software product of that day, the Formatted File System (FFS) and the new Generalized Information System (GIS). Our boldness in challenging this incumbent with fresh ideas was met with a jolt. I was called before the military director of the NMCS project who told me, in no uncertain terms, that Informatics was to bow out of this competition. I was warned that Informatics would be disqualified from obtaining further business with this agency if we did not concur. Years later, I regretted our withdrawal from this competition but at that time, the appeals mechanism of the General Accounting Office (GAO) had not yet become a viable part of the Federal Government business process.

An important unit of Informatics was set up at Englewood Cliffs, New Jersey, with Richard (Dick) Kaylor reporting to me. As a team, Dick and I brought in an enormous amount of new business for Informatics. We successfully obtained prestigious contracts in the area of on-line communications and message switching. Among our clients were the government's General Services Administration, Western Union's TELEX System and the New York Second District Federal Reserve Bank. Our most outstanding achievement was Dick Kaylor's management of our contract with CBS for the development of the 1968 presidential election prediction system.

Dick Kaylor also was key in obtaining a significant on-site contract with IBM in Poughkeepsie and Mohansic in support of developing systems software for the IBM 360 and the new TSS 67

timesharing system. Concurrent with these Eastern Operations successes, Frank Wagner was instrumental in obtaining a large subcontract to IBM in support of the NASA Manned Spacecraft Center in Houston, Texas.

Dick and Nancy Kaylor became very good and close friends to Phoebe and me. We socialized often and our families spent a number of holidays together. Dick and I really understood each other and we developed a mutual respect and admiration for each other's ability and together we were able to make things happen. One such endeavor was our pursuit of business relationships with the U.S. Air Force's Rome Air Development Center in Rome, New York. Our approach to building on-line, man-machine systems was shared with the civilian contract manager at Rome, a soon-to-be client and friend, William (Bill) Moore. Together we conceived of several research projects for exploiting intelligence data. One of these, the PACER project, concerned building software in support of the Strategic Air Command at Offut Field near Omaha, Nebraska. Another activity in which we were involved became known as DOCUS.

The Display Oriented Compiler Usage System (DOCUS) was a combination higher-order programming language and operating environment that facilitated the implementation of intelligence applications through graphical video-based screens interacting with an individual in real time. In today's technology terms, DOCUS could be described as a precursor system to later technologies such as Microsoft's WINDOWS environment and accompanying Visual Basic programming language.

Up to this point in my career, I had been intimately involved in each engagement under my control, both as a project manager as well as a strong technical contributor. The early work on DODDAC, plus the more current work at RADC with DOCUS, sharpened my expertise in the area of man-machine communications and on-line real-time computing. Accordingly, I authored a number of articles and gave conference presentations on these topics, including:

"An Integrated System for Data Processing, Interrogation and Display," presented at the 1961 Eastern Joint Computer Conference, Washington, D.C. (with W. Bauer).

"Implementation Procedure for On-Line Systems," Informatics paper, 1963.

"Programming On-Line Systems", *Datamation*, May 1963 (with G. Stock and W. Gardner).

"User Technology and Software Aspects for On-Line Visual Display Devices," presented at Shape Symposium on Computer Programming for Military Systems, The Hague, Netherlands, September 1964.

“On-Line CRT Displays: User Technology and Software,” *On-Line Computing Systems*, American Data Processing Inc, Detroit, 1965.

“The Display Oriented Computer Usage System: A General Purpose Software Package For Display Systems,” presented at AGARD Avionics Panel Symposium, Munich, November 1966.^{xiv}

“Display Oriented Computer Usage System,” presented at 21st National Conference of Association for Computing Machinery, 1966 (with H. Corbin).

“Terminal-Oriented Software: Promise and Problems,” *The Transition to On-Line Computing*, Thompson Book Company, Washington D.C., 1967.

“Software for Terminal-Oriented Systems,” *Datamation*, June 1968.

“Command and Control for Future Management Planning,” presented at Systems and Procedures Association, St. Louis, Missouri, October 1968.

During the first few years of Informatics' operation, the business was completely focused on providing professional and consulting services related to the building of customized software applications for our customers. This work was highly labor intensive, fees being directly proportional to the cost of personnel. Operating profits were limited, typically ranging between six to twelve percent before tax. Since there was little need for fixed assets to deliver these services, and the cash flow was good, the return on investment was extraordinary. In 1964, an important event occurred that would have a significant impact on the future direction and performance of Informatics.

Walter Bauer became aware of the break up of a Howard Hughes' software organization known as Hughes Dynamics. John Postley, head of one of the units of Hughes Dynamics, suggested that we acquire his operation, including the personnel and its proprietary software. This software consisted of programs that facilitated the definition and creation of data files from which could be produced formatted reports based on appropriate queries. The software was general purpose and suitable for sale to almost any user.

The concept of computer programs for sale was new at this time since heretofore the hardware suppliers simply included the cost of software in their computer hardware sale price or in the monthly rental fee. The industry called this the “bundling” of hardware and software costs. This bundling made it difficult for independent software companies to compete unless they offered a clearly superior or unique alternative to the hardware company.

Informatics management saw the possibility of incredible leverage in offering a software product, comparing the model of this business to that of a hardware vendor. An initial investment in a software product could be capitalized and then written off over subsequent sales, thus not impacting the profit and loss statement during the development phase. Even more important was the negligible cost of production of the program itself.^{xv} Indeed, as we later experienced, the operating margins from software products were potentially double or even triple the amount achievable through offering personal services.

Postley and crew joined Informatics and by 1967 produced our first commercial success, the MARK IV System operating on IBM's newly introduced 360 series of mainframes. We charged \$30,000 for a base system which over the years rose to over \$100,000, depending upon the size of the mainframe and including many special features that were increasingly offered. MARK IV became an international success with steadily increasing sales in North America, South America, Europe, Australia and Japan.

The software product industry got an enormous shot in the arm as a result of the 1969 decision by IBM to separately price its hardware and most of its software. At this point, many new companies entered this marketplace and enjoyed successful growth and profitability. At the high point, Informatics generated over \$30 million in revenue for MARK IV sales and maintenance per annum, with cumulative revenue running to over \$300 million in a thirty-year life cycle. Even in the years approaching the 2000-year millennium, this product was still in use and producing revenues of about \$20 million per annum.

I jumped into the fray of promoting MARK IV in whatever way possible. In particular, I was instrumental in one of the first sales of the product to the Civil Aeronautics Board (CAB) in Washington, D.C. After installing an early version of MARK IV at the CAB, we learned that the sophisticated reporting requirements of this customer were not all met by our solution. We soon realized we were still at a primitive stage in the continual need to increase the complexity of this software. Over time, we introduced the concept of paid-for improvements through the issuing of maintenance fixes, special features and a series of new releases.

The potential impact of software products and the success of MARK IV certainly were not lost on me. I urged Informatics management to seize another opportunity and exploit the productization of the DOCUS capability that had been developed for the Air Force. To get the idea across, we produced a prototype that was called DisplayAll.

At that time, all software products at Informatics were relegated to the MARK IV Systems Group since they had developed a magnificent worldwide sale and marketing organization. Thus, DisplayAll was handed over to this organization. As is often the case, new ideas introduced into

an organization with a heavy commitment to its own history and cultures have a way of being sabotaged, if not torpedoed. Thus, DisplayAll never got off the ground.^{xvi}

There were other wonderful ideas that never made it. For example, Frank Wagner headed an effort to create a new business that would integrate and centralize on-line airline reservations for all airlines. In 1967, we formed a subsidiary company called ATAR Computer Systems Inc. to actually develop this system. Unfortunately, the time was not right. We were eventually stopped in our tracks by the CAB, heavily influenced by the strong negative lobbying of American Express and American Airlines (the latter having a competing interest with SABRE).

We also had a few disasters such as the fixed-price contract with the Housing and Urban Development Agency (HUD) for implementing a payroll system. The original contract had a value of close to \$1 million for which we thought we would be able to implement anything. Unfortunately, we eventually discovered that the cost would easily exceed an additional \$500,000 and we sought to disassociate ourselves from this calamity. After intense negotiations and threats of litigation, HUD terminated our contract and we suffered small losses. This also was the end of our taking fixed price contracts, favoring from that point on the time-and-material provision for professional services or the government's cost-plus-fixed fee (CPFF) arrangement.

As we continued to grow, Eastern Operations became organized into two major divisions, one under vice president Richard Lemons based in Washington, D.C., handling the federal government business and the second under vice president Richard Kaylor at River Edge, New Jersey, in pursuit of major commercial opportunities. I began to free myself from everyday operations and sought out new opportunities and deals.

One of my first new projects was potentially a big deal. In March 1969, an executive of PA International Management Consultants, Ltd. contacted us. This company, one of Britain's largest management consulting firms with headquarters in London, was seeking to expand its purview in computer services by enhancing its classical high-level consultancy with more of a hands-on, software implementation thrust. They thought that a linkage with a real software company would provide credibility and accelerate their growth in this mushrooming business area.

Our discussion ranged from the usual acquisition possibility to forming a joint venture company for pursuing joint projects. None of the equity-related alternatives seemed to fit the mutual interests of the two organizations and a loose relationship ultimately resulted. An agreement was finally reached in January 1970 wherein Informatics would provide "know-how and a Mark

IV franchise" to PA Management and we would endeavor to mutually pursue software business among PA's client base.

I was the main liaison with PA Management, requiring me to make many trips to London to participate in organizational and strategic discussions. I also was the Informatics spokesperson, representing our interests and giving lectures on the status of the software industry at the annual meetings of PA Associates in both the U.K. and Australia.

This association also led to my first trip to Japan, where I represented both PA and Informatics. Phoebe accompanied me on this trip. This was a unique experience and remains in our memory due to the formal dinner hosted by our PA Japanese contact. We were introduced to a series of strange dishes that were difficult for us to manage. Fortunately, they were very small portions and we somehow made it through the evening, despite eating unrecognizable food and squatting uncomfortably on mats. Upon returning to our hotel, we found an open ice cream parlor and were able to satisfy our lingering hunger.

My good friend and Informatics colleague, Fred Bacon, became the London-based Informatics representative to PA Management. Fred wrote many joint proposals in the quest for software contracts. Unfortunately, the relationship with PA never really resulted in anything worthwhile and after two years the experiment was abandoned. Fred finally settled in Israel, where he married and raised a family. We are still very much in touch with each other.

If the ONR contracts represented my first major achievement, and the 1968 CBS Election Night system a huge public relations success, then surely my crowning glory came in attaining the prestigious NASA contract for operation of the Scientific and Technical Information Facility (STIF) at College Park, Maryland. This operation handled the entire collection, microfilming, indexing, abstracting, photocomposing and distribution of all research information related to space exploration and related fields. It represented the state of the art in modern library sciences and publishing.

Again, Informatics management discouraged my pursuit of this golden opportunity to get into a new business area. Nevertheless, we came up with the innovative concept of establishing a subsidiary company, Technical Information Service Company (TISCO), which would be entirely devoted to the fulfillment of the contractual terms of the agreement. Furthermore, we committed our key Washington-based executive, Richard Lemons, to be its president and on-site manager of the operation.

Careful marketing to the NASA decision makers led to our win in 1968 of the largest to that date contract for Informatics at \$4.3 million cost-plus-award fee per annum, with options for renewal in successive years. The 400-person staff for this contract now brought the total Eastern Operation personnel headcount to over 700.

By this time, I had become known in government circles and in the spring of 1970, I was invited by the Department of Commerce to be the software industry representative on a trade mission to Southeast Asia. Our task was to promote U.S. computer-related product sales. We were scheduled to make presentations in Taipei, Djakarta and Singapore. This looked like a great boondoggle and Phoebe was anxious to come along. Since we would be going halfway around the world, we decided to circumnavigate the globe and return to Washington, D.C., via Europe at no additional expense.

We had a grand time. I gave a seminar on *EDP in the Seventies* in the three selected cities, where we were hosted by our local embassies (Figure 22.6). At each location, there was a reception and we were treated as VIPs. We also had adequate time to tour the areas.

In Taipei, the presentations were given in a large university hall and we were received with great respect and just a few questions. In Djakarta, we presented our program at their national university and attracted a crowd of several hundred students, faculty and members of the business community. I remember well the response from the audience that was experiencing its early touch with modern computing ideas. One person asked for my opinion on the value of computers in telling fortunes. A second individual angrily suggested that we replace the English language emphasis in computing by the universal language, Esperanto. In Singapore, our audience was more sophisticated.

Personal details concerning this trip are discussed in Chapter 23.

Informatics grew well beyond our expectations, moving progressively to its first pinnacle in fiscal 1969, with revenues of \$11,463,000 and operating profit of \$1,174,000. In 1968, we were an organization of 300 persons and let it be known to the world in the advertisement shown in Figure 22.7. In the meantime, Dataproducts became a public company but did not seem to be going anywhere fast. Our small option stake in Dataproducts did not appear to be commensurate in value with our more successful execution and responsibility at Informatics.

Bauer began to put pressure on Tomash to free up Informatics and let it become independent of the performance of its owner.

Agreement for divestiture was reached with Tomash and Informatics was partially spun-off from Dataproducts in 1966 when 70,000 shares of common stock were offered the public at a price of \$7.50 per share. We insiders had purchased stock at \$2.50 and held seven percent of the equity after this transaction. At the time, there were 566,000 shares outstanding leading to a market cap of \$4.25 million, approximately equal to the fiscal 1966 revenues of \$4.4 million. In retrospect, the amount of shares placed in option was probably among the most parsimonious of all like companies of that era. This skimping attitude of the chief executive and the compensation committee of the Board of Directors permeated the culture of Informatics from that time on and contributed, in my opinion, to the ultimate collapse of the company.

