A brief history of the early days of the engineering program at the University of St. Thomas

By Fred Zimmerman

The engineering program at University of St. Thomas was a collective effort on the part of many people. Among them were respected members of the business community, adjunct faculty members who had extensive experience in manufacturing, full-time faculty members in other departments of the University, the President and Provost of the University, and influential members of the University of St. Thomas Board of Trustees.

Most assuredly, the program did not evolve because of the individual efforts of any one individual.

In the Beginning

The University of St. Thomas (then called the College of St. Thomas) was fortunate at the time to have several highly influential members of the Board of Trustees, each of whom had a strong interest in improving the competitive position of Minnesota industry. Among these were Jim Rainier – CEO of Honeywell, James Thwaits – President of 3M's International Operations, Dave Koch – CEO of the Graco, and Jerry Rauenhorst – owner of Opus Construction. These and other industry leaders, together with Father Murphy, president of the College of St. Thomas, formed the nucleus of the group supporting a manufacturing engineering program for our school.

The administrative leadership of St. Thomas and the Board of Trustees came first. Sometime around 1984, the Board of Trustees authorized a series of focus groups charged with the responsibility of investigating the feasibility of an engineering program at this institution. The focus groups were composed of influential members of the manufacturing community of Minnesota and some of the forward-looking members of the St. Thomas full-time and part time faculties. In total, about 145 people participated in the focus groups which were very intense, involving extensive conversations with the most interested companies.

I was an adjunct faculty member at St. Thomas at the time, but also had been involved with IBM, Control Data, and National Computer System. At the time, I was enrolled in the PhD program at the University of Minnesota. After spending more than 25 years in the computer industry, I took some time out to complete this degree which I had started many years earlier.

As has occasionally happened with other committees, the focus groups were not always focused. There was much worthwhile discussion of the benefits of having a manufacturing oriented engineering program present in the Twin Cities, but the many scenarios offered left ambiguity as to exactly what should be done.

The University of Minnesota was a stellar engineering school, of course, but the U of M was a bit more theoretical than applied with respect to manufacturing. What the people from industry wanted was an evening oriented graduate program which would allow companies to send their promising younger team members to study the most modern manufacturing methods which, in turn, would enable local companies to persevere against the rapidly escalating international competition that was taking place at the time.

Although the focus groups did provide a pretty good understanding of what industry needed, there was less certainty how the objective might be accomplished. As a part of the activities of the focus groups, some of us spent time going over some of the existing manufacturing engineering programs at some of the established schools such as Georgia Tech, General Motors Institute, Purdue, and most importantly the University of Wisconsin.

The University of Wisconsin in Madison was a real leader in manufacturing engineering at the time. John Bollinger was an enterprising entrepreneurial and highly respected leader in engineering education. Dean Bollinger was especially effective and working out meaningful engineering projects with important companies. I had met him earlier when he traveled to Minnesota to pitch a cooperative projects with us when I was president of the National Computer Systems affiliate Computool Corporation (later Camax and later SDRC).

Professor Marvin DeVries was chairman of Wisconsin's mechanical engineering department, during this era, and had also been the International President of the Society of Manufacturing Engineers. As a part of that activity, Marvin and his fellow professors had started what was perhaps the most respected graduate program in manufacturing engineering at that time. So, the University of Wisconsin became a principal benchmark for what St. Thomas was to initiate later on.

The focus groups were not very detailed in identifying which courses should be taught and who should do the teaching. So, after perusing the educational literature from several of the leading schools and coupling that with our collective knowledge of the kinds of industry we had here in Minnesota, I submitted a sort of straw horse curriculum consisting of around twenty possible courses which appeared both needed and doable. The names of some of the courses, along with the course numbers, were borrowed quite literally from some of the leading schools we had studied. Others, based on the perceived needs of Minnesota manufacturing, were named and submitted with course numbers consistent with the conventions we had seen in place at the leading schools. This straw horse curriculum was then submitted to the focus groups and also to the University of St. Thomas administration.

A short time later, University of St. Thomas Provost Charlie Keffer called me and asked me if I would like to come in for a visit. So I did. I had met Dr. Keffer earlier as a part of my involvement with both the MBA program as an instructor and as a participant in the focus groups where Dr. Keffer took a great personal interest. A short time later, he asked me if I might be interested in joining St. Thomas as the acting director of the Manufacturing Systems Engineering program. Several decades later, it occurred to me that nobody ever said I was done acting.

Our Official Start

The St. Thomas Engineering Program officially started on July 1 of 1985. My full-time employment started that day, but I was not alone. The people who were most active in the focus groups quickly sprang to offer assistance. Bob Johnson had been Director of Manufacturing at Honeywell and was also a past president of the Society of Manufacturing Engineers. John Pavolny had been a Vice President of 3M with excellent rapport with major Japanese, European, and US companies. John Walker, who was running manufacturing in one the Honeywell plants displayed his willingness to teach selected classes. George Gleeson, an experienced financial executive with strong experiences with manufacturing, volunteered to teach financial skills to engineers. Mike Evers, who was then Dean of the Graduate Programs in Business, and other St. Thomas faculty members were all helpful from the moment the beginning.

Our administrative staff was adequate but thin. The University assigned us an administrative person in the name of Steve Helmueller who had been a students in the MBA program. They also gave us a student worker to help with the record keeping and documentation associated with our new venture. The first location of the St. Thomas Engineering Program was not in St. Paul but in the principal building on the Chaska Campus, the research laboratory building donated by the Peavey Milling Company to St. Thomas. There was some extra space there and that's where we were located. It was actually quite a nice facility and we had no complaints.

