



Oral History of James (Jim) E. Gallagher

Interviewed by:
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Craig Addison: To begin with Jim, can you talk about your early days, where you grew up and went to school?

James (Jim) E. Gallagher: I grew up in western Pennsylvania in a small town of Slippery Rock. I went from second grade through college there. My father was a teacher; actually a country teacher. In fact the Gallaghers came over from Northern Ireland in 1794. My great, great, great grandfather down through to my father; every one of them was a teacher and every one was a farmer. They would teach for the six or eight months during the year and then four months they were farmers. Except my father. My father taught and then he did other things in the summer. In fact, he ran a large recreation and park in western Pennsylvania. I grew up on that park and ran the pony ring and stuff like that as a kid. So I had that kind of experience. But by the time I was ready to go to college unfortunately my father was getting severe arthritis and rheumatism. By the time I was in college or to go to college, he was using crutches and pretty soon was in a wheelchair. So although I wanted to go on in teaching, I had other plans of where to go. But we lived in Slippery Rock and I could just walk across the main street and I was on campus. And I could go there for \$42 a semester registration; \$15 for the activities fee per semester and then plus my books. Through high school and in college, I had started a little business of my own which I did painting. So I could afford to go there and still have money to spare, which I couldn't do otherwise because my father was on a very limited, limited pension of less than \$50 a month.

I got appointed to the graduate school at New York University in meteorology. And when I came out of there, of course like everybody [during the war], you get appointed a Second Lieutenant. But I was assigned very soon thereafter right overseas. I went to the 15th Air Force in Italy. I was trained in a kind of a new technology then, and that was upper air forecasting only. I didn't do anything with weather or anything ever in that tour. The 15th Air Force was in Italy. The 7th and 8th Air Force was up in England, and I mention that because that's where Milt Greenberg comes into it. [After the war ended] I was one of the latter ones to come home. What they did was they took the meteorologists from the 7th Air Force, the meteorologists from the 8th Air Force, the meteorologists from the 15th and brought us all [together]...those that did not have enough points to come home. And Milt Greenberg was in the 8th or 7th. That's where I met him. There were something like 20-some officers in this one beautiful, big building. And that's where we cooled our heels for a few months until we qualified to come home. I met Milt there. I knew him in the house. But Milt was probably not quite as much a party boy as I was. We had lots of parties.

Addison: What did you do when you came back from the war?

Gallagher: I didn't know what to do. I had plans to get my doctorate. But my doctorate was going to be in administration. I wanted to be a principal of a large high school or some kind of a school system...eventually go into college somewhere. A Colonel in Europe who knew me was coming to Washington DC. And he wrote me a letter and said, "I'm going to give you a call on such and such a date." He said, "I'd like to talk with you. Could you come down to Washington?" So I caught the train and went down there and saw him on a Saturday morning. And he said, "I have a job for you here in Europe." He said, "Under Hitler the German forecasters and their meteorological organization withdrew from any international operations. We know there's going to be a lot of international air travel now, and there's been an organization set up called the ICA -- which is the International Civil Aviation Organization.

They've standardized the way information is to be prepared. And the Germans have had no experience in that. We need you to come back and set up a school. With your teaching background, we wondered if you'd like to do that."

And by golly within two weeks I was on an airplane over there. Now I left my wife again. But he said, "Look. As soon as you get settled, your wife can come over." So I was over there for a little over two years. Came back. Once again there was a quandary. What am I going to do? During the summer I painted dad and mother's house and did some chores for some relatives and so on just to keep busy and was again about ready to go to graduate school when Milt Greenberg calls. Milt's down in Red Bank, New Jersey. And he said, "How are you?" I said, "Fine. How are you? What are you doing?" And he told me. "Look," he said, "The reason I'm calling is...the Air Force is considering starting a research center in a place called Bedford, Massachusetts." I said, "Where's Bedford?" He said, "Look on a map." But he said, "I think you ought to consider it. We're going to move up there. I'm working in an organization that's going to be key and kind of the focal point for the geophysics portion of it. There are going to be two arms of it. One is going to be electronics and one is going to be geophysics." And he said, "I'd like to have you consider it." So I signed up...and we had a very outstanding doctor who headed up the organization. There were then two or three labs. We grew that into about six different types of labs. We did a lot of internal R&D for the Air Force, but also had several million in contract dollars that went to universities and so on. Milt then became director of geophysics...research director to the Air Force Cambridge Research Laboratories. And I was number two man there. But that's how we got together there.