The value of Informatics took some immediate jumps as the stock price soared from its \$7.50 issue value to a high of \$28.00 per share in the first twelve months of trading, reaching a P/E ratio of 90. Dataproducts was not too bashful about cashing in on its largesse. In subsequent years through 1970, Dataproducts divested itself of its Informatics stock, successfully gaining some \$20 million on its initial investment of \$20,000.

My progress in the company is reflected in various positions that I had attained:

Director, Systems Analysis:	June 1962 until July 1963
Vice President, Eastern Operations:	August 1963 until April 1967
Senior Vice President:	May 1967 until December 1971
Executive Vice President:	October 1974 until December 1982
Member of the Board of Directors:	May 1964 until December 1980

From December 1971 until October 1974, I served as President and CEO of Equimatics Inc., the subject of the next section.

Formation of Equimatics, Incorporated

An unusual opportunity was presented to Informatics in October 1970 when executives of The Equitable Life Assurance Society of the United States (ELAS) visited our corporate offices to explore a possible business relationship. The insurance laws of the State of New York had just been relaxed to allow insurance companies to broaden their business scope. One of the areas being sought for exploitation was the mushrooming business of computer services and software

development. Since the major insurance companies already had vast data centers and extensive communication networks, they thought that this base could be leveraged to build an even broader business. Some had visions of spinning off their in-house operation to form a competitive service bureau that would provide its capability to other industries.

At first, ELAS expressed an interest in acquiring all of Informatics. This we quickly turned down and redirected the discussions toward forming some sort of joint venture in a well-defined market area. My proximity to New York City and key position on our management team led to my special assignment, along with ELAS executives, to build a business plan for a jointly owned Informatics/Equitable company. The result of our study was a recommendation that a new company be formed that would pursue the software, processing and communication needs of the life and property casualty insurance industry.^{xvii}

It took almost one year to fully launch the new company called Equimatics Inc., on 1 December 1971 (Figure 22.8).^{xviii} The headquarters of the company was Fairfield, New Jersey (Figure 22.9). I was appointed President and Chief Executive Officer and member of its Board of Directors. The chairman of this Board was ELAS Executive Vice President David H. Harris who readily became my mentor as I entered this new endeavor. Walter Bauer and I exchanged representation on our mutual company's Board of Directors, thus giving me continued strong links with Informatics.

One of the first actions of Equimatics was the establishment of a data services business based on the newly available IBM 370/145, later upgraded to a 370/158. We also established a communications network and thus were among the first in offering timesharing and batch processing utilizing the VM operating system of IBM.

An early triumph of Equimatics was the achievement of a \$500,000 contract with Home Life Insurance Company to build their new life insurance processing system. This event was significant in that it demonstrated the viability of a subsidiary of one of the three largest insurance companies in the U.S. to service a smaller competitor.

In early 1972, I pursued the acquisition of United Systems International (USI), with headquarters in Dallas, Texas. USI was a perfect target since it already was offering software application products directed to the life insurance industry. Furthermore, it had developed the specifications for a next generation life insurance back office administration system that could revolutionize the industry.^{xix} A merger took place in April which strengthened my management team by adding Paul Wrotenberry and Jimmy Porter to our ranks. It seemed that we were on a roll and we readily pronounced our growing success, as shown in the advertisement pictured in Figure 22.10. In the three-year period from 1971 to 1974, the business volume of Equimatics grew to

\$4 million and the staff increased to 160 persons. This performance reflected revenues that were double our original plan, with losses at one-half of the plan's projections.

There were, however, disappointments. One of the underlying assumptions held by Informatics management in forming the Equimatics joint venture was that a lot of business would be forthcoming from ELAS itself. There was even an assumption in the business plan that Equitable would not represent more than 30 percent of the revenue in the long run. We also had the perhaps fanciful belief that we could take over the entire communication network of ELAS and leverage it to form a massive utility that would encompass the nationwide needs for the entire insurance industry.

We really thought that ELAS management had given us encouragement in this regard. After all, the plan forecasted that we would achieve a level of \$25 million in revenue in five years and reach the \$100 million mark in ten years. As it turned out, very little business was forthcoming from ELAS, except for the initial bone that was tossed our way to handle the processing of Medicare Part B claims for four states under contract with The Equitable. We also provided Equitable with some timesharing services.

The discontent with our parent ELAS laid the foundation for the next step in my entrepreneuring progression. The market began to be unkind to the value of Informatics and it appeared to me that there was a masterful opportunity at hand.

The Merger of Equimatics and Informatics

In the period 1970-1971, the initial glow surrounding software companies suddenly evaporated, depressing the stock of Informatics. The cause seemed to be the investment community's belief that the highly people-dependent software business had no real hard assets upon which to base a value. To add to this period of discontent by the investing community, Informatics took a one-time, \$4 million write-off in 1970, related to the discontinuance of the data services business and the demise of the aforementioned ATARS investment.

In the 1972 to 1973 time frame, Informatics revenue growth slowed down and the stock dropped to a low of \$3 to \$4 a share, valuing the company at around \$6 million. I thought that this was an opportunity to strike and I approached David Harris to suggest that Equitable, via Equimatics, make a bid for Informatics and create a much more viable enterprise. A key motive for my suggesting this move was the obvious benefit to Equimatics. We would surpass the five-year revenue goal and would surely make the ten-year objective.

After some internal ELAS review, a plan was formulated in 1973 to cash out Informatics stockholders with an offer of \$6 per share. Informatics management thought over its alternatives and concluded that a buy-out would be in the best interest of the shareholders. A final deal price of \$7 per share was negotiated in April 1974, placing a value of \$12,468,000 on a company that was operating at a rate of \$25 million in revenue per annum. This seemed like a hell of a deal for the Equitable (Figure 22.11).

There was a second step to these negotiations. The continuing management team of the new Equimatics-Informatics would obtain a small minority ownership in the Equitable subsidiary. Walter Bauer thought that in the presence of minority shareholders, big brother Equitable could not do anything detrimental to Informatics for fear of a shareholder suit. This turned out to be a most fortuitous maneuver, playing a most significant role in a subsequent phase of our corporate existence although our management ownership was less than 5 percent.

The mechanics of the acquisition deal involved Equitable funding Equimatics with the necessary capital, Equimatics acquiring Informatics and, at the conclusion of the transaction, having Equimatics change its name to Informatics. In all of these dealings, I was in a linchpin position since Equitable had extended me the courtesy of a right of refusal to the agreement. Equitable executives were well aware that there was a strain developing between Walter Bauer and me and they respected the autonomy of Equimatics.

I met privately with Walter Bauer at the headquarters of Equitable on Sixth Avenue in New York City before a final commitment was made. I wanted to clarify our mutual roles. I readily agreed that he would become the CEO and President of the resulting amalgamation of the two companies and that I would become Executive Vice President and a member of the to-be-formed Informatics President's Office, as well as be appointed to the new Board of Directors.

Furthermore, I stipulated that I would be number two in the company, implying an heir-apparent position. Bauer agreed, with the proviso that I relocate back to the California headquarters of Informatics. No doubt, he was motivated by a desire to keep a closer eye on my activity. Returning to California was certainly not a hardship for my family and so we had agreement.^{xx} We proceeded to inform Equitable that we were both in support of the merger plans and were prepared to carry them out.

On 28 February 1974, the combined Equimatics and Informatics became a majority owned subsidiary of The Equitable and my family happily returned to Calabasas, California. The new Board of Directors included six members of The Equitable and four board members, including me, of Informatics. In the new company, I assumed responsibility for overall corporate strategy and development, as well as technology planning. In essence, I became the Chief Strategy

Officer of Informatics and oversaw acquisitions, the establishment of new international operations, and the formation of an advanced research unit, the Corporate Development Group.

The annals of the history of Informatics recorded this event with the following statement:^{xxi}

An interesting sidelight in this whole process is to observe how Werner Frank, CEO of a 16-employee company (the original Equimatics), first used Equitable's capital to acquire USI with 59 employees, and then Informatics with approximately 1,000 employees. First the minnow swallowed the trout, and then the whale! But he gave up his CEO position in the process.

Informatics General Inc., Resumes Public Ownership

In my new role as corporate strategist and business development officer, I immediately began to seek ways to expand our business. I encouraged the continuation of evolving several life insurance oriented applications under development by the Equimatics team in Dallas, Texas. I also sought new acquisitions.

A unique opportunity was presented when I visited George Langnas, the founder and president of Programming Methods Inc. (PMI) with headquarters in New York City. George was a former employee of Informatics who had successfully founded and grown a large professional service organization that also boasted a software products division. I was informed that the current owner of PMI, General Telephone, was anxious to sell the organization since it was over-staffed, losing money and had become unmanageable.

Informatics management concurred in my assessment that this would be a great opportunity and we activated our acquisition process. We successfully concluded a deal and bought a \$14 million revenue company for an unheard amount of \$235,000, representing its hard assets. In other words, we took over a company for essentially no cost. The challenge, of course, was to manage a downsizing and turn the unit into a profitable business. This we accomplished.

A second major strategic decision was made. Citibank offered us Management Horizons Data Systems (MHDS), one of its embryonic businesses located in Columbus, Ohio. Richard Kaylor and I began the analysis of this opportunity and saw the merits of a business providing wholesale distributors a service bureau solution to their business-to-business transactions. Little did we realize that this business would one day be a raging success that would bring its owner into the great New World of E-commerce and ultimately the Internet.

MHDS was generating \$7.8 million in revenues from transaction services to wholesale distributors, operating its own substantial computer and communications site. We paid approximately \$3.4 million for the net depreciated assets, obtained a favorable loan from Citibank to manage the cash requirements of the business, and received a long-term processing contract of \$3.3 million from the bank.

The newly created Informatics now went into a mode of operation that would ultimately spell its doom. Bauer believed that as a privately-owned company we could temporarily reduce our profitability in exchange for freeing up more investment dollars. He conceived of a multi-year plan of taking essentially a zero profit, investing these heretofore profit dollars in new application-oriented products and, after these new businesses became viable, returning the operation to full profitability. Then, we could enjoy a spiraling and accelerated growth and ultimately achieve a higher company value.

We were very successful in spending the money but did not succeed in generating significant new businesses. In fact, once the company was no longer being driven by profitability, it became ever harder to return the operation to being a moneymaking machine.

As a subsidiary, we also carried on a campaign to pry loose more significant business from our parent, The Equitable. Admittedly, we were neither bashful nor taciturn in making our feelings known that we were entitled to more of The Equitable business. This did not sit well with Equitable officials and the honeymoon was soon over. An agonizing strain slowly developed on the Board of Directors between the old Informatics members and the ELAS representatives.

The time came to seek redress from The Equitable. We promoted the notion that the Informatics management minority was being thwarted in its efforts to continue to build the company. Bauer further argued that having given the management team equity in the enterprise should ipso facto now dictate that the stock becomes a negotiable currency. Walter Bauer did not want to look too self-serving in these matters so he asked me to draft a memo to the file expressing my similar sentiments. In this way, he could approach Equitable as a representative of the entire management group.

After some acrimonious discussions with The Equitable, it was decided that our owner would divest itself of Informatics. A two-step public stock offering was underwritten by Goldman Sachs, one in October 1979 and a second in September 1980. Thus, Informatics once again became a publicly-owned company and on 4 October 1979 began trading over-the-counter with the symbol IMAT. The company claimed notoriety in having made two initial public offerings in its lifetime.^{xxii} On 7 June 1982, the re-named company, Informatics General Inc., was listed on the New York Stock Exchange with the symbol IG (Figure 22.12).

Next, Bauer sought to revamp the management team and establish a new succession scheme. Notably, Frank Wagner and I were removed from the Board of Directors; an unforgivable action after both of us had put so much effort, dedication and leadership into the company. This move undermined my self-esteem and I have never forgotten how Frank and I were pushed aside. Bauer had concluded in his own inimitable way that he was the only one among all of the original management team who had matured to an acceptable level of executive capability. The rest of us simply did not merit the responsibilities of a growing company. Richard Kaylor had seen the light earlier and had left the company in 1981 because of what he perceived as a lack of continued personal growth. The resulting discontent reverberated throughout the organization.

In retrospect, perhaps this was the best thing that could have happened to me at that point in my career. I was shaken out of complacency and began to realize that Informatics was not necessarily the place where I would spend my remaining working years, or the place from which I would retire.

My Experience as a Columnist

In early 1980, Phoebe and I were homeward bound, driving south on Highway 101 towards Los Angeles. Phoebe had just presented one of her weekend seminars on coping with stress at the University of California in San Louis Obispo. Somehow, we began to talk about creative writing and Phoebe suggested that I commit my business-related ideas to paper and become an industry pundit. Why not write weekly columns for one of the trade press?

At first, I rejected the idea completely, not seeing how I could possibly come up with enough material to fill the demands of a regular column. I had already published a number of articles; first, in my days as a numerical analyst, and also with several contributions to the In Depth pages of the popular industry weekly, *Computerworld*.^{xxiii} The In Depth feature was a several-pages long article covering a timely topic related to the computer and data processing industry. My first such contribution was “The Ten Great Software Myths”, appearing in the 6 March 1978 issue in which I attempted to expose half-truths, and separate fact from fiction and reality from fantasy. The ten myths included:^{xxiv}

1. Software represents a growing proportion of total data processing expenditures.
2. Software is (necessarily) expensive.
3. Software must follow hardware.
4. Software outlasts hardware.
5. Software needs continuing change.
6. Software productivity can be enhanced.
7. Software product manufacturers are more efficient producers.

8. Software must satisfy the user.
9. Modern software systems require a data base management system.
10. Software is the result of programming.