Steve Helmueller turned out to be an enormous asset for us and he worked with us for many years as the engineering program's chief administrative person. The student worker, however, was no good. He seemed nice enough in terms of his personality, but he got everything colossally mixed up. One day, while experiencing the frustration of this situation, I was looking out

the window at Chaska and noticed there was another student worker mowing the lawn. He was doing a splendid job, very energetic – even during the heat of the August afternoons. So I went downstairs and talked to the physical plant manager for that location. We worked out a trade; our student worker for his fellow mowing the lawn. The lawn mower was Mike Ouradnik, a very astute accounting student who worked for us until he graduated and became a bank examiner. Then the quality of our record-keeping improved.

Engineering's early organizational staffing operated a lot like ushers in a church. People just show up and the collection gets taken. We were helped enormously by a plethora of well-meaning talented volunteers. In the very early days, Bob Johnson from Honeywell, John Povolny from 3M, and George Gleeson were all very helpful.

Location Number Two

After a few months, Dr. Keffer found a new place for us on the second floor of a house at 57 Portland Avenue. The facility was very appropriate for us because it was right across the street from the St. Thomas Library and just one block north of the Graduate Programs in Business with whom we cooperated on many programs and administrative matters. There were a couple of problems with 57 Portland. We shared the building with the Small Business Development Center, which had the ground floor. There was one staircase which was accessible either through the room where the SBDC held most of their meetings or through the bathroom. If we ever left upstairs, there were occasional delays in getting back to work.

Except for a two-car garage in the back of the lot, there was almost no parking at 57 Portland. But as we were forming the new engineering program, there were many people coming and going and there was no place for them to park. They begin parking on the lawn. One day, I looked out and there are eight cars parked on the lawn of 57 Portland. Some of the neighbors begin to complain and so Dr. Keffer found a new place for us on the ground floor of Loris Hall on the Seminary campus.

Early Faculty

Initially, we thought it would not be easy to start a new engineering program with no laboratories, no dedicated space, and no faculty. However, because of the large complement of enthusiastic well-wishes, it turned out to be easier than what we imagined. We also had the great advantage that nobody interfered with what we were doing. Jim Reid did set up an Academic Counsel for us, which was very helpful. The Academic Counsel was composed of respected faculty members from other departments at the University, such as Joe Hallman from Theology, Bob Woodhouse from Business, and Gene Audette from Education . They knew ways to get things and who might be helpful and they also knew which conventions of academia were most fervently cherished. We appreciated their contributions and one of the members, Gene Audette, did some excellent teaching for us in later years.

Our extended advisory group became sort of an official kitchen cabinet of engineering. Some members of the kitchen cabinet were high ranking industrial managers who just wanted to see the program succeed. Others, like John Walker, John Povolny, Bob Johnson, and George Gleeson, played more active roles in meeting with potential students, planning individual courses, and recruiting students. These people ultimately became the instructor cadre for the next several years.

At that stage, we had four suppositions as to what our graduate program should be like:

- First, we suspected that we were not yet established so that we might be better off with people who were tapering down rather than tapering up.
- Second, we understood that our customer students were busy people in their mid thirties. We were quite sure that they would not sit still for sup-par educational delivery.

- Third, we suspected that the material we presented in an evening program had to have short term application. For instance, we needed to teach not only how robots (for instance) worked, but also which robotic companies were among the best vendors for particular tasks.
- Fourth, based a Harvard study, we suspected that theoretical knowledge needs to be transmitted along with situational stories to reinforce the learning as relevant.

In general, our experienced faculty was able to meet these objectives quite handily – – even from day one. The faculty was not young. Bob Johnson was born during the administration of Warren G Harding. And John Walker was born during the reign of George VI in England. To the best of my knowledge, we didn't have anybody teaching who was born after the FDR administration.

All of these people were able to convey which elements of manufacturing technologies and managerial methods were most applicable to certain situations. John Walker did a fine job of covering the basics of manufacturing engineering such as plant layout, staffing requirements, production control, documentation systems, along with the latest engineering methodologies. He knew manufacturing well and had managed good plants. George Gleeson was able to colorfully and effectively portray what was needed in order to make money while manufacturing. George had a bulldog which he would occasionally bring to class. The bulldog's name was "Cash Flow." George also taught in the MBA program and was a successful instructor until he passed away in the fall of 2014 during the final semester of his 29 years of teaching at St. Thomas. In 1915, I was at a car dealer looking a possible newer car. The sales manager informed me that he had received his MBA from St. Thomas. When I asked him who was his favorite instructor, "He was great. I had him for three classes. I don't remember his name, but I remember he had a bulldog."

Location Number Three

Loris Hall was the oldest facility on the St. Thomas campus. It was a dormitory for seminary students built in 1894 which was being refurbished for academic purposes. From our perspective it was palatial but there was one problem during the construction. We had been allocated the north end of the ground floor of Loris Hall which consisted of a few offices and a spacious room which at one time had been the chapel for that dormitory. The construction crew had been instructed to break up the large room and make it into offices. We didn't need many offices. We wanted to make use of the large room with undedicated space. But we were new to the campus and we did not have much clout, so the construction people wouldn't listen to us. With the help of our desktop publishing system and the downloading of the logo for the city of St. Paul, we printed up a quite official-looking new city ordinance mandating that any building with 25 or more occupants would have to have at the least one room 20 feet wide in order to accommodate adequate breathing on the part of the people working there. We titled it the Breathing Space Ordinance and the document did look surprisingly official. Somewhat perplexed, the construction crew brought it to Dr. Keffer in search of a decision. Dr. Keffer was an immensely talented and insightful administrator and he quickly determined that it must be a ruse. But then he did talk to us and we made our case and we were able to preserve the large room where we could have several people situated and also enough space to have occasional meetings with visitors.