Addison: How did you end up starting GCA with Milt Greenberg?

Gallagher: I guess about 1955, we thought...we all had worked up to positions where we were near the top of government ladder, so to speak. And that was it. We said, "Why don't we start a company?" And the summer of 1957...we [Greenberg, Gallagher and five others] worked all summer long, every weekend, Saturday and Sunday and we prepared a business plan. We even went so far as to prepare proposals of how we were going to do this. Our technique was to start a small company, take a lot of our colleagues with their PhDs and go and get government contracts. And then we would work towards the industrial applications of it. So that's what we did. We went public...I don't know when that was, '61 or '62, something like that. We went over the counter, then the American Stock Exchange and then finally the New York Stock Exchange over a period of time.

But we had now collateral that we could go out and talk. So one of the early acquisitions was...the David W. Mann Company, which was just down the road from us. They were building precision motions and so on for work that we were doing. And that's how we got acquainted with Burt Wheeler and his colleagues. They were having financial troubles at that point so we came in and bought them. We traded stock so to speak, and that's the way we acquired it. And that's how we became acquainted with a fine group of really senior technicians and inventors. But we went on a tear of acquiring. We bought Vacuum Industries, which was a manufacturer of heavy industrial vacuum equipment for titanium and so on, which was used in the new blades of the jet aircraft. Then we had a lot of experiments going on in which...we didn't have satellites in those days and we didn't have too many high flying aircraft. So we were working for some government work where we needed to get to pretty good altitudes -- up to 80,000, 90,000 and sometimes 100,000 feet. And there was a company called Viron in Minneapolis that made these kinds of balloons. We saw a possibility of using those in a different way so we were able to acquire that company instead of

just doing contract work with them. So we bought them. I think that was in 1962. What they did also was to build transponders and collecting devices for information which could be camera operated. And what we were doing was putting these balloons up at 80,000, 90,000 feet, sending them across the Atlantic, across Russia -- because that was the enemy or so-called enemy in those days -- bring them down off Japan...cutting them and bringing them down and then recovering by air, not in the water. There was a contraption developed for the aircraft that we were using that would catch them and then bring them back. And then they would analyze the cameras.

Also very soon thereafter in 1965 we acquired Precision Scientific, which was then one of the largest producers of laboratory apparatus and equipment. They built everything from chambers that are used in laboratories to mechanical vacuum pumps to just ordinary utensils that you used. Also in this area...there was a company called McPherson Instruments. They were in the area of spectroscopy. Well that certainly was up our alley. And we got very, very interested in that and bought that company because they made a whole line of spectrographs and vacuum ultraviolet instruments, which fit in well. Then we bought a number of other things like Markite, which made high precision potentiometers which we used. And we also bought another company called PaR Systems which is a company that made automatic remote handling systems.

What we were trying to do in a sense was get away from just pure, technical, high tech products into run-of-the-mill kinds of things because that's where supposedly you could make money, or at least more money than we were making on some of it. Because whenever you do this other work like in some of our operations where we made just one-of-a-kind or two-of-a-kind or three-of-a-kind, you can't make any money that way. But Precision opened that up. Vacuum Industries opened that up. McPherson Instruments opened that up. Those were good acquisitions. Like any company we were kind of "bright-eyed and bushy-tailed". We got very enamored of growth. Growth was a very important thing. So you can only grow so fast. We wanted to grow faster than fast. And you could do that with acquiring and so on.