A second In Depth submission was my opus, "The New Software Economics", which appeared in four successive *Computerworld* issues beginning 8 January 1979. This material was enhanced and published in a 100-page pamphlet by U.S. Professional Development Institute of Silver Springs, Maryland, in October 1979. This work became an industry ground-breaker in modeling the software construction and marketing process, together with analyzing the investment aspects of the software product business. I received international acclaim.^{xxv}

Such one-time authoring efforts did not require an ongoing commitment but writing a series of columns was a different kettle of fish. Nevertheless, I was urged by Phoebe to try it. The thought of attaining more status and notoriety in my industry spurred me on; I could write about contentious or obscure subjects that had come up in the course of my work. I asked Phoebe to begin recording ideas for subjects that were spilling from my mind in rapid succession as I was driving along. Within a few miles, I had generated close to thirty possible topics fit for a column. This gave me the confidence that I could make a commitment.

Our thoughts now turned to ways of promoting myself. I singled out *Computerworld*, the most prestigious computer industry weekly, as the likely publisher of my intended column. We then thought about a catchy name and ideas ran from *Frankly Speaking* to *Softwords* to *Softline*. I wanted the title to emphasize the topic of software and therefore chose *Softline*.

As soon as I arrived home I began to turn out a handful of candidate articles with which to whet the appetite of *Computerworld* editors. I sent an offer letter with three trial columns and was readily accepted. In fact, I was offered the very nice honorarium of \$225 per column (later going to \$300). I agreed to a biweekly run, thinking that this would put less pressure on me. My first column appeared on 15 September 1980 and they continued uninterrupted for three years until August 1983.

I enjoyed the appearance of every *Softline* column brandishing my by-line. I began to receive reader reactions through letters to the editor of *Computerworld*, as well as comments addressed directly to me. Soon, *Computerworld's* sister publications in other countries asked for rights to reprint the articles, paying an additional royalty. Thus, I appeared in *Computerwoche* of Germany, *Computerworld Australia* and the *Asian Computer Monthly* published in Hong Kong (Figure 22.13). A sample of article titles running over a three-year period is listed in Figure 22.14.

My appearance in the press also led to a number of invitations to make presentations at various conferences. For example, I was a key speaker at the Southeast Asia Regional Computer Conference '82, held in Kuala Lumpur, Malaysia, in October of that year.^{xxvi}

Subsequently, in 1983, I authored a hardcover book based on my various articles as well as the collection of my *Softline* columns. The book, *Critical Issues in Software, A Guide to Software Economics, Strategy and Profitability*, was published by John Wiley & Sons and had a run of 2,000 copies [73]. I was now a legitimate author, receiving a modest royalty. I thought that I had arrived!

Phoebe encouraged every step in my progression as an author. I simply would not have achieved this status had she not given me a great level of confidence and support.

In late 1983, I switched my allegiance from *Computerworld* to the newly emerging *PC Weekly* published by Ziff Davis. I changed the title of the column to *Softline PC* in order to refocus my earlier mainframe orientation to that of the Personal Computer (PC). This relationship also introduced me to the editor of the monthly *PC Magazine* who encouraged me to write a feature story. The result was the 8 January 1985 epic article, "Key Forces that Will Shape the World of Computing." This commentary received a lot of attention and as we enter the next millennium, it is interesting to check my past vision of the future:

1. There will be a computer on almost every desk by the early nineties.
2. By the end of the 20th century, at least as many computers as TV sets will operate in the home.^{xxvii}
3. Computer-based word processing will be the means for recording and transmitting the written word.
4. The personal computer will be a paradigm of performance, leading the way to increased productivity.
5. Desktop computers will lead to overall personal productivity increases up to 20 percent.
6. People will communicate more and more effectively, via computer networking.
7. The widespread use of the personal computer will encourage the growth of the mainframe and departmental computer, not inhibit it.
8. The economics of computer hardware will become more and more like that of the automobile market.

9. Standardization of software is becoming the dominant influence on data processing.
10. Software will be expendable.

Based on the overwhelming utilization of the PC, my prediction regarding its pervasiveness is self-evident. Furthermore, the popularity of word processing and e-mail, together with the advent of the Internet, gives substance to my prescient views, all of which had materialized by the year 2000.

My articles for *PC Weekly* were heavily oriented to the software aspect of the proliferating desktop computers. I was biased towards writing about the implication of this new technology to the mainframe-oriented MIS organization in Fortune 1000 companies. Unfortunately, I soon found out that this new periodical's focus was aimed at beginning users of microcomputers who were not conversant with the large scale-computing becoming common in corporate America. I received more and more editorial resistance to the content of my columns and, after a dozen articles, broke off my affiliation.

I soon found a new home for *Softline* and became affiliated with the monthly, *Software News*. I had another successful run of columns as well as a prominently featured article in February 1985 introducing the idea of using a PC to file individual Federal income tax returns. My relationship with *Software News* was rewarded by recognition of the *Softline* column as shown in Figure 22.15.

During the course of these years, I was interviewed by representatives of a number of journals, thus forwarding the messages of some of my articles. Three such examples are the 5 September 1981 article in Zürich's *Finanz und Wirtschaft*, the 10 June 1985 feature in the French periodical, *Ordinateurs* and the July/August 1981 issue of the German magazine, *On-line*. I was also appointed to the Editorial Board of two periodicals, *The Computer Lawyer* and *Tech Street Journal*.

I did not realize at the time that my prolific writings would later provide a strong platform upon which I would base my independent consulting business. Several of these articles are cited on the World Wide Web to this day and can be found by doing a search on my name [see samples in Appendix III].

My Computer Related Experiences in Israel

I was no stranger to the computing scene in Israel, having made several private trips and having met a number of government and business officials. In late spring 1969, I was contacted by the economic counsel of the Embassy of Israel, regarding my willingness to participate in a special

conference which was to be held in Jerusalem. This meeting was inspired by the late Prime Minister, Levi Eshkol, who had the brilliant notion of inviting worldwide Jewish business leaders and investors to Jerusalem in order to marshal them on behalf of the economic development of Israel. The resultant meeting was called the Jerusalem Economic Conference, subsequently dubbed by the local press as the "Conference of the Millionaires." Although I was not a millionaire, I agreed to attend.

I soon received a formal invitation to attend the conference from no less than the Prime Minister, Golda Meir (Figure 22.16). The meeting's sessions were to be organized according to various business disciplines. Victor Carter of Los Angeles was the chairman of the U.S. Regional Committee. I was asked to chair the International Computer Committee. I was totally flattered by the recognition that I was receiving and only too happy to underwrite the cost of the trip and my accommodations in Jerusalem.

The arrangements for the meeting (25-29 June 1969) were extraordinary; all the red carpets were duly pulled out and the attendees were made to feel that they were very important persons. Meetings and dinners were hosted in sequence by every key government official beginning with Prime Minister Meir and including Ze'ev Sharef, Pinchas Sapir, Abba Eban, Moshe Dayan and the Mayor of Jerusalem, Teddy Kollek. The President of Israel, Shneur Zalman Shazar, honored us at a reception in his residence. Leaders of world Jewry were present. It was, indeed, an exciting time and a unique experience.

I expected to be in Israel for several weeks while Phoebe was attending to her duties as art director at Camp Louise in Cascade, Maryland. But Phoebe had noted the stimulating program of events I would be enjoying and the highly placed personages that I would be meeting. She was determined not to miss out. A few days after my arrival in Jerusalem, I received an unexpected telegram indicating that she would be arriving in Tel Aviv airport the next day. I could not believe that she had such courage and initiative.

When Phoebe arrived, she revealed how she managed to make the trip. Desperate not to miss this once-in-a-lifetime event, she sold one of her paintings to cover the expense of the airfare. She then obtained approval from the camp management for a temporary absence and, within a few days, put the trip together. I was delighted that we could share this experience together. Belatedly, I realized that I should have planned to take her with me from the start.

Our committee held a number of plenary sessions during which we debated issues that were posed to us by the conference organizers. Among the prominent overseas participants were Professor Gerald Estrin of UCLA, Frank Lautenberg of ADP (later Senator from New Jersey), Alan Benjamin (k"z) of SPL in the U.K. and a number of Israeli computer executives including Uzhiah Galil of Elron Computers; Dov Chevion (k"z) of the Office Mechanization Center (OMC),

Ministry of Finance; and Aaron Gertz (k"z) of the Corporation of Planning and Research (ILTAM), Ministry of Commerce and Industry.

The conclusions reached by the Computer Committee were brought to the closing conference session. I was quoted in the 30 June 1969 issue of the Jerusalem Post as having said:

All the investment required for setting up a computer software company is men with the right technical background and a lot of coffee.

A nice summary of the proceedings appeared in the 17 July 1969 pages of the Washington, D.C., publication, *The Jewish Week* (Figure 22.17).

Subsequent to this meeting, I maintained continued contact with Gertz and Chevion. Dov Chevion also was the Chairman of the Information Processing Association of Israel (known as IPA in English and ILA in Hebrew) and in that capacity invited the Computer Committee to organize and sponsor an international computer conference to be held in Jerusalem in conjunction with the Association's 1971 annual meeting. Professor Gerald Estrin volunteered to be the international program chairman and we were off and running in putting together a fantastic meeting. We brought to Jerusalem an ensemble of the biggest names in international computing, thereby highlighting the emergence of Israel as a center for computing.

The conference was kicked off at the Binyamei Ha-Umah, the Jerusalem convention center that I first saw in 1952 as its construction was being completed (see Chapter 19). The session opened on 16 August 1971 in the presence of the Prime Minister, Golda Meir (Figure 22.18). I was privileged to launch the five-day meeting by greeting the head of the government in remarks that were prefaced by my Hebrew greeting which encompassed the following (Figure 22.19):

Your Excellency, Madam Prime Minister
Distinguished members of the Presidium
Ladies and Gentlemen:

Good Evening and Shalom!

It is my privilege tonight to open these proceedings on behalf of the sponsoring bodies, the International Computer Committee of the Jerusalem Economic Conference, in cooperation with the Information Processing Association of Israel.

The Economic Conference is a worldwide body of businessmen and professionals working with the government and industry of Israel to further technology and business development in selected areas of the Israeli economy.

It is no accident that we find ourselves here, in Jerusalem, where we will be deliberating on the problems of applying one of the most advanced tools invented by man to the task of building and developing nations.

I then introduced the distinguished representatives on the dais who individually had made great contributions to the meeting, and acknowledged the presence of conference participants from 45 countries (Figure 22.20).

The International Computer Committee of the Jerusalem Economic Conference also held a follow-up meeting in July 1971 in conjunction with the Jerusalem Conference on Information Technology. In preparation for this session, a thorough backgrounder was prepared by the OMC, describing all of the major government data centers to assist us in fulfilling the requested terms of reference.^{xxviii}

- 1) Examination of the method of handling automation in government administration on a policy level.
- 2) Examination of the policy of computer use in government offices – centralization or decentralization.
- 3) Delineation of a method for preparation of a government automation master plan, including coordination between the work plans of various government offices.

The Computer Committee departed from these directives to take a much more pragmatic approach in dealing with their presumed mission of providing advice to the Government of Israel. The Committee focused on the infrastructure problems facing Israel with respect to exploiting the power of the computer. Consensus was reached that qualified manpower was the primary issue being faced in all countries, including Israel. Accordingly, it was recommended that the government establish a national advisory committee on manpower needs. Other recommendations dealt with candidate areas for investments and the suggestion that consolidation of the many small software companies be encouraged.

My investigations in Israel were significantly advanced by the appointment of a liaison who had enormous clout to open the doors of top management of both industry and government. He was a former Chief of Staff and a 1948 War of Independence hero, General Haim Laskov. General

Laskov gave Phoebe and me his personal attention, squiring us around to a number of sites of historic significance. He accompanied us on a tour of the battlefield of the slopes of Latrun where he had commanded the Israeli forces in a decisive battle of the 1948 war. We also visited one of his favorite locations, Kibbutz Yad Mordechai and its historic exhibits, reminding us of the struggle between the Israeli forces and the Egyptian army in the War of Independence [157].

Before leaving Israel at the conclusion of these meetings, I was rushed to the Tel Aviv office of Minister Pinchas Sapir to summarize our findings for him. Subsequently, I received a letter of appreciation from the Minister (Figure 22.21).

In May 1973, I participated in an IPA-sponsored symposium held in Tel Aviv in cooperation with the Computer Committee of the Economic Conference. I presented a paper at this meeting, "Economics of Software Products."^{xxix} This session took place in connection with the holding of the Third Economic Conference in Jerusalem as attested in the certificate shown in Figure 22.22.

There was a Second Jerusalem Conference on Information Technology and I was once more privileged to participate. This meeting also included a significant exhibit of hardware and software, representing Israeli production as well as that of companies from overseas. I convened the proceedings on 29 July 1974 in the presence of the President of Israel, Ephraim Katzir (Figure 22.23).

In addition to the various meetings that I attended in Israel, I also made a number of additional trips to that country to visit with our now resident daughter Dori, as well as to interact with local computer related businesses. In the course of these years, I became well acquainted with most of the Israeli software companies and their managements.

During the summer of 1976, I met my Israeli friend Aaron Gertz in New York. Gertz was making his periodic swing through the Diaspora in order to maintain contact with leaders of the international computer and data processing industry. He headed a Jerusalem-based agency called Corporation for Planning and Research, known in Hebrew as ILTAM. ILTAM was a small unit comprised of a few government bureaucrats and a dozen computer-oriented technologists who reported to the Ministry of Commerce and Industry, headed at that time by General Haim Bar Lev.

Gertz made me a surprising offer. Would I come to Israel for an extended period, conduct a survey of the Israeli computer industry and evaluate the adequacy of the nation's computer

usage? His objective was to have ILTAM publish the results of these investigations and make recommendations for the further growth and exploitation of computer automation in Israel.

Gertz followed the practice then current in Israel of employing a recognized overseas expert to analyze and make recommendations in a specified area of interest. Who better than the Israelis to recognize the influence of outsiders since no one can be a prophet in one's own land? I think Aaron also had a hidden agenda of finding a more prominent role for ILTAM in the infrastructure of the Government. Perhaps he thought a foreigner might make recommendations that would further feather his own nest?