Our first classes were not scheduled to begin until the spring semester of 1986. So the last half of 1985 was spent recruiting instructors, figuring out what to teach, and recruiting students. In this latter regard, John Povolny was the indispensable primary leader. John had made many contacts during his decades of service with 3M, not only within 3M, but also with major Japanese companies and other important US companies including IBM and several others. Many people do not know that John was offered very lucrative job positions with important companies after his retirement from 3M. He declined these offers to volunteer to work for his alma

mater for nothing. John deserves at least as much credit for the success of the early engineering program as anyone alive.

Loras Hall was a good facility for us, but it had certain peculiarities. The basement, which is what we intended to use for our laboratories, was a bit of a dungeon dating back to its initial construction in 1894. With the help of the very capable physical plant crew, we were able to get the interior of the basement painted and the floor installed. The rooms were basically project rooms though one was devoted to the manufacturing process class. Through our connections with companies we were able to provide the laboratories with a moderate complement of manufacturing equipment. My old employer IBM donated a Bridgeport mill and a Hardinge toolroom lathe which had been decommissioned at the Rochester plant. Bob Johnson had a friend engaged in the importation of manufacturing equipment who donated a very functional and highly versatile manual lathe with several chucks, eight tapering system, and a full complement of collets. The Onan Corporation had provided us with an unexpected grant of $40,000 so that we could equip the labs with tools and equipment.

It was in this basement that we conducted our first class is in manufacturing processes and also conducted the extensive research in the manufacturing of the tooling necessary in the surgery and installation surrounding artificial knees and hips. This research was sponsored by Orthopedics Innovations, a local firm funded by a prominent orthopedic surgeon. At one time, this project employed 10 of our students.

One disadvantage of Loras Hall was that the men's restroom was located immediately above our manufacturing process laboratory and some of the urinals leaked. This became a particular problem for our newly found Hardinge lathe which was installed directly below a leaking urinal. We complained about the situation, but not much happened. So finally, I went to see the head of Physical Plant Operations, Jerry Anderley, to see how he would feel about it if he were the lathe. He, like so many of the people at St. Thomas, was very supportive and so he had the flush valve replaced in the urinals. After that, we could conduct our manufacturing process class in with greater tranquility.

John Povolny was an early riser and was always there with the coffee made before I arrived usually at 7:30 AM. Steve Helmueller typically arrived a few minutes later and together we mapped out what we were going to do that day and subsequent days.

One day, however, the coffee seemed exceptionally weak. John had indeed arrived early and had performed his usual duty of making the coffee with one exception. He had forgotten to load the coffee maker with coffee. We were using a large and rather elderly aluminum coffee maker that suffered from minimal cleaning, so even though John had forgotten to put in the coffee the coffee was still moderately brown.

We made it a point to visit many factories. At one point we had an internal convention of visiting at least one factory every week. Most weeks we were able to meet that objective. The visiting of plants was received as sort of a complement to the people who owned and managed them. They seemed very happy to see us and many of these people responded by sending some of their employees to our classes and by even donating occasional pieces of equipment. Kurt, Remmelle, Midwest Machinery, 3M, Bermo, Duncan Company, Productivity, and several other companies all gave supplies and equipment to our program.

Recruiting the First Students

John Povolny had a highly effective approach to recruiting students. We would go from company to company and ask to see the principal manufacturing managers, many of whom we knew. John would usually take the lead in the discussions where he would make the following argument.

"Look, you are going to want to promote somebody some day, right?"

"Of course," the person would almost always say.

"Well," John would say, "Isn't your HR department going to want you to promote the people who have the most extensive education?"

"Yea, they probably will."

"Is that who you want to promote?"

"Maybe not."

"Then why don't you take the people you want to promote and send them to school."

"Good idea."

Then, if someone asked what was necessary for someone to enroll, I would say, "You need four forms and two checks." The forms were short and the checks small, which along with John's approach, created an atmosphere where graduate engineering education became appealing to both potential students and their employers.

And that is why we were able to start our first semester with 70 graduate students.

Even at that early stage, we understood that we would have to exhibit academic professionalism, so we did require that applicants take the Graduate Record Examination. They did not have to take it right away, but they did have to take it before registering for the third class. In general, this was neither an impediment nor a problem. The accomplished engineers at 3M, Honeywell, and several other technical companies normally aced the GRE, so the impressive scores of the St. Thomas students helped attain full engineering accreditation some years later.

The First Programs

The architecture of our first programs emanated from the needs of local industry. It was not always consistent that every company wanted only advanced technical training. Some wanted to advance the technical caliber of their staff. Some wanted technical expertise, but also to be groomed for management. Others wanted to experiment by sending a promising employee to learn more about a particular subject where resident knowledge was in short supply. So, we ended up with three main programs:

- Master of Manufacturing Systems Engineering which required fourteen courses plus a major thesis.
- Master of Manufacturing Systems in connection with the St. Thomas MBA program. Fourteen courses were required, but no thesis.
- A Certificate Program where courses could be taken individually.

We did not have many certificate students, but we did have a few. One was Harold Adamson who was an up-through-the-ranks technically competent salt-of-the-earth type who did not have a college degree. Harold was very dedicated, however, and he took and completed some very difficult courses. One evening, I saw him in the cafeteria studying for his upcoming class and I asked him how it was going. He responded by saying, "Oh, fine. I'm just working here on my Lap Lace transformations."

Our Early Semesters

From our years of rattling around industry, both John and I had a pretty good idea of who were the technical and managerial leaders in the field of manufacturing in this community. We went to see them. Some of these leaders were not available to do teaching, but almost all of them had

some ideas as to who might have both the technical knowledge and the interest in advancing manufacturing to be candidates for our adjunct faculty.