Now those were pretty much, except for the Mann Company, those were all non-semiconductor companies. We then had by that time Tropel which was in high precision optics. The Mann Company had used some of their equipment. We had a lot of their equipment in Mann products designed to our specs for some of the special research projects in the R&D arm of GCA. And then we heard of a little company out in Palo Alto or somewhere out there which was Industrial Modular Systems, which was Art Lasch' company...that had come up with and got patents on air bearing motions that could move the wafers. Well now that tied in with the Mann Company and it tied in with Tropel with the optics. And here we had something there. So that was trying to get this semiconductor group together. Then we bought a small company making special photo resists. Then we got a company which manufactured wire bonders. Then we got Hampshire Engineering which was a local company that was electromechanical and computer specialists. So they fit in with all these companies in assisting them in automating their equipment or computerizing it or whatever was required. And then we got Pulse Measurements which was a company out there on the West Coast that made wafer testers. So that tied in. And then we got into development with a group in electron beam lithography. Well, all this kind of made sense to us in that we had really non-semiconductor markets to serve. And we were trying to build up a kind of a central group for the semiconductor related companies. And that's how this went.

Addison: Over what period of time did you acquire the semiconductor related companies?

Gallagher: They were acquired, starting in '59 with the Mann Company. '62 was Tropel, '72 was Industrial Modular Systems. It actually went from '59 to about '72. That's when we did all that. All of those came in that period of 15, 20 years. Well less than that. And we were making money. We were doing quite well. For the industry that we were in, I think we were pretty high as far as the earnings per share because we had the non-semiconductor [products] where we had higher margins. At least in the early period...that reversed later. I think you mentioned, how did you market and sell? Well, that's pretty interesting. Sales and service organizations, particularly in the semiconductor industry, needed to be centralized. You had to have some kind of central location and kind of an intelligence and an appreciation of that market. And you had to be pretty market oriented for it. So we set up a sales and service organization in the United States. Service was separate from sales. But it was all managed at one level so that there was coordination and an exchange of information.

In Japan we went with Sumitomo Shoji. And that was a long term relationship right up to the very, very end of GCA. In Europe Kulicke & Soffa had an organization and I don't know whether it was a matter of desire or a matter of finances or what...that's something that they know more about than I. But anyway we worked through them. In the early stages, our semiconductor products [sold] through Kulicke & Soffa in Europe. And that worked out very, very well. Had no problems whatsoever with that organization. We bought that organization from them when they were either wanting to get rid of it or having problems. I can't remember that part of the story.

In Korea we set up an organization. And actually in Korea we got talked into setting up...sending over parts and getting an assembly setup there. That was a big mistake. That was just an absolute big mistake. And I was part of that. I was very enthused about it. But I was green behind the ears when it comes to dealing in that atmosphere. But it did work for a while. And that was in South Korea. We even went so far as to establish a sales and service organization in the USSR. But that became rather short lived because of the international situation that was developing in those earlier days. And it just was not going to work. We were not able to get clearance for products that had this high technology, particularly in the semiconductor area, and particularly in the area of Vacuum Industries with their high technology equipment for those kinds of metals. So we had some failures. One of the things that young people fail to understand is the difference in cultures. And to really understand how to do business...we were being very typical of that age and of American culture. We were quite certain that what we wanted done we knew how, probably better than they did. And that's just not going to work. So we learned the hard way that you have to put trust, you have to monitor but you also have to educate and be educated or you're not going to make it. You have to learn the lesson and that's pretty hard for some of us to do; to listen. Probably I'm one of them, but I learned a lot from that.