The prospect of playing a role in the building of the State of Israel caught my immediate fancy. Gertz thought that a half-year study would be a sufficient period and ILTAM was prepared to foot the bill for my travel and accommodations in Jerusalem. I gave him a tentative assent, subject to discussing a leave-of-absence with my boss at Informatics.

I reviewed the Gertz offer to become an Israeli government consultant with Phoebe and our children. They knew that I really wanted to do this work, understanding that it would be my belated contribution to the State of Israel. This was the next best thing to an actual *aliyah*. With my family backing me, I then approached Informatics management to obtain consent for a temporary leave-of-absence without pay. They readily agreed, viewing this as valuable recognition for one of its executives.

I started planning for an extended stay in Israel. I targeted my departure for the fall of 1976, following the Holydays and expected to return the following spring. I had to think through all the financial issues that would be complicated by my absence, including the handling of mail, bills and other household activities and the preparation of income tax data. I organized a binder that covered all of the transactions that would likely occur. I then trained daughter Judi to handle the bank checkbook and make all the disbursements. I would coordinate by mail and do the monthly balances. The arrangement worked very well and Judi now successfully manages her own Rothenberg family accounts.

In Jerusalem, I took an apartment in the Rechavia section and lived like an Israeli, commuting on the city bus to my workplace at ILTAM. I shopped in the small mom-and-pop shops for food, cooked my own simple meals, and enjoyed the hospitality of my Suesskind cousins who lived nearby. The fact that our daughter Dori was at that time also living in Jerusalem added to my pleasure in being there.

I was given the following terms of reference for my assignment:

1. Review the government's current organization for administering the use of computers and make recommendations with respect to the future.
2. Review and comment on the general utilization of the computer among the users in government and non-government sectors.
3. Review and comment on government policy with respect to development of computer utilization and the promotion of the local electronic data processing (EDP) industry.

I mapped out a program of data gathering that would become the basis for my investigation. I assembled data that was readily available from the Bureau of Budget and other organizations. I also identified key government and industry figures who had expressed opinions or who were opinion makers. I set up personal interviews with these individuals, as well as others who occupied management positions in computer related enterprises.

Initially such sessions in the name of the Ministry of Commerce and Industry began to raise concerns among government functionaries. What might I learn and what might I recommend that would affect their position? Industry types were wont to influence me in the direction of recommending more favorable government treatment in taxes and subsidies. Government officials were worried that their empires would be disturbed. This created some fine lines that I had to walk and which I did with tact and understanding. I was especially sensitive to the rivalry that existed between ILTAM and the OMC, and I carefully maintained good working relationships with both units.

At ILTAM I met some of Israel's brightest young systems analysts and programmers. One individual stood out among them. This was my lasting friend, Larry Pfeffer. Larry was a son of Hungarian survivors of the Holocaust and had originally settled in New York. He later made *aliyah* with his wife and children and has resided in Jerusalem ever since.

Larry Pfeffer is an intense Zionist, committed to the notion that Israel be a light unto the nations. He is a philosopher who brings his humanity to the task of turning the forefront of technology into advances for society. He has an unusual talent for understanding both hardware and software. He is a tinkerer in many pots. Upon meeting him in 1976, I discovered the new world of the microprocessor, a phenomenon that had simply escaped me in the course of my work in the United States. Here, in Jerusalem, I was able to see breadboard experiments showing the power of tiny chips of silicon.

Larry also introduced me to more macro ideas. He was filled with the ambition of creating centers for innovation and exploration in Israel. He had visions of building in Israel a model Multi-Media Information System and a series of Innovatoriums, museum-like facilities that bring man and machine together. His visions were precursors to the Internet phenomenon that would only burst on the scene towards the end of the twentieth century.

Larry sought my support in convincing ILTAM management to further fund his research, requiring a modest expenditure of dollars. After seeing what he was about, I gave him my confidence. I ultimately saw, through Pfeffer's efforts, that the micro computing world was just the right area of the computing industry that was fit for exploitation by the Israeli economy. I also realized that I must bring these ideas back to Informatics and find new ways to grow our company.

While I was in Israel, I looked for business opportunities for Informatics, taking advantage of meeting young entrepreneurs with new ideas, as well as maintaining contact with existing MARK IV customers. In this connection, I visited the OMC as well as MAMRAM, the main administrative data center of the Israeli army located at the *Zahal* headquarters facility in Tel Aviv.

I continued to follow up the business I had cultivated in Iran. A year before my service in Israel, I had begun a series of trips to Teheran in order to obtain a share of what appeared to be a new overseas opportunity for sizeable contracts. Our competitor, CSC, had managed to obtain a very large amount of business with the Iranian government and already had hundreds of its employees in that country.

The Iranians, however, showed themselves to be a most difficult national group with whom to do business. We were informed that it was necessary to line up one of the Shah's family members to front any kind of significant business operation. This meant, of course, that this individual would demand a percentage of the contract's value. Indeed, a group did approach us, representing themselves as a broker and expecting to skim millions off the top of any business we would secure. We decided not to play in this ball game.

I targeted the oil and banking industry in Iran since we already had in place some MARK IV systems. I made a number of presentations and sales calls to Bank Melli and to the national oil company. There followed a succession of agonizing meetings with both organizations until it seemed that our best bet was Bank Melli. I finally managed to obtain a contract for providing communications-related consulting to the Bank and, in the process, became very friendly with

my executive counterpart. Through this experience, I learned much of the life and agony of living under the militancy of the Shah. I also became a fancier of the national dish, *chelo kabab*.

Now that I was in Jerusalem, I thought that a side trip to Teheran would be expedient since I had a small team of consultants in residence at Bank Melli. Relationships between Iran and Israel were marginally cordial at the time, making such a trip possible. It was rumored that the Shah was making secret visits to the medical facilities at Hadassah Hospital for treatment of his cancer. Also, it was said that Israel was covertly supplying Iran with vital parts for its military equipment.

Airline connections were in operation between Tel Aviv and Teheran, albeit circumnavigating the bordering Arab countries. I took an El Al flight and experienced my most dramatic trip ever. We approached the Teheran airstrip, descended for a landing and, upon touchdown, were waved off for reasons unknown to the passengers. There followed some frightening moments as we circled the field and finally landed safely.

During this trip I was introduced to a shipping magnate who was known to be loyal to the Shah and was one of his strong supporters. This executive was an Armenian, unique in the make-up of the indigenous Aryan power brokers. His company was seeking a new solution to its data processing needs and he was open for contracting with a qualified supplier. I hit an immediate accord with this man after disclosing my Jewish identity and explaining the current work that I was doing in Israel. What really did the trick, and ultimately landed us the job, was his discovery that I was consulting to the ministry of General Bar Lev. Apparently, this Armenian had done shipping business with Israel, possibly arranged by Bar Lev whom he considered his friend. Accustomed to the then intrigue-filled business world of Iran, he expressed his relief and satisfaction that he could trust me, based upon my credentials.

In December 1976, Phoebe flew to Jerusalem for a several-week stay over the New Year holidays. This gave us a chance to be with our daughter Dori, as well as an opportunity to host a party for all of our acquaintances. Phoebe also busied herself with a number of courses that she discovered, including some mystical sessions with Madame Colette Muskat, a creative artist and counselor hailing from Morocco.

My assignment in Israel had proceeded for three months at which time Walter Bauer informed me that the relationship between Informatics and The Equitable was heating up. He thought it would be best for me to return to the company and help in fighting an emerging battle. Accordingly, I had to wrap up my study in a few weeks and set about putting together a final report.

I produced two documents dated February 1977, both titled, *Exploitation of Electronic Data Processing (EDP) in the State of Israel*, one labeled as Executive Summary and the other as Detailed Report. I purposely did not evaluate nor criticize current government procedures or organizations; rather, I looked towards the future, making recommendations that would better serve the interests of the State of Israel in matters relating to the exploitation of the computer.

Basic to my counsel was the suggestion that there be established an Intragovernmental Council for Informatics (ICI).^{xxx} This unit would have the responsibility for creating government policy and overseeing the planning for EDP. Four operating directorates were proposed:

Planning–Consulting/Policy Administration, Government Liaison Desk

Development–Seeding of New Government Users

Communications–General Education and Monitoring

Technology–Technology Exploitation through R&D Grants

An ICI Secretariat was conceived as the operational unit that would have responsibility for conducting the business of the ICI. This organization would start off with a staff of a dozen personnel and perhaps double in size over the first few years. It was contemplated that most of the studies and projects undertaken by the ICI would be contracted to other government agencies or, even more likely, under tender to industry.

The report also provided statistics with respect to the size of the EDP user and supplier community in Israel and the expected growth over the period 1975 to 1985.

Prior to my return to Los Angeles, I presented my finding to the management group of the Ministry of Commerce and Industry in the presence of the General Director, Haim Bar Lev. I was duly thanked but received little assurance that any of my suggestions would ever see the light of day. Efforts were extended, however, to persuade me to make *aliyah* to Israel and become involved in the resolution of these issues. I was not prepared to go that far.

A summary of my Israeli assignment was neatly reported in the February 1977 issue of *Infonews*, the in-house organ of Informatics (Figure 22.24).

I made many more trips to Israel, maintaining my contact with the computer industry. I attended the July 1978 meeting of the Computer Committee at which time the results of my 1977 investigations and recommendations were discussed.^{xxxii} I also participated in the 1984 Fourth Jerusalem Conference on Information Technology organized by the IPA in cooperation with like professional organizations from the United States, Canada and France. A parallel session for executives was held with the theme “Economics and Management of the Information Industry”, at which I spoke on “Software– The Essential Element in any Information Solution” (Figure 22.25).

Finally, the Computer Committee and the Jerusalem Economic Conference, founded in 1971, folded and was replaced by a new initiative, the Committee for Economic Growth of Israel (CEGI) headed by Chairman Elmer L. Winter. I was asked to become a U.S. Director of this organization of worldwide business leaders and have remained involved to this day.

In time, I finally was able to turn my personal interest in the development of Israel into a real investment commitment. I oversaw the formation of an Informatics (later Sterling Software) software development laboratory at the Tefen Industrial Park in Western Galilee. Tefen is modeled somewhat along the lines of Silicon Valley, where entrepreneurs find a hospitable environment for their start-up companies. Stefan (Stef) Wertheimer, a German immigrant of the 1930s hailing from Kippenheim, fostered this project. Stef is my sixth cousin, once-removed, as a result of tracing his ancestry to our common Weil and Auerbach families.

Wertheimer was a former member of the Knesset and became disillusioned with the workings of the government. He retreated to his home in Nahariya where he resolved to demonstrate how private industry can grow the economy and foster capitalism. He proceeded to found several technology parks, such as Tefen. He also is a successful industrialist, having fully automated his export-oriented tool making company, ISCOR, by successfully introducing robotics.

Our development laboratory in Israel was given the task of building data storage management capability for operation in networked environments. The unit was formed under the leadership of Koby ben Zvi, an Israeli whom I had met many years earlier (Figure 22.26).^{xxxiii} I had been responsible for providing Koby a training period at Informatics in the U.S. After obtaining his Ph.D. at UCLA, he became an Informatics manager at Canoga Park, California. Since Koby wanted to return to Israel, we took advantage of the opportunity to assemble highly qualified analysts and programmers to produce advanced software products. This team peaked at a staff of 35 persons.

My years of activity with the Israel computing scene brought me recognition in the 1972 issue of *Who's Who in World Jewry, A Biographical Dictionary of Outstanding Jews* [134], as well as a citation in the 1980 compendium, *Biographisches Handbuch der deutschsprachigen Emigration*

nach 1933, Band I [207]. My biography also has appeared in a number of issues of *Who's Who in Israel & Jewish Personalities Abroad* [22, 23].

Entering the Age of the Personal Computer

In 1978, the possibility of an individual owning a computer became a reality. Off-the-shelf products, including PET from Commodore Business Machines, Apple II from Apple Computers and the newly introduced TRS-80 from Radio Shack, began to compete for the attention of consumers. The TRS-80, a system with 4 kilobytes of RAM, a 12-inch video display, a keyboard, a power supply, a cassette tape player and recorder, two game cassettes, a 232-page manual and Level-1 Basic, was available for the unbelievably low price of \$599. Sensing my enthusiasm and zeal to own such a system, Phoebe promptly placed a sight-unseen order for a TRS-80, deliverable in three to four months. The purchase was made with funds that she had earned and saved.

The TRS-80 arrived in March and I immediately began to write programs. I soon discovered the severe limitations of this computer's small memory when I tried to build a general-purpose application called "Homeowner's Investment Analysis." The program determined rates of return, present value of an investment, mortgage payments and several other related computations. I thought I could write an attractive application program and submit it for commercial sale to a number of organizations that were beginning to emerge as software suppliers to this nascent personal computer industry. While this endeavor was not rewarded, I did have a lot of fun and gained valuable experience in the use of these small-scale computers.

Another project involved Phoebe, who was now a practicing Marriage, Family and Child Counselor. We had heard of the Eliza experiment at MIT that involved programming a computer to simulate the transactions of a client interacting with a counseling therapist.^{xxxiii} The objective of this research was to determine the degree of intelligence shown by the response of the computer in the role of a therapist. If the client sitting at a keyboard could not distinguish the dialogue with the computer from a similar dialogue with a human, then the computer was deemed "intelligent."

Phoebe constructed a series of generic responses to likely statements that might be posed by an individual at the TRS-80 keyboard. We successfully created a program that we called "CounselMate." This program offered meaningful conversations by choosing random computer retorts from a selected, pre-stored set of generic responses, such as:

Tell me more . . .

And then what? . . .

How do you feel about that? . . .