In designing the manufacturing engineering curriculum, we knew that technical knowledge alone by itself would not be sufficient to attract the support of the manufacturing community. That community was looking for a rather broad variety of skills. They wanted people who were technically competent but also people who understood the mechanics of profitability and possessed leadership skills sufficient to get things done and achieve objectives.

Our first semester began in the spring of 1986 with seventy students enrolled. Among the early instructors were George Gleeson, Bob Johnson, John Walker, Bob Brattland, and myself. Some of our first semester instructors continued to teach for many years in the future.

The average age of our students was 32 years.

During the summer after our first semester, the reputation of our program seemed to spread. The students and the employers both seemed to appreciate the applied nature of our classes and the degree to which these highly experienced instructors were ably to convey how advanced technical and managerial concepts could be employed to improve the performances of companies.

Glen Thomas was an example. Glen had attended St. Thomas as an undergraduate and then went on to achieve a PhD in Chemistry from Michigan State University. From there, he went to DuPont where he ultimately became Director of Research. Glen retired and he and his wife Lenore visited St. Paul with their youngest daughter who was enrolling as a freshman at UST. Glen heard about our new engineering program, so he came over to visit. John and I asked if he would like to teach. Glen responded that he might, but they lived in Delaware.

With a possible view toward later expansion, St. Thomas had gradually acquired a few of the proximate houses in the neighborhood. We the went to see Dr. Keffer to see if we could provide you a house for the Thomas's to live in while Glen taught a class entitled "Polymer Applications in Manufacturing." Dr. Keffer arranged for it and for several years Glen taught this highly popular class once a year.

Glen had been Director of Research at DuPont at the time when it was learned that the ozone layer might be depleting -- thus accelerating global warming. The chlorofluorocarbons found in the refrigerants made by DuPont and others were blamed in the media. Glen and his team did extensive research into the cause of ozone depletion and determined that animal effusions and other factors were far more important. But then, the company decided that it did not make any difference. DuPont was the country's leading chemical company so they should be able to develop a new refrigerant, which they did. The episode was instructive to our classes, but Glen did say at lunch, "If you really want to slow down global warming, stop eating meat." I am not sure that our noted scholar John Abraham would reach the same conclusion in this era, but I suspect he might.

Distant and Local Helpers

Steve Davis was the Provost of the General Motors Institute in Flint Michigan and a very active member of the Society of Manufacturing Engineers. Steve broke in at Ford, then spent several decades in responsible positions in academic administration. In addition, he was President of the Engineering Society of Detroit which had perhaps thousands of members, so he knew many people in one of America's most important industries. We spent quite a bit of time with Steve – especially when we applied for ABET engineering accreditation a few years later. Steve was also instrumental in getting us some in-kind donations for our emerging need for laboratory equipment and examples. We received a couple of engines along with brand new Buick and Lincoln cars. The recipients of car donations from Detroit were forbidden by precedent to drive or sell donated cars. So, we kept the engines and gave the cars to Dunwoody for use in their automotive program.

Steve introduced me to Alex Maier, who was a Group Vice President of General Motors and Lewis Veraldi who was in charge of all new car programs at Ford. Both of them, along with some other Ford officials visited us at St. Thomas where Lew graced us with an impressive description of Ford's Taurus/Sable program. The highly successful Taurus had become the best selling car in the world, at the time, and Lew Veraldi became Automotive Executive of the year in 1987.

Most of the automobile executives that I have met are, in their veins, car buffs so I was able to pick these distinguished automobile executives up in my 1952 Hudson Commodore Eight which I had overhauled some time earlier. It is shown below with Veraldi and Chuck Gemusian who was head of Ford public relations.

As I was driving the group around the lovely St. Thomas campus, we passed by some of the seminary buildings. Lou asked, "Is that a seminary?" I responded by saying that it was. He then went on to say that he had been in the Jesuit seminary at one point but his Italian father thought he ought to go to work. So, Lew had started as a tool and die maker with Ford 40 years earlier.

None of the automobile executives would accept any gratuities, or even any reimbursement for travel expenses, in connection with speaking engagements. However, he and his wife did have several grandchildren. We were able to find out the names and ages of his grandchildren and so as a token of our appreciation for his generosity and spending time with our students, we sent several St. Thomas coats, T-shirts, and sweatshirts appropriate for the ages of the grandchildren with the names of each grandchild attached. A few days later, Lew Veraldi called to say that over his long career he had received a closet full of plaques. "However," he explained, "This was the only thing I ever received that my wife liked." Lew remained helpful to us, but he was not in very good health. Steve Davis and I attended his funeral in 1990.

At the same time, our friends in organized labor were also very supportive and helpful. Bob Killeen, had at one time been president of the United Autoworkers at the Twin City Ford plant. The early 1980s were a very difficult time for the automotive companies. The most severe recession since the 1930s had been devastating from 1979 through 1983. Many companies closed and many many workers were laid off. As some of you may recall, Chrysler Corporation almost went out of business at this particular time and international Harvester became us a dim shadow of its former self when it was at one time the fourth largest company in the country. That company saw its employment decline from 101,000 in 1979 to 16,000 a few years later.

Bob Killeen was well aware of the effect that a noncompetitive industrial base could have on the workers of the nation. Bob set up about giving talks to the workers of unionized plants all over the country with the message that an improvement in quality and productivity was essential to the survival of their industries and hence to their own employment. This was a very powerful message and Bob went on to become the co-director of the Minnesota Council on quality. But along the way, he was very helpful to the fledgling engineering program at St. Thomas.