GCA went along very well. We were up operating at somewhere around \$160 million a year in 1984. And a relationship developed between Jim Morgan [of Applied Materials] and Milt Greenberg...I think it might have been initiated by Jim. I'm not sure. I came into the act very soon after they started discussions. I was going to the West Coast frequently for SEMI meetings -- I was president from '78 to '80 of SEMI --- and this is in '83 and '84. I was still of course very active in SEMI as a director but not active in the day-to-day operations as I was before. I would meet Jim [Morgan], and I was kind of like a Jewish matchmaker, you could say, in that I would be carrying messages back and forth. Jim and I never talked on the floor. Usually I'd meet him in the parking lot or someplace else and pass the word on or something. Well that relationship started to get pretty warm. And it was...to me it was just an ideal relationship, because here

you had that part of the market covered by Jim's company and ours by GCA and another. Now that wasn't the whole industry by any means. But it was a good chunk. Probably our combined operations in the semiconductor industry at that time...we probably had \$100 some million in it and they [Applied] had \$120 or \$130... I forget the figure. There's \$250 million. That was a big company in this industry at that time.

Well, what happened? The general concept was to have Milt as chairman of the board. I think that was his idea, [and] Jim as president. The problem was not with Jim. The problem as I saw it was that Milt was not able to sit back as a chairman and have everything, operations and so on, run by Jim, which was Jim's concept of what the president should do. And Jim is no dumb-head. And he knew Milt and he knew that Milt was very mercurial at times. Bright. No question. Milt Greenberg was one of the brightest guys you ever saw. He could pierce through a lot of things. But he would get very contemptible about things sometimes. And that is not Jim Morgan's way of doing things as I saw it. And although the concept was there and I think they both appreciated what it meant, I think in pure and simple terms it was that Milt wanted too much day-to-day nosing into the operations or having a say, or having his henchman located throughout the forces. And that's not Jim's way of operating. One of my greatest disappointments is that that never happened. I would have just loved to have seen that go and see the two of them operate. And they could have operated as a real good team. Milt could have...played in the financial community and used a lot of the contacts that we had. Because when we started GCA there were three major families that backed us. And they probably had half the money on Wall Street. There were the Rockefellers, the Hill family and the Walker family. And the Walkers had more money than all of them. So that was good backing.

Addison: How would that have worked if the merger happened? Would Jim Morgan have moved to GCA?

Gallagher: Now you're checking my memory. No. I think Jim would have stayed. His operation and the others out there [in California] were more than just what the Mann Company had here, and that was our major holding in this industry. So therefore my idea, if I were asking then and now, was he should stay there. Because that's where the predominant amount of the work was done, on the West Coast.

Addison: I've read articles that say the ultimate downfall of GCA was the fact that the company purchased a lot of inventory in 1984, just before a big downturn in the industry.

Gallagher: The downfall of GCA was more than that. We also went and did some other things; spending money, taking on a large plant up the road of [Route] 128 with the concept that it would be used to employ people in the Lawrence area where we could get cheaper labor. It would also have the effect of giving some employment to that area. And Milt got very political at this in life. He was feeling pretty good. We all were. We were doing well and so on. And he got involved with a Senator and a couple of Representatives of this area. And they promoted that concept. And our treasurer, Ephraim Radner, did his best to disabuse them of going ahead in this direction. Ephraim was from the little red schoolhouse down here called Harvard. He had his master's degree in finance and he saw very clearly that these kinds of activities...there were others and I'm not going to even mention them...but we were spending money and commitments were being made pretty much like a drunken sailor on leave because everything was blossoming. Everything was going well.

We hit that bump during that period where some of the operations, particularly in the semiconductor industry, fell off. And we had made broad commitments in those areas. We had gone into a very large plant up in Andover, a very modern plant, a very expensive plant. And to be very frank, it was money. We were just running out of money. We started to sell off operations as best we could. But when you're going downhill, so to speak, that's not the time to start selling because what you're doing is, everybody knows your problem and they're going to give the lowest, lowest prices. So that was the beginning of our slide.