Hmm, go on . . .

We invited several of our friends to try out the system. A few of these “clients” believed that the computer was imparting good advice. One subject actually freaked out from the “conversation” he was having with the machine. Our program was a success.

My early experience with microcomputing led me to offer extension courses at a number of colleges and universities such as the California State University at Northridge, University of California at Santa Barbara, and several other Los Angeles area colleges. I bundled up my TRS-80 system and brought it into the classroom for a hands-on demonstration, teaching fundamentals of computer operation and the Basic programming language. I offered dozens of seminars under the title: “Introduction to Microcomputers.” These courses ran for two days on weekends as well as one evening during the week for a period of several months. I trained some 400 students in a two-year period.

The TRS-80 was nicknamed the “TRaSh-80”, a completely undeserved label based on my own experience. The expertise that I developed influenced me to think of ways of introducing this new technology to the future business interests of Informatics. I saw an opportunity for my company to move into a new era of the changing computing world. The answer came at a computer exhibition where I found an offering of a desktop system that had promise of commercial value. The manufacturer was the Ontel Corporation, one of the pioneers in producing a desktop microprocessor.

I promoted two projects, one for internal use and the other to exploit our commercial software business. In the first case, I suggested the introduction of the Ontel workstation as a word processor for our own executive offices. The cost of the system that would achieve this objective was over \$10,000 and required a cost-benefit analysis to justify this expenditure. I tried to show that supplanting the \$1,000 *Selectric* typewriter with an automated word-processing system would provide a satisfactory return on investment through the greater efficiency that would be achieved in generating documents such as business plans and proposals. Fortunately, management approved this first departure from conventional office practice, more on the strength of my persuasion than the validity of any investment analysis. I was proved right when the system demonstrated sufficient benefits to warrant the introduction of several additional stations.

In the meantime, I was able to set up an experimental laboratory under the banner of Project 80. We built an end-user workstation capability tied to our mainframe proprietary software, MARK IV. The purpose of the system was to provide a workstation user with graphical displays by which requests for information could be made. Thus, individual users would have the ability to generate their own locally stored and controlled information files, would be able to connect to the mainframe for corporate data, and could then integrate all the information for ultimate presentation at a video terminal or associated printer.

This investigation led to a three-year project that ended up with a commercial product of hardware and software known as Informaticom, released for sale in March 1982. This product was an early example of what later became state-of-the-art offerings known as client-server computing.

I took my new role in corporate development very seriously and aggressively. I began to explore opportunities in connection with the burgeoning Japanese marketplace. A fortuitous contact was made with a representative of Sumitomo of Tokyo, Japan. Sumitomo had established a small beachhead in Orange County, south of Los Angeles, and was seeking to enter the U.S. computer marketplace in a significant way. They thought that a liaison with a software company could accelerate their advance toward their objective of introducing Japanese microcomputer hardware to the western countries. I was assigned to explore this seemingly golden opportunity.

By now I had a lot of practice in dancing around with prospective brides in search of a viable relationship. The ritual was well established. We first had to explore all of the possible variations of doing business together, short of either partner giving up his autonomy. Informatics always took the firm position that we would not be acquired, nor would we give up any slice of our potential marketplace. The trick was to design a joint venture company whose purview would not infringe on any of our business opportunities. Furthermore, we had the firm requirement that our P&L would not sustain start-up losses; we wanted to begin with a minority position and retain the option to take control when the investment turned the corner. On this basis, it would seem that there was not much left for the other partner, which is why we were never successful in executing this strategy.^{xxxiv}

The Sumitomo contact stimulated our thinking regarding Japanese technology and the potential for using it to strengthen our own business activity. We were open to finding advanced software products and unique hardware as alternatives to domestic offerings. I began to make a number of trips to Japan to explore these possibilities and to further our acquaintance with Sumitomo.

Before my first meeting in Tokyo, I heard of a one-day course in how to do business in Japan. I readily signed up to learn the proper etiquette and protocol of meeting and dealing with Japanese executives. I learned a few essential Japanese business terms and some phrases for polite chatter. Thus, on my arrival at Narita, I was able to greet my host with my newfound vocabulary. At the next morning meeting in the offices of Sumitomo, I was introduced as “Frank-san, and he already speaks Japanese.”

Sumitomo introduced us to the most advanced hardware developments being pursued by such companies as Fujitsu, Cannon, Panasonic and Oki. Although the Japanese were diligent in adding interesting new gimmicks that helped advance the technology, we concluded that they had nothing groundbreaking that would out-compete American skill and current domestic offerings.

I was attracted, however, to a software product being promoted at that time in Japan. I visited a computer show and saw a demonstration of PIPS on a SORD computer. This system was being promoted as a breakthrough in automating the programming needed for tabular visualization and graphical manipulation of data. What really caught my attention was the assertion that the PIPS architecture was “based on Eastern concepts, influenced by Buddhist and Indian philosophy.” Even more to that point, the PIPS software approach was said to accommodate right-brain thinking rather than the more usual left-sided approaches associated with software products developed in the West. The final decisive factor that aroused my interest and curiosity was the put-down that “an American looking at this product will probably be amazed . . . but probably will not be able to understand.”

Bottom line, this capability turned out to be nothing more than the already well accepted spread sheet technology developed in the United States.^{xxxv}

Many hours of discussion and negotiation ensued with Sumitomo. There also were many dinners and the ritual of late-night entertainment. On one trip to visit a potential vendor in Osaka, my colleagues and I spent a Sunday afternoon at one of the remaining bathhouses frequented by the Japanese male. This was an unusual experience since I was the only Occidental there. I felt that the women attendants were especially attentive to me since it seemed that I was the only one with hair on his chest.

I had gotten to know my primary contact at Sumitomo well enough for him to invite me to his home for a Sunday afternoon social visit and dinner. This was not typically done, especially with a *geijing* (foreigner), but it showed the growing esteem and depth of our relationship.

The most painful part of these discussions with the Sumitomo people was the slow pace set by the *ringi* procedure, the arduous process of seeking consensus among the management of a

Japanese company. On the other side of this equation, Informatics also struggled hard to find an accommodating relationship. In every case, we sought minority ownership with a one-sided, buy-out clause. They, in turn opted for equal ownership. The continued discussions and endless drafts of the terms of the deal finally led to the decision by Informatics to drop the entire matter.

During the development of Informaticom, I lobbied the management of Informatics continually with respect to the future of the microcomputer market opportunity and the need to move ourselves in that direction. In July 1981, I cited the Insight-Onsight market research statistic that indicated microcomputer software sales would move from an annual \$300 million to over \$5 billion in a five-year period. Little did anyone know at that time that the PC market would ultimately engulf the mainframe world.

In March 1982, I wrote a definitive white paper urging Informatics to recognize the business opportunity of the microcomputer by setting up a separate organization to be called the MICRO Development Group with the following mission:

To exploit the emerging market of the professional workstation and clustered local networks, including multifunction capability, and emphasis on information analysis.

I was not at all modest in asking that I be directed to set up and lead this organization. Subsequently, I also identified several organizations that were entering this marketplace and which could be stepping-stones for our own interests.^{xxxvi}

During the course of these advanced technology investigations, I drifted further apart from my management's direction and interest. I began to see that I was not having sufficient impact on the strategy of Informatics. My focus on microprocessors was not readily accepted and my role as a key executive was eroding. Furthermore, there were shifts in management that caused me to conclude that I was being pushed aside. I began to formulate plans to resign my position and seek opportunities elsewhere.

This began a very troublesome and stressful period in my working career since I had no idea what the future might bring. I had made no effort to seek other employment and I was fearful that I would be left in the cold, without a job and with essentially no income. My friend Al Kaplan, former CFO and recently departed from Informatics, advised me to become a computer industry consultant, a role he felt I could easily fulfill. Al helped me to feel a lot better and much more optimistic.

But, in the end, it was Phoebe who gave me the ultimate support and the confidence that I would make it. She was undaunted by the possible downside, the risk involved in not bringing home a weekly paycheck. Rather, she encouraged me to go for it, feeling that I had more to gain being on my own. I was now ready to make a move.

In mid-1982, I announced to President Walter Bauer that I would leave the company and I gave a six-month notice. There were no efforts to keep me, only proving to me the wisdom of my decision. Now, I had to work out the details of my departure, expecting to be treated rather well after the twenty years of long hours of service and dedication that I had given Informatics.

My negotiations with Bauer were not of a high quality; I had to claw my way through uncharted waters and fight for every concession. I ended up with a severance package that included a modest retirement annuity plus a one-year non-exclusive consulting agreement.

This departure from Informatics was the second time that I had officially left its employ. This time, there was a party feting my twenty-year tenure and the contributions I had made in the progress of the company. My colleagues had fun roasting me as can be seen from the truths that stood from the quips that they offered:^{xxxvii}

Werner's gut wisdom: When someone appears to be thinking great thoughts, they are probably thinking about lunch.

Werner's wish: I'd give my right arm to be ambidextrous.

Werner on work: Thank God, it's Friday. Only two more working days left in the week!

Frank's philosophy: Software bugs are always infectious.

Frank's frustration: When the math starts to get messy, Quit!

Frank's legibility: A good illegible signature is a key to success.

Frank's fault finder: When someone is kicking your ass, at least you know you are in front.

Frank's foible: A bull who carries his own china closet with him.

Frank's finale: Don't leave things unfinishe

And Phoebe was not to be left out. She was quoted as saying, "If you have to travel on the Titanic, why not go first-class?"

The graphic history of my twenty-year role at Informatics is shown in the progression of business cards that I carried, noting my position as well as the location of my office (Figure 22.27).

Becoming an Industry Consultant

I formally left Informatics at the end of 1982 and formed the Werner Frank Computer Group, a consulting company offering computer industry-related services to management in areas of organizational matters, product and marketing strategy and technology evaluations. I obtained a number of assignments to develop business plans for companies wishing to enter the vertical and horizontal markets for microcomputer-based products including word processing, database systems, general utilities, operating environments and communications.

I was not at all convinced at the outset that I should go into consulting. I thought that being associated with a product-oriented business would be wiser. I initially sought to find a promising business opportunity in areas relating to microprocessors. I had one great idea.

In the early 1980s, corporations were flooded with IBM 3270-type video terminals. These were the workhorses serving the interface needs of information workers connected to mainframe computers but there were compelling technical reasons to replace this older equipment by the PC. Unfortunately, the communications infrastructure of the 3270 was not consistent with that of the PC. The gap could be bridged by a protocol converter between the PC and the hardware adapters of the 3270, one that would be readily feasible and non-intrusive. I looked around for such a hardware/software solution.^{xxxviii}

The technical solution required that we develop a way to adapt the PC asynchronous communication port to the synchronous coaxial communication of the 3270 controller. Unfortunately, I found no hardware manufacturers that would run with me. A company in Georgia ultimately emerged with a solution called the IRMA board and took the market by storm. I felt that I had missed out on a gold mine.

I retreated to the safer role of consulting where a different kind of success came at a rapid rate. One of my first assignments was to advise my former company, Informatics, with respect to opportunities in the microcomputer arena, the very issue that had precipitated my leaving in the first place. I produced a well thought-through recommendation that once again was not adopted.

There were many small companies forming and clamoring to get into the new business that was proliferating due to the emergence of IBM's Personal Computer (PC). My writing career, plus the experimentation that I had done at Informatics, stood me well. It gave me credibility in the marketplace. I knew enough about this burgeoning technology at this inflection point in its evolution to qualify me as a momentary expert. Accordingly, I received unsolicited requests to review and evaluate new PC software. Some of these contacts and their products provided fodder for my trade press columns; others became clients for my consulting services.

My business was heavily dependent upon my own PC system located in the recreation room of our home (Figure 22.28).^{xxxix} In addition to producing my client reports, I also used the configuration to test and evaluate newly offered software. I soon outgrew this space and obtained an office at a nearby executive suite located on Calabasas Road.

Shortly before leaving Informatics, I had been approached by David Shefrin of Hartford, Connecticut, and asked to become a member of the Board of Directors of his technical training school, Computer Processing Institute. The curriculum was heavily geared to the need for trained computer technicians and programmers to feed the microcomputer manufacturing and user marketplace. David asked me to become more involved in his operation and I undertook small consulting assignments specifically aimed at expanding his business purview.

One of the contacts I made through David Shefrin was with the newly formed company, MultiMate International Corporation, headed by Wilton (Will) Jones. Will had approached David for an investment in his venture and I was asked to evaluate the opportunity. Jones' idea was to replicate the very popular minicomputer-based Wang word processing software on the IBM PC. I was enthralled by what I saw and immediately put my stamp of approval on the concept and on the reality of the early version of the software. Subsequently, Will Jones asked for my consulting assistance.

I became very involved with MultiMate, the name that was given to the company's word processing product. At the time of this product naming, Will had the idea of producing companion tools, including spreadsheet, database and graphics capabilities. Thus, the name MultiMate would cover this spectrum. I began to spend more and more time with MultiMate, serving on its Board of Directors and deriving modest fees for consulting on product development and organizational matters. I was instrumental in helping MultiMate obtain its first round of venture capital financing. This closeness to the company led to the opportunity to purchase a block of low-valued common stock.

I extended my duty at MultiMate twofold; I became an avid software Beta-tester as well as a creative source for additional functionality for the product line. I conceived among other ideas, two word-processing functions implemented by the + (insert a character) and – (delete a character) keys on the numeric keyboard. Phoebe collaborated by helping to check out new releases of the software. She prided herself in finding ways to bring the word processor to its knees by innovative selection of random keystrokes.

I undertook to use my industry contacts to help in the marketing and sales efforts for MultiMate. I take credit for two early OEM (Original Equipment Manufacturer) sales that put a stamp of approval on MultiMate. The first was an agreement reached with an innovative computer hardware upstart located in Westlake, California, close to my home. We gave rights to deliver a limited version of MultiMate with every machine that would be delivered. I negotiated the unheard-of low price of one dollar per copy for each delivered computer.