Bob Killeen was a personal friend and associate of Douglas Fraser who was International President of the United Auto Workers union. Mr. Fraser had started out putting fenders on DeSoto automobiles in the 1930s. In the early 1980s, Fraser had worked effectively with Lee Iacocca to help Chrysler Corporation avoid bankruptcy.

Bob Killeen was able to arrange for Fraser to visit St. Thomas as a guest speaker somewhere around 1990. Douglas Fraser was a highly professional and accomplished public speaker, with appearance and cultured speech befitting an Oxford don. He and Iacocca were good friends and he told the story about a man coming up to him after one of his speeches. The man said, "You don't look like a labor leader. I always thought a labor leader would be a very boisterous fellow with a loud voice who would smoke cigars and pound on the table." "My good man," Fraser replied, "You've just described Lee Iacocca."

The Twin Cities Ford Assembly plant was near and dear to us at St. Thomas. We had several students from Ford and for some time we held graduate level classes at the magnificent newly constructed Ford Education Building at the Ford plant site. Many years later, I lobbied intensely both the state legislature and local government officials to see if there wasn't something we could do to provide the plant with an integrated metal stamping facility, which the Twin Cities plant lacked resulting in a major competitive disadvantage. All of the modern plants had integrated metal stamping and the Twin Cities Ford plant had none. I was able to garner the interests of some important Minnesota metal stampers who might have been willing to make investments. The UAW leadership was also supportive. But none of us were able to convince the public officials of Minnesota that keeping a highly regarded plant with 1600 well-paid employees was important to the economy of the State and the welfare of its citizens. When the plant closed in 2007, it was one of my most significant professional disappointments.

Guest Speakers

Guess speakers were always material assets to our manufacturing programs. Some of these were respected academics from other schools. Many were industrial leaders. But there were also other colorful and important speakers. One of the most entertaining was Mike Veeck, owner of the St. Paul Saints baseball team. Mike grew up in baseball, his father being Bill Veeck who at different times owned the St. Louis Browns, the Cleveland Indians, and the Chicago White Sox. Mike, himself, possessed a lifetime of baseball knowledge together with a deep understanding of what fans wanted when they attended a baseball game. So the baseball games became fun under his tutelage.

Mike was a reformed alcoholic who was deeply conscious of the tragedies that substance abuse can bring, not only to individuals but also to families. In class, he humbly related some of the experiences he had as an alcoholic. He told about one time when he was stopped by the police for weaving all over the road. When the officer came to his car window, the officer observed an open bottle of whiskey on the dash board. The officer said, "You've been drinking." to which Mike responded, "You must be Sherlock Holmes."

As a result of his own misfortunes with alcohol, Mike really tried to help both baseball players and other members of the community in defeating this and other addictions. Mike remains a fine person with a good heart. He was also very nice to our youngest son, Hans, who was struggling with cancer at the time.

Because he was so entertaining, Mike was an extremely sought-after speaker. I had met Mike on a couple of occasions and I was able to get them to speak at St. Thomas because I got Father Lavin to say a Mass for Daryl Strawberry.

Over the years, we had many interesting and knowledgeable guest speakers at our classes. Among them were the following:

- George Allen – Senior Vice President of Research and Development for 3M
- John Manoogian -- VP of Ford's Alpha Project (Advanced Proprietary Technology)
- Archie Johnson – Executive Vice President of Kimberly Clark
- Dave Koch -- CEO of Graco
- Rudy Boschwitz – Retired US Senator
- Bob Faffield – CEO of Banner Engineering
- Alan K. "Bud" Ruvelson -- a prominent venture capitalist
- Bruce Hertzke – CEO of Winnebago Industries
- Chuck Maitland -- Plant Manager of Twin Cities Ford Assembly -- previously with General Motors.
- Doug Iverson -- CEO of Nucor Steel
- Sidney Sepacky -- VP of Product Development for General Mills
- Don Stolz -- Owner of the Old Log Theater
- Jim Ranier – CEO of Honeywell
- Bob Lumpkins -- CFO of Cargill
- All four of the CEOs of Pentair – all of whom are left handed engineers
- And many many others.

Classes in Different Places

It soon became clear to us that manufacturing was significantly more geographically dispersed than business generally. During the 1990s, which was a relatively good time for manufacturing, 1.4 million manufacturing jobs were lost in the metropolitan counties of the United States. During the same time period, more than 400,000 manufacturing jobs were created in the non-metropolitan counties. Even the manufacturers that do operate in metropolitan counties have most of their operations quite some distance away from the core cities where most universities are located. So, we quickly realized that many of our customers would not prefer to drive fifteen or twenty miles and battle the traffic and parking issues commonly associated with major college campuses. St. Thomas was better off than some schools because that university had campuses in St. Paul, Minneapolis, Chaska, and Owatonna. The engineering program held classes in all of those locations plus others. For thirteen years the St. Thomas engineering program held classes in Hutchinson, Minnesota where there were two 3M plants and a large Hutchinson Technology plant making parts for most of the countries disk drives. Later on, we held classes in Anoka because of the Pentair plants and companies located in the northern metro. Our willingness to bring the classes to these locations was much appreciated by the manufacturers.

Research

It was clear from the very beginning that we were not going to be able to become respected as a first-rate engineering school without at least some notoriety in the form os respected research. This was awkward for us because it had been several decades when any of us had enjoyed the benefit of advanced technical university courses. However, we did have one advantage in that

we had a pretty good idea of what was going on in the current industrial world and also which of the emerging technologies had potential for appropriate applications.