That, by the way, brings us back to Jim Morgan and his company because when things got really, really bad and the [GCA] board had to make some changes, Milt was essentially asked to leave. And others were brought in. And I worked very closely with them on trying to fulfill what they thought were the right things to do. And what happened was basically we brought in council, financial council, one of the big firms on Wall Street. Well, it's maybe just as well I forgot it, but anyway [we] worked with them. And they helped lay out plans for us. One was to continue operations but at the same time look for partnerships or sale of the operation. And of course we did finally end up with General Signal. And then that worked for a while. That certainly gave us financial stability. But then things did not work out. And Jim is one of the individuals who came in about that time...he had a whole crew come and go through the organization at two different times and was very interested in the possibility of getting a certain part of GCA, where if he had to take it all I'm sure he had a plan for divesting the other. But their analysis indicated it was not worth the risk for them, to be very frank. That was it. He would be buying something that would be a drain on where his efforts could be spent. This is I speaking. Jim may look at it differently but that's the way I interpreted it. I kept a relationship with Jim during that period and still do. But I think he made a good decision. But that was the death knell of GCA. I was the last individual at the auction when they auctioned off equipment in this great big building. All the operations had either been sold or closed.

Addison: And that was in what year?

Gallagher: It was sold to General Signal in June of 1988 and I think it was in 1990 that everything was closed up.

Addison: You were still then an employee?

Gallagher: Yes. General Signal kept me on... I don't know why they would. But they did, kept me on. I was there at the birth and I was there at the -- I guess you'd call it the cremation.

Addison: I've heard from a couple of people a story about Nikon getting into the stepper business. And the story goes, when GCA stopped buying lenses from Nikon that prompted Nikon to move into steppers. What's your take on that?

Gallagher: Well, we went to two or three places [for lenses], to be frank with you. We were over in France looking at a relationship. I was not in on that detail. I'll be honest with you. That was out of my hands. That was two other people plus Milt [Greenberg].

Addison: I also heard that after this, Nikon sent a representative to GCA to say, "Sorry, we are going to be making a stepper".

Gallagher: Yes, I knew. We were a company that if you did anything that was the least bit not in our favor, you were out of favor. And you know, that might be a good thing, but the world is a big place. And there are some bright people all over this world. And there are ambitious people all over this world. And I know we gave Sumitomo some tough times and Nikon some tough times. We even had a very large operation...which was Sumitomo GCA in Japan. We put in assembly over there, and test and sales. And service was all over there. It wasn't running from this place. We put a big investment over there. And Sumitomo put up a lot of money also. More than we did, I'm sure, in the final analysis. But if anybody came and said to us, "We are considering..." You were out the door. Goodbye. We had no patience. In retrospect...I was a little more loose about things like that. My feeling was, "Look. We've had a long relationship. Let's talk about it. Let's see how it goes." We didn't like to talk under those conditions. That was our culture. That's the way we were.

Addison: Jim, can you talk about your involvement with SEMI in the early days?

Gallagher: Well, I came on the [SEMI] board in 1972 and I was appointed secretary. And like all organizations you work up through...just like the Masons or the Knights of Columbus or anything else I guess...you work up through the chairs. And once you get in there, unless you really screw up terribly, you're bound to become president. I didn't get president [of SEMI] because I was an outstanding individual in this industry. I got to be president because I was in line and I was put in line. And that's how I got there. And I did the best I could when I got it. I took it as a very serious assignment.

One thing I wanted to mention was the area concept. All of the positions [at SEMI] were previously held by West Coast people because that's where the headquarters was of SEMI. It wasn't much of a headquarters in those days. But whatever it was, it was there. Shelly Weinig came to me and I still have the piece of paper... it was on February 25, 1977. We had talked on the phone and then he wrote me this. And he said, "Look, Jim. We don't have anybody on that board or in the office. I'm concerned about it". He said, "You've been on there for a while. Why don't we set up a system whereby we can have an East Coast and a West Coast person coming up in the ladder for presidency?" I said, "Hey. I don't see anything wrong with that. What's the problem?" Well, you know Shelly. When Shelly gets an idea, you either have to say, I disagree completely with you. Don't call me again on the subject. But if you say, "Well, it sounds like..." You're tied in. You're a captive from then on. So I...with the Presbyterian background I have, said, "Hey Shelly. It's worth considering." And of course he promoted me, which was very much appreciated. And that's how I came up through the chain in SEMI. Not a very startling thing but it was a fact.