MultiMate International was mesmerized by this company's business plan calling for the sale of millions of computer units. A simple multiplication of one dollar times their expected production

would yield us revenues beyond our fondest dream. Furthermore, we had visions of follow-up sales of the full-function version of the product to these new users. Unfortunately, this enterprise never succeeded. Nevertheless, the MultiMate product was endorsed and deemed competitive with other rising stars such as the then better-known and more popular WordStar package. In fact, it became the number two microcomputer word processing seller in 1986 and 1987, somewhat behind WordStar.^{xi}

My next target was an important early fixture on the PC software scene, Softsel Computer Products, Inc (later known as Merisel, Inc.). This company was started by principals who initially re-marketed a variety of software products to large end-users and to the small computer stores that were sprouting up on the scene. Suddenly, Softsel became an overnight success and became the primary PC software distribution vehicle to retail dealers and large corporate buyers.

I approached Softsel through one of the founders who had once been an employee of Informatics. I convinced him to add MultiMate to their inventory and negotiated a deal that led to a multi-year contract. This relationship brought MultiMate into the big time and the product now became a household word.

The growth of MultiMate was startling and its employees soon numbered over one hundred. Then, seeds of organizational issues took root and began to grow. The company seemed to be running away from the control of its inexperienced entrepreneur management. Fortunately, a buyer appeared on the scene when the company was at the zenith of its operation.

I was acquainted with the top management of Ashton-Tate Corporation, located in the Los Angeles area, and provided liaison in their negotiations to acquire MultiMate in 1985. After some haggling, a cash purchase price of approximately \$20 million was reached. This transaction produced a few of the first millionaires to be born out of the PC industry. Will Jones bought a near 100-foot yacht and with his family, sailed around the world. I collected my handsome proceeds and went on to my next challenge.

I had a number of significant consulting arrangements with both hardware and software companies, all focused on the promises of the microcomputer and the emerging rich set of applications. My expertise was clearly in the area of evaluating the man-machine interface, the quality of the screens and the issue of ease of use. In this connection, I often served as a third-party reviewer in the product development cycle.

My second concentration was the area of data base management and information retrieval and reporting. I consulted with several start-ups that were producing innovative software in this

arena. My former mainframe experience, coupled with the Project 80 activity at Informatics, gave me the necessary credentials for informed views in this subject area.

Another very satisfying role came my way through the invitation to serve as a consultant and member of the Board of Directors at Sage Systems Inc., in Rockville, Maryland. This company was extending its very heavy mainframe orientation to workstation computers in the area of application development tools.

Aside from my association with MultiMate, and making a significant capital gain on the sale of its stock, my most important consulting assignment was with Sterling Software Inc. Before leaving Informatics, I had met its President, Sterling Williams, at an ADAPSO industry association meeting in San Diego in 1982. Sterling inquired about my activity and I had informed him of my imminent plan to leave Informatics. He quickly responded with the invitation to let him know when I would be a free agent since he “wanted to be my first customer.” I was elated.

Sure enough, in early 1983, I was requested by Sterling Software to create a business plan for entering the microcomputing marketplace. I produced such a scheme, including a suggestion that they look at MultiMate as an acquisition candidate. I soon found that more and more of my time was being spent in helping Sterling Software examine its strategy and in finding qualified personnel to staff its management positions.

Towards the end of 1983, Sterling Williams asked if I would be willing to serve as interim president of one of their early acquisitions, Systems Software Marketing (SSM), located in Sacramento, California. The prior owner, now the president of this division, was giving Sterling Software a lot of problems and he had to be removed. Would I be willing to spend the necessary time in Sacramento, run the operation and assist in finding a permanent executive? I would. Now Sterling Software had a chance for a close-up look at my performance on the management firing line.

They must have liked what they saw because in October 1984, I was persuaded to join the company as Executive Vice President and President of the Systems Software Group (SSG). I marked my career as an industry consultant with the business cards shown in Figure 22.29.

My Career at Sterling Software

Sterling Software Inc. was formed in 1981 by a group of investors led by Sam Wyly.^{xlii} Sterling Williams became the company President and CEO. The strategy of Sterling Software was to select highly promising niches of computer software technology in which to become a dominant supplier. In particular, the area of systems software was chosen as the prime opportunity. In

1983, four small software companies were acquired and Sterling Software became a publicly traded American Stock Exchange company.

I became well acquainted with the management at Sterling Software through my consulting efforts. I found Sterling Williams to be a dynamic leader, exceedingly bright and with a great sense of humor. A deep respect developed between us.

Chairman of the Board, Sam Wyly, also impressed me. My most memorable conversation with Sam was about his view on rewarding the individuals on his team. He was proud of the dozens of managers who had achieved personal wealth serving in his enterprises. This was a distinctly different management style than I had experienced at Informatics.

My initial duties at Sterling Software included responsibility for three operating divisions engaged in developing and marketing mainframe-oriented systems software products to large scale IBM computer users. These companies included SSM in Sacramento, California, Dylakor Division in the San Fernando Valley, California, and Software Labs in San Bernadino, California.

One of the stipulations with respect to my joining Sterling Software was that I would retain my home base in the Los Angeles area. Fortunately, all three of the divisions reporting to me were California companies. However, I did have responsibility for the international marketing associated with the products we sold, which involved many trips to Europe and a few to the Far East.

Sterling Software Inc. Acquires Informatics General Inc.

In early 1985, I received a surprising telephone call from Walter Bauer asking me if Sterling Software might be interested in acquiring the Answer product line of Informatics. Apparently, this unit was not going anywhere and the interest of Informatics management was directed towards application software, specializing in insurance, manufacturing, distribution, and financial and accounting systems. I brought Walt's inquiry to the attention of Sterling Williams who suggested that we seek a face-to-face meeting.

Soon thereafter, the three of us had dinner at Walt Bauer's business club in Westwood. We began the evening with small talk, recalling earlier years when Walter Bauer had been considering Sterling Williams for the presidential succession slot at Informatics. At that time, Bruce Coleman won out, a victory that was short-lived. Bruce became persona non grata and left Informatics in 1984 under unpleasant circumstances.

Bauer's offer to sell the Answer Division was met with a startling counter. Williams offered to buy all of Informatics. This was not something that Bauer was prepared to consider and the meeting broke up under tense feelings and an unpleasant stalemate.

The proposal by Sterling Williams to buy Informatics started Sam Wyly's entrepreneurial juices flowing at a fast clip. The more he considered it, the more enticing the idea became. Soon, targeting Informatics for takeover became a prime strategic move of the Sterling Software management group. In the meantime, the value of the Informatics common shares dropped from a high of \$34 to approximately \$18. Informatics had just completed its lackluster 1984 fiscal year and revenues from continuing operations were reported at \$191 million, with earnings essentially flat compared to the prior year. The company had divested itself of a number of units, including data services and certain insurance businesses, which added non-recurring losses to the bottom line.

We studied the organization and all of the publicly available financial data from which we constructed a pro-forma business model. We knew which of the businesses we wanted to keep and expand, which to milk and which to divest. My own familiarity with all of the players and the company's internal structure contributed significantly to this exercise. Even Phoebe was solicited to use her psychological background and appraisal skills to come up with personality evaluations and backgrounders of the Informatics principals.

Our offer to buy Informatics at \$25 per share was presented to the Board of Informatics but was viewed as an unfriendly takeover bid. The company carried cash of around \$7.20 per share on its balance sheet, had a book value of \$17.44, and was trading at \$17.38 per common share. We had rounded up financing by appealing to the then popular use of junk bonds, promoted by the now defunct operation of Michael Milken at Drexel, Burnham and Lambert in Beverly Hills, California. The Board of Directors of Informatics turned us down.

We were ready to conduct warfare to make this deal happen. We laid siege to the Informatics headquarters in Woodland Hills, California, by establishing a command center at the Bel Air Sands Hotel in nearby Westwood. The Sterling troops moved in from Dallas, ready to confront any contingency. We had lawyers, accountants, bankers, financial analysts and a host of our executives in residence at the hotel for several months. New telephone lines and fax machines were brought in to support our heavy use of communications. Our clerical support team set up an entire typing and duplicating capability. I was excited and amazed at our audacity and persistence as the drama of the attack unfolded.

The Sterling Software offer triggered an internal struggle for control at Informatics, including a proxy fight, a management buy-out attempt, a bid for control by a dissident sub-management group, and had stimulated several other third parties who now entered the fray. Informatics even

instigated litigation against Sterling Software but this was eventually squashed. This suit actually mentioned me, alleging that I might have passed confidential Informatics information to Sterling management. I had scrupulously avoided this possibility.

When it was all over, Sterling Software prevailed and bought Informatics in August 1985 for \$27 per share, which amounted to around \$135 million. The cash was raised through \$100 million of high-yield bonds and \$40 million by selling preferred stock.

We accomplished a remarkable feat. Wall Street deemed it a David vs. Goliath epic. An upstart, four-year-old company with a measly \$18 million revenue does a highly leveraged takeover of a twenty-two-year-old, \$200 million revenue company. The telling aftermath of this transaction was recorded in a Datamation piece shown in Figure 22.30.^{xiii}

I personally benefited from this cash-out of Informatics shareholders by a six-figure amount, essentially recognizing my twenty-plus years of personal commitment. In the greater scheme of corporate life, this was hardly adequate recompense but, as I was soon to discover, my real business career, rewarded by far greater financial success, was about to unfold.

Needless to say, the entire corporate office of Informatics in Woodland Hills, California, was terminated, including President Bauer.^{xiii} In a sense, the consequences were presaged; in 1964, Stephen T. McClellan had predicted the likelihood of a buy-out of Informatics in his book, *The Coming Computer Industry Shakeout, Winners, Losers, and Survivors* [180]. Here is what he said in reference to Informatics General in a conclusion carrying the subtitle "Doing too many things, none of them well:"

The company is big and sluggish. Walter F. Bauer, the longtime chairman, is 60 years of age and has managed the firm too autocratically and too monotonously for too long . . . as long as Bauer remains in charge, don't look for big dynamics here . . . by the time it decides to go for it, it may be too late. This company would make an excellent acquisition for a number of other data services or software companies.

After the acquisition, both companies were thoroughly integrated, although we divested a number of units that did not fit our long-term strategy. Our pre-acquisition planning was solid, we simply executed what we had planned and it all worked like a charm. We thought we could do no wrong!

Once again, I returned to familiar ground since I had now inherited a large part of the Informatics business as part of my SSG operation. What goes around comes around!

My Growth in Sterling Software

I concluded my first full year of operation at Sterling Software in September 1985. My SSG organization performed well beyond the year's business plan and I was awarded an unexpected handsome bonus. I had similar successes the following two years and my rewards were wonderful trips. In recognition of the 1986 results, Phoebe and I spent three weeks on the QE 2, sailing from Rio de Janeiro, Brazil, to Karachi, Pakistan, via the tip of South Africa. We enjoyed three days of the Carnival in Rio de Janeiro (Figure 22.31) preceding the voyage.^{xliv} Fiscal 1987 was another banner year and Phoebe and I were rewarded with a first-class safari in Kenya.

As my successes increased and responsibility broadened, I was duly rewarded with increasing compensation and a liberal amount of stock options which, over the years, have provided my family enormous financial security. Life at Sterling Software was grand. Most gratifying, however, was the opportunity to demonstrate my ability to manage a sizeable operation, a skill that had been unappreciated at Informatics.

After the acquisition of Informatics, the Systems Software Group was reorganized. The Answer Systems Division (including the old MARK IV product line) was added and we formed an independently operating International Division, with headquarters in London, England. Now, I really had a worldwide purview and I made many trips abroad, visiting Europe, Japan, Southeast Asia and Australia.

Concurrently, an Information Services Group was formed around the strong Informatics data services business centered in Columbus, Ohio. This organization evolved their business in the direction of Electronic Data Interchange (EDI), the paperless path to future business-to-business commerce.

In 1990, SSG pronounced its grand strategy. It was popular among software companies at that time to promote product integration and market these products through initiatives that tied them together. Thus, we conceived of an enterprise-wide approach through three thrusts: Corporate Application Management Initiative (CAMI); Corporate Storage Management Initiative (CSMI); and Corporate Data Communications Initiative (CDCI).

Our promotional material and advertisement campaign was highly appealing and successful. We were even the subject of a cover story, with a front-page photo of the SSG management team, in the June 1991 issue of *Software Magazine* (Figure 22.32). SSG revenues were now approaching the magic \$100 million level and represented the largest of three operating components of Sterling Software.

A major event in July 1993 involved the acquisition of Systems Center Inc., located at Reston, Virginia. This \$130 million-revenue company was acquired in a \$185 million-valued stock-for-stock transaction and added substantial new businesses to the SSG organization. This expanding scope led to a renaming of my group as the Enterprise Software Group (ESG), which now boasted a staff of 640 and 7,800 customers worldwide.

ESG was split into four operating divisions: Application Management, Storage Management, Systems Management and VM Software. The international division was sprung loose to become a separate group. Nevertheless, I retained responsibility for development laboratories around the globe, including Canada, Norway, Israel and Australia.

Two of the communications product families, one from Sterling Software and the other from Systems Center, were integrated and placed into the newly structured Electronic Commerce Group. Once more, Sterling Software successfully integrated a sizeable operation and demonstrated our competence in pursuing a growth strategy by appropriate acquisitions.

In November 1994, however, we did not do as well. We encountered a temporary setback upon acquiring the Atlanta, Georgia, based company, Knowledgeware Inc. This company was overstaffed, at a revenue plateau, and operating at a loss. We had every expectation of being able to turn it around and start it growing once more. We did achieve the profit-making objective immediately but found that their application modeling and development tools were rapidly losing marketplace acceptance. These products were primarily oriented to large MIS shops dependant upon the IBM mainframe and our customers were now interested in building client/server based applications. We were simply not adequately geared to serve this need.