It was helpful that both Bob Johnson and Bill Huot of Minneapolis-based Huot Manufacturing had both been presidents of the Society of Manufacturing Engineers at the national level and both continued to be active in that organization. Over time, we did get to know many of the key personalities in SME and we did present a number of articles and studies at the well-attended SME conferences. It was at these conferences that were able to make connections with companies and people that were helped us later, such as Kenneth Iverson of Nucor.

As I look at the St. Thomas Engineering Program today, I am so impressed by the research work done by John Abraham, Mike Hennessey, Greg Mowry, Sarah Baxter, Camille George, Ann Marie Thomas, and so many others. The School is doing such a good job and I am so glad that the research achievements of the St Thomas School of Engineering have become so prominent.

Publicity

One day, Mark Dienhart stopped by to see us. Mark was vice president of external affairs for the University at that time and he was making the case that we needed to do something to gain more publicity. Quentin Hietpas was the University's principal fund raiser and he was good friends with Dave Beal who was a prominent business columnist at the St. Paul Pioneer Press. Dave produced a full-page article on our new engineering program which detailed some of the activities we had going on and some of the plant visits we were making. This article was quite helpful to us and expanded our notoriety to the extent that people began calling us asking advice on certain technical problems or more commonly how they might send some of their employees to benefit from the educational programs we were offering.

Much of the publicity we received was related to two factors. First, we did know a lot of companies and this became known to the media companies. Reporters and editors would quite frequently call us when they were doing stories on the local companies or developments in the national economy. This was only partly due to the fact that we were out and about quite a bit. It was also related to our being available. Jim Winterer of the St. Thomas news service knew how to get a hold of us at almost any time and he routinely made these phone numbers and schedules available to the media people who almost always on deadline.

Gary Eichten of Minnesota Public Radio also showed an interest and he invited me to participate as a guest on his Midday program. Over the years I had appeared on his programs several times and Gary and I are still friends today. Gary, of course, was also host to many of the states political personalities including instances where opposing candidates appeared on his program at the same time. On one occasion, and obnoxious incumbent appeared within equally of noxious challenger. The debate became so heated that Gary could not get a word in edgewise, so he sort of lost control of the discussion which seldom happen to him. I felt sorry for him so I went down in our basement at home and turned a gavel for him on our lathe. I thought the gavel would help him retain control of the discussion. I don't think the candidates have reappeared, but Gary still has the gavel.

On one occasion, I was invited to appear on a special Twin Cities Public Television with some people from the University of Minnesota and a few people from some of the leading companies. The subject was graduate level technical education opportunities in the Twin Cities. Lore Sturdevant from the Star Tribune was moderating the discussion ans she asked me, "What is the difference between the University of St. Thomas and the University of Minnesota?" I replied with what I thought was a truthful and sincere response, "They are smarter than us, but we know more people." I have always thought it was in the best interests of our program to have excellent working relationships with the University of Minnesota – and other schools.

As our program grew, we needed additional administrative help beyond that which Steve held Mueller so capably provided. Marilyn McGee Powell was hired. She was exceedingly capable and at a later stage in her life was the recipient of an important McKnight award for poetry. She also had the very important fringe benefit of having a husband who was a machinist. John Powell was helpful to our program by describing to Marilyn what it was that someone was talking about.

Marilyn Magee was an excellent writer. So when we had to decide what Steve would do and what Marilyn would do it was a simple choice. Steve was to be in charge of numbers; enrollments, tuition payments, credits, everything with numbers. Marilyn was to be in charge of words; everything that was written including program descriptions, announcements, and other communications. Our department was an early adopter of desktop publishing, so we were quite well equipped for that era. Marilyn was excellent at using it and it is not an exaggeration to say that office work would not fully utilize her extensive capabilities.

Publications

At one point, the University had allocated some money for us to do advertising. We didn't really know how to use it. We had quite effective low-profile announcements that we would send to the companies with whom we had contacts -- always on yellow paper and always without envelopes. That worked well, so we really didn't need to place any advertisements. Our president, Father Murphy, did not spend much of his time in meetings. Instead, he would frequently walk about the campus meeting whoever he could to get a general impression of how things were going. On one occasion, I met him crossing the mall and he asked me if there's anything we needed. I didn't think so but I wondered if he would have any objection if we use the advertising money for something other than advertising. He said, "What do you want to do?"

I responded that we would like to start a journal, an academic journal devoted the applied aspects of manufacturing technology rather than the theoretical aspects which nearly all of the academic journals were treating. Father responded by saying, "Good idea. Do it." Then he shook hands and walked on.

A few weeks later, we turned out the first edition of the *Journal of Applied Manufacturing Systems* which featured articles submitted by respected authors from several universities and influential companies. The Journal came out twice annually from 1988 to 1998. Just prior to our accreditation visit, we received a very prestigious award for the Journal of Applied Manufacturing Systems from the Society of Manufacturing Engineers. That award was perhaps important in our gaining full engineering accreditation at an early stage in the life of our program. We received many articles for the Journal from different universities as far away as Ukraine. We should have perhaps worked harder at keeping it going.

The ability of the Engineering Department to produce professionally looking printed type-set documents was a major plus for us. Marilyn Magee and Carmen Peota were both extremely talented as editors and in their use of state-of-the-art publishing software. We named this effort the St. Thomas Technology Press and Marilyn got us set up with all of ISBN numbers and registrations with the Library of Congress.

In addition to the Journal, the St. Thomas Technology Press also did some books. Among them was an interesting book by Murray Harpole, the founder of Pentair entitled *Living the American Dream -- Pentair the First 25 Years*, which is still available by book sellers today. Ed Rzepecky's book, *Packaging and Environmental Issues* was also published. On two occasions, we received grants from a State of Minnesota department to write and publish *The Status of Manufacturing in Minnesota -- 1998* and *The Status of Manufacturing in Minnesota -- 2003*. These were also published by the St. Thomas Technology Press. Other Manuscripts produced were, *Measurement of the Industrial Economy, The Relocation of Industry,* and *Turnaround is Fair Play and Efficient Production*. These later two were republished later by Dearborn and McGraw-Hill.