Addison: Did Shelly have a particular authority to promote people? I thought it would have been a vote by everybody.

Gallagher: Oh, it was eventually. It had to be. But he was the one who pushed the concept. He was the father of the concept. It had to be voted on...eventually. But once Shelly gets something in his grip or teeth or whatever the saying is, it's pretty hard to get it out. And he's a pretty forceful speaker on an issue that he feels strongly about. And he felt strongly because he felt that the East Coast was supporting [SEMI] through membership and dues and so on... We had a good concentration of activity on the East Coast. And he thought it should also be reflected in the ladder of positions.

When the issue came up about whether we stay national or whether we have an international [outlook]...it seemed to me that SEMI was a U.S. originated organization. But it had a national and an international focus. To make it a complete organization it had to be international. And I never questioned it. I voted for it. Yes, there were people who felt differently. But I think time has proven that it probably was a very good choice.

Addison: Was there any during your period as president of SEMI, and I realize it was only for a couple of years, but was there any burning issue that needed attention?

Gallagher: Well, we were discussing the international aspect at that time. That was one thing. I think the thing we were talking about...because the organization is growing...is that we have to be more professional in our management. I think that was what captivated a lot of our thinking. When you have part time people directing... we had [Mary] Law and others that were very diligent people running shows and running the office and so on. But did we have a senior individual or a staff building towards senior, where we could have international representation, could look to that office as preparing papers for positions on issues, etc. We didn't have that. We had a bunch of us who would push in ideas. And we had some beautiful brains pushing them. But we had to lift our standards, to be honest with you. We were maturing. And with maturity you have to look at that one issue. Because that's the only thing that's going to keep that organization alive over a period of time. Somebody else is going to come in and eat your lunch. Take it away from you. That's the issue that was being discussed.

We were a bunch of bulls. We knew it all. Every one of us knew that he knew more than the next guy. And I knew how to run this better than you knew how to run it...we could get into all kinds of arguments. It took somebody [like Phil Gregory] at that point, who had been in the industry and come out of retirement. I have an awful lot of respect for him. And I think SEMI owes that man an awful lot for the time he spent, because he had some ill spells physically during that period. And yet he handled himself. You never heard him complain. You never heard him brag. So I was pleased to know him and was pleased to work with him. But I was also pleased to see SEMI move forward, restructure, employ and move ahead in the industry. And I think time has proven that to be a fact.

Addison: Is this when Phil Gregory was brought in to run SEMI?

Gallagher: Phil came in. I'd like to talk about Phil a little bit. I liked Phil an awful lot. I think for the time that he came in and for the time he spent was just about all that we needed Phil for. Some people felt it was a little too long. But Phil had that way of walking down the hall, putting his arms around a Shelly Weinig or a Jim Gallagher or a Jim Morgan or somebody else that might be griping about something, and just telling you that he understood 100 percent what you were talking about. He had a full understanding of it. And yet he made you feel that you'd been heard. But he didn't do a damn thing about it if he personally didn't think it was the thing to do. And he didn't do this deceitfully. The man had no deceit in him at all. He just was one of those kinds of fellows that could just fall in it and still come out and smell as pure as the driven snow.

It's been a grand, grand ride, let me tell you. Coming as a teacher in Pittsburgh High School making \$1,800 or whatever it was for nine months of teaching. It's been a long, long ride and I've enjoyed it. I've never had ulcers, but I've had close to it, but I've enjoyed it. And some of the most talented people in

SEMI, in management and in their efforts and their own companies, and their relationship with their employees...a very important thing. It's an organization to be proud of, and to be proud a member of, in my opinion.

END OF INTERVIEW