The absorption of Knowledgeware operations into the structure of Sterling Software led to a re-organization of the Enterprise Systems Group and the split-off and formation of the Application Development Group. At this point, I had reached the age of 65 and indicated to management that I no longer wished to be a line-operating officer. In fact, I was ready to retire. I was then offered the unique position of Executive Vice President for life, with a generous ongoing compensation. My duties would consist of providing high level consulting services as requested by the CEO of Sterling Software. Thus, I entered a new phase of my then 32-year computer software career.

(Semi) Retirement and Beyond

Sterling Williams wanted to know what descriptive title I preferred. He thought that Mentor might be appropriate. He even had business cards printed with that label, reflecting once more his great sense of humor. I was not, however, about to curl up and disappear from the scene. Rather, I opted for the title of Corporate Business Development and actively participated in the on-going evolution of our strategy and acquisition analysis. I kept myself current with respect to overall industry activity. I also pursued acquisition candidates that would fit our changing focus from a pure mainframe-oriented software supplier to the rapidly growing world of distributed processing.

I continued in this role until March 1996 when Sterling Software made a substantial financial move in preparing the spin-off of the Electronic Commerce Group. The business of EDI and its E-commerce implication suddenly made this unit a very attractive asset to the investment community. Accordingly, a new company was formed called Sterling Commerce Inc., and two steps of divestiture were taken.

In March, approximately 18 percent of Sterling Commerce was sold to the public, followed in September by a complete distribution of the remaining equity to the existing Sterling Software shareholders. The value of Sterling Software shares before this offering was in the range of \$20 to \$30 and after the entire process had been completed, the equivalent value of a shareholder's two equities was close to \$100. This was a most happy outcome for all, especially the company executives who ended up considerably wealthier.

After this spin-off, the remaining company was re-organized and I moved a further step into retirement.

A unique opportunity occurred in early 1997, which brought me back out of what I then termed semi-retirement. Texas Instruments (TI) was paring down its portfolio of businesses and put on the block its software unit devoted to automating the production of application code. This organization participated in the same market area as Knowledgeware but seemed to have achieved an advantage by becoming the premier provider of component-based application development tools for distributed systems. It appeared that through the TI software business, we could solve the technology gap we had inherited with the acquisition of Knowledgeware.

The TI unit had a sizeable staff of 1300, was generating around \$250 million revenue from a worldwide customer base of 700, but was operating at a loss. Here, we had another instance of the classic case of a good organization going wrong due to over-expansion in personnel and becoming throttled with respect to their product line. The success we had had with Informatics and Systems Center, Knowledgeware notwithstanding, gave us the courage to go after this

opportunity with the aim of making our company the key provider of application development tools. We successfully negotiated this acquisition for a closing in June 1997, the total deal being \$215 million, involving a payment to TI of \$165 million and incurring one-time costs of \$50 million.

Since the acquisition of the TI software unit, I have been less directly involved at Sterling Software, limited to attending the annual spring group strategy sessions. These meetings are week-long, off-site meetings dealing in depth with the business direction being taken by a specific group. I participate vigorously in these proceedings. I also attend the annual Worldwide Customer Conference, typically held in May of each year. Over the years, I have had the good fortune to meet some of our prominent speakers pictured in the photos of Figure 22.33.

I also continued to attend the annual fall sales incentive trip called the Silver Achievement Club. Attendance at this event is awarded to overachievers from the just-concluded fiscal year. I established this motivational prize while I was president of SSG and Phoebe and I have attended each of these trips journeying many times to the various islands of Hawaii, made one trip to Cancun, Mexico, and sailed in the Caribbean.

The time came for me to remove myself as a corporate officer, and so I resigned my Executive Vice President position in November 1998. From that point on, I carried an Informatics business card showing only my name.

It would be fair to ask how my colleagues perceived me. One answer is visually depicted in the cartoon sketch done at one of our management meetings (Figure 22.34). I certainly admit to a no-nonsense, get-things-done and work-hard attitude but I always had an open-door policy with easy access to me for anyone on my staff. I made it a religion to properly and in a timely manner review down to the two levels of management which reported to me. Finally, I worked myself hardest. I was in the office promptly at the beginning of each day and, when not traveling, made it a point to always be home for the dinner hour at 6 p.m. However, I carried my bag of reading material home every night and, after the children were put to bed, worked a few more hours.

Sterling Software and Sterling Commerce became sizeable entities, boasting \$807 million and \$561 million revenue respectively for fiscal 1999. Sterling Software had a 2 for 1 stock split in April 1998, had historically made 36 acquisitions, reported that its products operated in 20,000 worldwide customer sites and employed a staff of 3,700 in 90 offices.

Towards the end of 1999, the respective executives of Sterling Software and Sterling Commerce began to question their future business prospects as well as the interest of each of the executive team's members in continuing to actively manage. A conclusion was reached by each of these two entities to pursue a sale of their company. In close succession, Sterling Software was sold to Computer Associates International and Sterling Commerce was purchased by SBC Communications Inc. Both transactions were completed by April 2000.

My employment at Informatics in year 2000 had accrued 38 years, making me the oldest employee in age as well as in years of continuing service. During this almost four-decade period, I have had many extraordinary experiences. One of the most moving of these was a business trip I took to Berlin in 1989, just after the Wall that separated the two Germanys had been sundered (Figure 22.35).

All of these adventures came to a sudden end after the sale of Informatics to Computer Associates. By virtue of my lifetime employment agreement with Sterling Software, Computer Associates still counts me as an affiliate, although I no longer have an active role in that company.

My career path at Sterling Software is reflected in the variety of business cards that I carried over the years as shown in Figure 22.36. Towards the end of my career, when I gave up line operations, Sterling Williams gave me three choices for a byline: mentor, notin, or really nothing as can be seen in Figure 22.36. I ultimately opted for "nothing." Computer Associates also has issued me a calling card, indicating that I am attached to Administration with the address "Working from Home."

I am proud to see that my son Daniel has also followed in some of these same professional paths, as noted in his business cards (Figure 22.37).

In concluding this portrayal of my long business career, I must acknowledge some of the key assistants who helped me achieve my success. I refer to the outstanding secretaries who have accommodated my personality and adjusted to my hectic office activity: Shirley Dewey, Juana Serna, Sydney Wrigley, Jean Laguzza and Barbara Jelinski.

My Role as an Investor

I was exposed to many investment opportunities during the course of my entrepreneuring years. I invested in stocks, bonds, partnerships, real estate, re-insurance, mutual funds, hedge funds and, very recently, in venture capital and security options. I have experienced qualified options, incentive options and restricted share purchases. I have dealt with deferred income and 401K

accounts, as well as IRAs and a SEPT. I have made and lost money dealing with all of these various speculation and investment alternatives.

I began my life as a modest investor purchasing common stock. I opened my first account with Merrill Lynch and was prone to agonizing over decisions about buying 10 or 20 shares at a time. I carefully orchestrated the expenditure of \$100 to \$200 and my expectations were not great. I simply needed the experience of parting with my money and watching the price of my chosen stock move up and down. I never had a really clear-cut winner in those early days. I was an accumulator, not a trader, which is how I still behave when investing in the market.

For a while, I balanced my securities investments by purchasing a modest amount of life insurance. After the children grew up, I ceased carrying life insurance beyond the term policy available from my employment. Stocks and bonds were then the mainstay of my investment activity although the role of life insurance changed in later years.

My first departure from the conventional followed an introduction to Meyer Berman by our friend, Al Madansky. Meyer was a New York broker known at the time as the "King of Shorts." He had received national recognition for some astute stock picking that triggered a sell-off and huge profits for the short sales he made in one security. The concept of shorting and the demonstrated remarkable results were intriguing and I was lured into thinking that I could make a lot of money. I became one of Meyer's clients and learned all about being *au contraire*.

My early association with Dataproducts introduced me to the benefits of qualified stock options. I saw the potential value of this conditional investment as Dataproducts stock vacillated in value. It was all paper profits and losses, but fun to calculate.

As part of the management group of Dataproducts, I was invited to participate in an investment partnership organized by Erwin Tomash. It was called MAIF, Ltd., and we raised \$330,000 amongst us; I participated at the level of \$15,000. Our major investment was \$250,000 with the Becker Technological Association, a fund operated by A. G. Becker of Chicago. I did not really understand what was going on with this investment, the reports being somewhat beyond my financial skills. I took it on faith that my more astute colleagues knew what they were doing and I just came along for the ride. The investment ran for about five years and, in 1979, it was terminated with a very modest profit to each of us.

On one trip to Israel in 1971, Phoebe and I became infatuated with the idea of owning a cooperative apartment in the Ariel Hotel, which was then under construction. The hotel was being built by a Mexican investment group in the Abu Tor part of Jerusalem, not far from where our Sueskind cousins lived. We were enthralled by the idea of having a residence overlooking the Valley of Hinnon and of being able to gaze right at Mount Zion and the southern ramparts of the Old City. We would have rights to occupy the premises for a designated period each year and, during the remaining time, it would be rented. It was an investment that had favorable tax benefits.

We executed a purchase agreement on 28 July 1971 for apartment #506. Our initial commitment was \$9,200 and we agreed to pay additional incremental amounts for a total of \$46,000 (probably equivalent in today's dollar value to \$500,000). Soon thereafter, we got wind of huge impending construction cost overruns and that the investment group would cease operation. I stopped making any further payments upon hearing that the project was being taken over by a large Israeli builder with a tarnished reputation.

At this point, I became worried about the disposition of my investment. I hired the law firm of Gideon Hausner in Jerusalem to intercede and, happily, was extricated from this venture through negotiations. All of our invested funds were returned. On future trips to Jerusalem, Phoebe and I would often walk by the completed Ariel Hotel, regretting the outcome of our attempted real estate undertaking.

I had several other experiences in dealing with real estate. In early 1995, a number of Informatics managers and executives were drawn into a web of real estate partnerships. One of our former financial executives, Emil Landefeld, was the organizer who put us together with a Dallas-based property management group. The concept was to purchase an apartment complex by putting down a small amount of capital, take out a huge 25-year wrap-around loan and cover the operating cash flow requirements by the rent. In addition, the deal included a monthly cash payment to the investor that amounted to an annual 11 percent of the invested capital. The property was the only security for the loan. The investor was betting on the excellent monthly return on his initial investment and because of the continuing rise of real estate value, assumed that he would be able to cash out with substantial profits in the near future.

It did not work quite this way. As it turned out, the property management group was running a Ponzi scheme. They began to siphon cash from their managed properties for their own use and grew their empire by buying more properties for eventual sellback to new partnerships. Actually, new monies coming in were used to finance the monthly payments to earlier investors.

We soon discovered that the apartments owned by our partnership were physically deteriorating and were in serious need of maintenance; dissatisfied tenants were not paying their rent; many units were vacant and, finally, our monthly payments stopped. We had to proceed with expensive litigation.

In the end, after a protracted legal battle and agonizing months of continuing cash needs to keep the apartments operating, we collectively settled our dispute by selling the properties to a Dallas investor who paid us a fraction of the original cost. I lost almost \$65,000 from the two partnerships in which I participated.

Two land development transactions I became involved in did not make it. In both cases, they were deals that came to my attention through the collective investment interests of Informatics management. One, in the early 1960s, involved the purchase of several lots near Lancaster, California. We speculated that there would be a building boom in that area, including the possibility of the relocation of the Los Angeles airport. Unfortunately, nothing ever came to pass and we sold the holdings, essentially breaking even.

A second deal went absolutely sour. We became limited partners in Fullerton Development Company, which speculated on a parcel of land at Diamond Bar Ranch to the east of Los Angeles. In the period December 1971 through December 1972, I made payments of \$20,000. In early 1973, we discovered that the General Partner was not carrying through with the proposed plans. Instead of using our payments to service the mortgage on the property, he squandered the money. We were faced with a total loss. The General Partner was prosecuted for fraud and spent some time in jail. Finally, after protracted court proceedings and additional legal bills, the limited partners ended up getting back around 20 percent of our investment in small monthly payments.

I made one other real estate investment. This was the purchase of several condominiums in partnership with Walter Bauer. These units were located in the Warner Ranch area of Woodland Hills. After a few years, when the real estate market seemed stagnant, we sold the units for a small gain.

I had no further interest in any real estate investment.

Through my Informatics business associates, I was introduced to Lloyds of London as an unusual investment opportunity. Lloyds is the famous organization noted for insuring almost anything and everything. It operated by obtaining the rights to the collective assets of subscribing members who are called "Names." A name would write a specified level of insurance premiums, backed by his entire assets. Lloyds writes the annual policies, collects the premiums, and then further protects the risk by laying off portions of the premiums in the form of re-insurance. If all goes reasonably well, as it had for hundreds of years, then the name would collect his share of the annual profits without actually having put up any collateral. It appeared that one could make infinite returns on the investment.

This sounded good. In fact, it was too good. I applied for membership in the late 1970s, along with my colleague Walter Bauer and other members of our Board of Directors. Part of the initiation process was to make a personal appearance at the premises of Lloyds in London and to participate in a brief ritual that assured the entrance committee that one understood the total risk that was being undertaken. I was accepted as a Name.

I wrote a premium of \$50,000 and began to receive annual payments of \$8,000 to \$10,000. This went well for a few years until two concurrent adverse events occurred. One was the sudden rash of natural disasters, including large-scale fires, floods and earthquakes, coupled with significant airline accidents. The second problem was related to the misconduct of some of the syndicates that were writing the insurance on behalf of Lloyds. I saw that things were not going well and I wanted out. I resigned my Lloyds position in 1985, escaping thereby some of the catastrophic losses that others suffered during the second half of the 1980s.