Thesis Program

The Master of Manufacturing Systems Engineering was a thesis program from the very beginning and that was another aspect in achieving full ABET accreditation at an early stage. We had a standard thesis format consisting of five specified chapters. We also held a special class session on how to construct an academic masters thesis of acceptable quality. The committee for each thesis consisted of three member – at least two faculty members and occasionally a Company representative. Among the dissertations completed are the following:

Author	Thesis Title
Alowonle, Rilwan	Gravimetric Blending of a Ratio Mixture of Polypropylene Pellets and Nordel Rubber
Anctil, Dennis Michael	Applying Computer Controls to Correct Rotor Imbalance on Computer Disk Drives
Ames, Mark D.	Waste in Industry in the Minneapolis/St. Paul Geographical Area
Barrett, Thomas H.	PVC Coating Alternatives for the Playground Industry (May, 2000)
Bachinski, Thomas J.	High Performance Teflon Laminated Media Without Chemical Binders
Blaskowski, Matthew L	Web-based Machine Control as an Alternative to Traditional Human/Machine Interfaces(July 2004)
Brown, Larry S.,	Development of Methods to Automate the Measurement of Reflective Sheeting Appearance Properties which are Modified During the Weathering Process
Chandler, Mark	A Critical Dimension Scanning Electron Microscope Cost of Ownership Model for a Specialty Wafer Fab. (November, 1999)
Cooper, Scott	The Application of Advanced Manufacturing Technologies in a Machine Shop
Cotner, Richard C.	Optimization Strategy for Dynamic, Stochastic Processes with Multiple Input Variables and Multiple Performance Objectives; with Application to Photographic Film Research and Development
Coyle, Todd	Combined Cycle Power Plant as an Efficient, Economical and Reliable Power Source for the Generation of Peaking, Intermediate and Base Load Electricity.(December, 1999)
Dirkx, Jeff,	The Application of Ultrafine Carbide and the Future of nanophase Carbide in the Stamping Industry
Dockendorf, James L.	Effects of Deposition Parameters and Surface Conditions on the Adhesion of High Purity Thermally Evaporated Aluminum Thin Films on Silicate Glass Substrates
Erickson, Pamela E.	Enhanced Device Level Screening Outperforms Established Combined Temperature å Vibration Methods of Environmental Stress Screening in Select Military Flight Hardware
Fick, Michael J.	Implementation of Paperless Shop Floor Control in an Electronic Module Assembly Environment
Flolid, Stuart J.	Optimizing the Performance of a 2.15 GHz Oscillator using SQC Tools
Hanson, Scott	A Confidential Thesis on Stent Manufacturing (June,2000)
Hoeft, Timothy J.	Maximizing Total Cost Efficiency Through System Flexibility in Processing Drawn, Three Dimensional Sheet Metal Components: Replacing Traditional Press and Die Operations with Multi--Axis Laser Cutting
Hollen, Michael K.	Rethinking Equipment Layout for Efficient Operation
Johnson, Karl	Electrical Discharge Wire Cutting: An Inquiry into the Selection of Wire Electrodes for Rough Cutting Nickel Iron Cobalt Alloy for an Aerospace Application
Keller, Jeffrey J.	Improving the Odds by Corporate Level Funding of Interdivisional Electronic Database Formats and Protocols
Kinney, Jeanne E.	Use of Static Dissipative Floor as an Alternative to Wrist Straps in the Assembly of Military and High Reliability Commercial Circuit Boards
Koehler, Raymond	An investigation of the Influences of Wire Geometry in the Cross Wire Welding of Austenitic Stainless Steels