Over the years, I also was a limited partner in a number of Merrill Lynch investment schemes set up to minimize the federal income tax. These included partnerships in real estate, Hollywood films, energy production from windmills in the California desert, shopping malls and whatever else was pushed by the brokers with whom I dealt. None of these ventures ever yielded a financial benefit worth talking about. I did, however, get my tax deductions.

These schemes are no longer in vogue since the tax benefits are no longer available. Thank goodness for that. Now I have placed my assets into a variety of managed accounts that invest in equities and bond portfolios.

My Retrospective

My achievements are in a large part due to Phoebe's courage and her remarkably optimistic view of life. She has never been a worrier, always looking for the bright and positive aspects of new opportunities. She has bolstered my self-confidence, somehow making risk-taking an acceptable part of our life. She never thought for a moment that I might fail.

I am very proud that Phoebe and I have had the means to set up a charitable foundation known as the Werner L. Frank Family Foundation. Our three children are vice-presidents of the foundation and it is our intention that this institution actively continue in future generations. In the meantime, we want to instill in our entire family a sense of community responsibility. To this end, we also began to involve our teenage grandchildren in 2001. I wrote the following e-mail to them:

Dear Grandchildren:

Grandma and I have a deal for you. We want to involve you in community service and *tzedakah*. So, here is the plan.

We will write a check for \$50 from each of you to some designated charitable organization. We want you to be involved in *Tikun Olam*, which means fixing the world.

So, if you are going to participate, this is what you must do:

- 1) Select a legitimate charitable organization that you personally want to help.
- 2) Write me a short paragraph, a few sentences, that describe the nature of the organization and why you think the chosen group deserves our support.
- 3) Send me the address to where the check is to be sent.
- 4) Do this before December 1, 2001.

I will do the rest and send out the \$50 in your name.

I hope this act of kindness will make you feel good about yourself and our family.

Papa and Grandma

Here are some of the responses that I received:

From Rachel Rothenberg: I choose the charity Save the Children because I am lucky enough to have food, clothes, shelter and many other privileges. This charity helps kids in very poor countries. I am sending a holiday card to the child I am sponsoring, so please send me the check so that I may include it in the card.

From Jessica Rothenberg: Amnesty International promotes all human rights. In particular, Amnesty International campaigns to free all prisoners of conscience; ensure fair and prompt trials for political prisoners; abolish the death penalty, torture and other cruel treatment of prisoners; end political killings and “disappearances” and opposes human rights abuses by opposition groups. This is a very good cause. I was looking through their website, Amnesty International: Act Now!

From Rona Kremer: I am really impressed with your desire to help the community and teach all the grandchildren this important value as well. I would like to donate my \$50 to Habitat for Humanity. Recently, they have been robbed (large-scale) of many valuable and much-needed supplies, used for building homes for the homeless and their families. At school I have heard that they are now in great need of financial support. I will talk to my teacher for more information on the situation and tell you where to send the money. Thank you for helping us do good in the world.

The bottom line for me, however, is gratitude to my adopted country, the United States of America, for giving me the opportunity to achieve beyond my fondest dreams. I am proud that my successes have led to my having to pay enormous income taxes over the years. I am most proud of the role I played in providing jobs for thousands of workers. Horatio Alger is still alive and well in the United States.

ⁱ ENIAC (Electronic Numerical Integrator and Computer) was built to compute gunnery tables. This computer occupied a large room, operating in decimal architecture and employing 18,000 vacuum tubes.

ⁱⁱ At a later time, I undertook the mechanization of David Muller’s method for finding zeros of polynomial equations by applying the technique to an arbitrary function. This research led to a published paper in the *Journal of the ACM* in April 1958, as cited further on in this chapter.

ⁱⁱⁱ These three pioneers authored the definitive book, *The Preparation of Programs for an Electronic Digital Computer, with special reference to the EDSAC and the use of a library of subroutines*. The book was originally published by Addison-Wesley Press in 1951 and reprinted by Tomash Publishers in 1982.

^{iv} The IAC machines were known as “von Neumann machines” or of “von Neumann architecture.” The role of von Neumann, however, has been disputed as, for example, in Scott McCartney’s *ENIAC, The Triumphs and Tragedies of the World’s First Computer*, Walker and Company, New York, 1999.

^v Illiac’s word size was 40 bits, including a sign bit. Memory size was 1024 words and the storage was on a drum of 4096 words. Every effort was made to contain a program and data to minimal use of these resources by judicious

coding. This was the beginning of what would later become the Y2K problem towards the end of the twentieth century.

^{vi} This dictum was only violated once in my career. With the introduction of the IBM 709 I found a spurious error in the arithmetic logic that affected computations for an extremely small range of floating point numbers. The quandary was pointed out to IBM and they quietly fixed the problem.

^{vii} Other offers came from the U.S. Naval Postgraduate School with a salary of \$5,940, Sperry Gyroscope at \$4,956, Douglas Aircraft at \$6,000, Cornell Aeronautical Institute at \$4,680 and Westinghouse Electric at \$5,820.

^{viii} Thompson Products had made an initial investment in R-W so that its takeover was not a surprise to the financial community.

^{ix} Buck Rogers was the cartoon character of my youth who experienced outer space adventures in the twenty-fifth century.

^x I had to borrow my \$5,000 investment from my parents, which added trauma to the risk that Phoebe and I were undertaking. I was able to pay back this amount within a year.

^{xi} Forty years later, on 28 May 2002, I received the following email from Sterling Williams, my former boss at Sterling Software: "Happy Anniversary! It was on this day forty years ago that you took a major step toward revolutionizing the computer industry! You founded Informatics General! Because of you, Informatics became what it did; and because of you Sterling Software became what IT did. And in large part, because of you, the world of technology became what it is today! What a legacy! You also became a cherished friend along the way. That's even more important to me."

^{xii} Willard (Will) Gardner was a practicing Mormon from whom I first learned of the genealogical pursuits by the Church of Jesus Christ of Latter-day Saints. Will took upon himself the task of ferreting out his family by studying telephone books of towns he visited.

^{xiii} Year two and three exceeded by over a factor of two the initial business plan, producing revenues of \$813,000 and \$2,185,000, with concomitant operating profits of \$67,000 and \$169,000 respectively.

^{xiv} Published in *Displays for Command and Control Centers*, Technivision Services, Slough, England, 1969.

^{xv} The economic model of the movie industry was a more accurate analogy to the software industry. In each case, copies of movies and copies of software had little associated direct cost. The preponderance of expenses in both cases was incurred at the outset, during production. Later, it became obvious that the analogy was inappropriate. Software required continued maintenance and upgrades throughout its life cycle.

^{xvi} Informatics made a second attempt to get into the business of marketing a transaction-oriented, visual terminal-based application building system. I was instrumental in acquiring the TAPS product in 1980 in order to leapfrog the DisplayAll effort. TAPS was already operating successfully in a Navy application. We sold a development system to Drexel Burnham in order to implement an on-line, interactive system for the bond trading activity managed by Michael Milken. We were not successful and our contract was terminated. Unfortunately, TAPS did not become economically viable and was ultimately de-committed.

^{xvii} The Equitable had an additional motive. They were finding it increasingly difficult to adequately staff their MIS operations and thought that a relationship with a software company would provide backup to their expected personnel needs.

^{xviii} Equimatics actually began to operate as an entity within Informatics in early 1971, pending all of the regulatory approvals needed for becoming a majority owned operation of an insurance company.

^{xix} This concept eventually became a reality with the implementation of Life-Comm, a comprehensive software offering to life insurance companies.

^{xx} I carefully recorded these events for my file, fully expecting that some day I would need to refer to these notes. In fact, it is on this basis that I can record the events of 1974, eighteen years later.

^{xxi} The entire history of Informatics is contained in a professionally written volume, *Fulfilling the Computer's Promise, The History of Informatics, 1962-1982* authored by Richard L. Forman, dated January 1985.

^{xxii} Actually, this was not really true since the Informatics of 1979 was really the incarnation of Equimatics.

^{xxiii} I also authored a number of articles that appeared in the key monthly industry journal, *Datamation*, including the May, 1976 article, "The Second Half of the Computer Age" and the January 1980 piece, "Buzzwords Revisited." Other articles have appeared in periodicals of Argentina (*Revista Idea*), Switzerland (*Finanz und Wirtschaft*) and Japan (*Denpa Computer World*).

^{xxiv} Some of these myths have never gone away as I reminded the readers of the August 1988 issue of *Software Magazine* in my article, "The Myth is Reborn."

^{xxv} A shortened version of this series was included in the compendium *Perspectives on Information Management* published by John Wiley & Sons in 1982. It was also translated and found its way into the Italian periodical, *Sistemi*

e Automazione, beginning with the April 1979 issue under the title “Nuove Tesi Economiche sul Software”; into the Argentinian magazine, *Computadoras Y Sistemas*, beginning with issue 60, under the title “La Nueva Economia del Software”; and into the French *informatique nouvelle*, beginning with the October 1979 issue, under the title, “Logiciel: Nouveaux Aspects Economiques.”

^{xxvi} *SEARCC '82, Proceedings of the 4th South East Asia Regional Computer Conference*, “Software Strategies of the 80’s,” Malaysian Computer Society, 1982.

^{xxvii} This prediction was based on the belief that there would evolve a blockbuster consumer application for the home, having similar impact as did spreadsheet technology on business. In my article, I thought that on-line banking and financial record-keeping might be that application. We now know it is the World Wide Web that is the base of applications that encompass the entire population.

^{xxviii} This report was based on detailed interviews, guided by a structured survey of thirteen high-level government managers from a like number of organizations. I compiled a comprehensive record of these proceedings with the assistance of Fred Bacon. This was published on 1 September 1971.

^{xxix} Published in *New Horizons in the Computer Field*, Volume 13, Information Processing Association of Israel, 1974.

^{xxx} The use of the word Informatics in this context is not to be confused with my company’s name. The international community was rapidly adopting the term informatics to refer to all matters relating to the computer, unperturbed by the infringement on our copyrighted company name.

^{xxxi} Contained in *30 Years of Computers in Israel, 1948-1978*, ILTAM, Jerusalem, 1978.

^{xxxii} The sequence of events was as follows. Informatics formed the Israel subsidiary in 1982. Upon the purchase of Informatics by Sterling Software, the Tefen operation was sold to Policy Management Systems along with the insurance-related software then in development. Later, in August 1991, Sterling Software regained control of this organization and the Tefen based venture became its eighth remote software development laboratory.

^{xxxiii} The program was constructed by Professor Joseph Weizenbaum in 1967 (described in *Communications of the ACM*, January 1966, p. 36-45).

^{xxxiv} A case in point was the previously mentioned joint venture with PA Management. Here we came closest to an arrangement that satisfied our conditions. The looseness of the deal led to no demonstrable success.

^{xxxv} I was always open to finding the Holy Grail to software solutions. Another example was *The Last One*, created in the U.K. and by its name suggesting it was the ultimate software that could readily automate any application. After examining this product, I discovered that it was yet another version of an application generator similar to our own MARK IV and its later cousin, MARK V.

^{xxxvi} These organizations included Software Publishing Company and Context Management Systems where I advocated at least a minority investment in either or both of these companies.

^{xxxvii} Another attempt to analyze me was professionally generated by a handwriting analyst on behalf of Jeff Milton of Geneva, Switzerland, who wanted to understand how to build a business relationship with me. He ultimately showed me the results: Handwriting shows a fairly level headed, even tempered person who, when he gets mad, really gets mad. Very intuitive but at the same time is tied to the past, has forward thinking ideas but may not always act on them because of analysis of the past. Great leaps of faith, intuition, insight, gut feeling. Very creative and intelligent, mixed with a bit of romanticism. Mixture of printed and cursive shows originality and also ability to go in different directions. Changes mind a lot. Sense of rush, do it now then stop and consider. The thought that he may have made a mistake is haunting. Identifies himself with first name rather than last, healthy ego, good self-image. Although he can appreciate the finer things of life, this person is plain, not self adulating, wants to get the job done, modest about himself, no-nonsense and has figured out what things in life are important to him.

^{xxxviii} I tried to develop the interest of business colleagues Michael Parrella and Fred Bacon in this process.

^{xxxix} The hardware was contributed by my clients to facilitate work on their behalf.

^{xl} Source: www.utdallas.edu/~liebowitz/book/wordprocessor/word.html

^{xli} Sam Wyly was a well-known entrepreneur who had earlier founded University Computing, which subsequently became known as UCCEL. He then attempted to break the AT&T hold on communications by forming the unsuccessful Datran long-lines company.

^{xlii} The astounding success of this business deal was seen within one year of the acquisition. The high interest financing was completely replaced by a conversion of the preferred shares to common shares and the liquidation of the junk bonds by a combination of cash and lower yielding convertible debentures. The cash was generated by selling off some of the undesirable portions of the Informatics portfolio of businesses. All of the debt eventually was retired and on 28 March 1990, the company was listed on the New York Stock Exchange with symbol SSW.

^{xliii} While this marked the end of Informatics, I continued to maintain loose contact over the years with many of the management team, including Walter Bauer. In fact, on 22 June 1999, Bauer invited six of us old-timers to a dinner party that he called “Informatics Retrospective.” Walt thought “it would be fun to get together and get re-acquainted, and to discuss what happened, good and bad.” Joining Walter Bauer that evening were Marvin Howard, Richard Lemons, Richard Kaylor, John Postley, Frank Wagner and me.

^{xliiv} Sterling Williams announced my award at a management meeting. Actually, he offered me either a Ferrari or the trip. I decided on the trip. I subsequently bought two 1:18-scaled, 1984 red Ferrari Testarossa models, as a consolation. One model was presented as a gift to Sterling Williams and the second model remains on my bookshelf to this day.