Krob, William A.	Managing Product Life Cycle in a Supply Chain Context A prescription for Improved New Product Development (June 2003)
Kvalheim, Jeffrey A.	The Development of a High Accuracy Chemical Bonding Module for Tetra-methyl Ammonium Hydroxide Based Developers in the Semiconductor Industry(July 2002)
Liberko, Anthony	Hygrodynamic Changes of Mechanical Attributes in a Laminated Disk Drive Suspension (June, 2005)
Liebl, Michael	The Effects of Contact Resistance during Wafer Production Probing (May, 2000)
Lemke, Scott	Machine Effectiveness Measurements and the Performance of Production Equipment
Lindsley, Christine A.	Automating the Capital Evaluation Process for Intel Corporation (December, 1999)
Lundsgaard, Mette A.	Exploring Contract Manufacturing
Major, Ron	The Application of Thermal Analysis on a Disk Array
Meade, David J.	The Importance of Manufacturing Execution Systems in the Implementation of Computer Integrated Manufacturing(June, 2001)
Mohammed, Zachery	Heat Transfer in Heaters in Integrated Circuit Manufacturing (June, 2005)
Monson, Robert J.	A Technique for the Automated Analysis and Grinding of Curvilinear Supports
Murray, Neil	Aqueous Cleaning of High Reliability Commercial Electronic Assemblies as an Efficient Alternative to CFC Solvents
Nicholson, Kevin M.	An Analysis of Leadership Techniques for Improving Productivity within the Context of a Supervisor--led Natural Work Team Employee Involvement System
Nottestad, Daniel	Capacity Planning, Scheduling and Equipment Selection Using Discrete Event Manufacturing Simulation (August 2002)
Olson, Robert	Some Limitations of Existing Theory for Modeling Stresses in Wound Roles of Bi-directional Profiled Webs
Osborne, Paul	An Experimental Program in Improving Welding Design in the Defense Industry(January, 1999)
Peterson, Brad	An Assessment of the Impact of Downsizing on the Knowledge Base of Companies
Peterson, Michael J.	Improvement and Technology Assessment in Solder Paste Application for Surface Mount Devices Using the Application Method of Stenciling with Vapor Phase In--line Reflow Soldering
Phrommathed, Promma	New Product Development Success -- Impacts of Innovation Strategy, Organizational Learning, and Market Conditions (June, 2003)
Pietruszewski, John E.	An Inquiry into the Suitability of Abrasive Belt Machining of Composite Materials in an Aero-ballistic Application
Radke, Kathleen M.	Diagnostic Expert System Technologies Applied to Maintenance and Repair of Integrated Circuit Processing Equipment
Ramunno, Anthony J.	The Effect of Signal Transmission Cable Electrical Noise Propagation, in an Operating Nuclear Power Plant Environment, on Spurious Activation of Equipment by Radiation Monitoring Instrumentation
Rogers, Michael	Rubber Shock Bumpers: A Research of Factors in Design and Manufacture that Affect Performance and Life of Nail Gun Bumpers (July, 2004)
Roddy, Patrick J.	Optimization of the Core Bead Manufacturing Process for a Multi-particulate, Controlled Release, Oral Dosage Form Utilizing a Factorial Experimental Design
Rottier, Eric M.	Steady State Manufacturing(Summer, 2000)
Schuelke, David S.	Optimization of the Product Design to Production Process of Injection Molded Products by the Custom Molder through the Integration of Technology and Systems
Steele, Carolyn	Programmatic Supplementary Production in the Defense Industry
Steinacker, Gregory)	The Implementing of Roller coating of Liquid Photo-resist as an Alternative Process to Dip Coating for Manufacturing Photochemically Milled Precision Computer Components (April, 2001
Terpstra, David	Lessons Learned from a Post Mortem of a New Product Development Project for a Small, Chemical, Electro-Mechanical, Programmable Device. (May, 2003)

Thome, Michael E.	The Benefits of Implementing an Integrated Pictorial-based Manufacturing Process and Assembly Instruction System in a Custom Manufacturing Environment (December, 1999)
Tyner, Richard D	Employment of Machine Vision in the Reduction of Machine Tool Setup Time
Waibel, Teresa D.	Cost of Safety: Integrating Safety Principles from Design Concept through to a Production Ready Work Center will Reduce the Cost of Safety Features
Webb, Terence J.	The Applications and Limitations of Electrochemical Grinding in the Production of Cobalt Bonded Titanium Carbide Parts
Jeff Weiss	Designing and Manufacturing an Appropriate Technology Shredder in a Developing Country(December 2005)
Williams, Jimmy D.	Logic Analyzer Technology Applied to the Test and Measurement of Complex Electro--mechanical Systems
Winter, Robert	An Expert System Approach to the Design of Precision Molds (1999)
Wygonik, Mark	The impact of the Clean Air Act on the Manufacturing Strategies of Flexible Packaging Converting Firms Employing Flexographic Printing Processes.(1998)
Yilek, Todd)	The Feasibility of Automating Custom Hearing Aid Manufacturing at Starkey Laboratories (May, 2000
Zander, Matthew	A Study of Total Cost of Ownership and Activity-Based Management in the Outsourcing Paradigm Shift (June, 2004)

The theses completed by the students were pretty good and many of them led to major improvements at the companies where the students worked. One of the most interesting was Todd Coyle's thesis of how the efficiency of power plants could be greatly improved by adopting combined cycle systems where the heat from an initial stage could be used to generate more electricity in subsequent stages. Todd still works for Xcel Energy. When I spoke to him recently, Todd described a new Xcel combined cycle power plant in Colorado was operating at far greater efficiency than other plants. I always thought that this technology would be useful in salt water conversion, but I am over the hill and do not know.

The Laboratory in the Binz Basement

As our program grew, even before the need new science building was erected, we needed additional laboratory space. It turned out that there was an unused basement below the Binz dining hall on the seminary campus. We went to see Dr. Keffer to see if there was any possibility that we could use that space to build an engineering laboratory. Dr. Keffer was remarkably innovative and supportive. He really has to receive a very high percentage of the credit for St. Thomas having the kind of engineering program that it has today. Dr. Keffer was a physicist by training and we appreciated his objective approach to helping us get things done. He was both cooperative and eminently practical and I do think he may have appreciated that our facility requests were usually in the form of an unused basement. There was a catch, however, and once again I give credit to Dr. Keffer for supplying the funding that was somewhat more extensive than what we had initially proposed. The problem was that we had some pretty good size pieces of equipment and there was no elevator going down to the basement. So, Dr. Keffer arranged to have an elevator built they would be strong enough to carry some of the machine tools down to the basement. We secretly regarded this as going beyond the call of duty and we were very grateful.

The Binz basement laboratory came at a time when we had the Orthopedic Innovations going on in that project required a multi-axis turning center capable of machining hardened alloy steel to precision specifications. That company didn't know very much about what machines would be suitable, so we worked with the machine tool distributor Productivity to select a machine that would be suitable. We selected a smaller but highly precise high quality Nokamura. St. Thomas actually purchase the machine and Orthopedic Innovations rented it from us until they exercised the purchase option a year or so later. The Nokamura was one of the reasons why we

needed the elevator. The second was the coordinate measuring machine which was quite heavy because it was made out of granite.

Vern Cottles was a scientist with 3M and perhaps the best lab person I have ever known. During personally built a whole series of servo system demonstration units which were used in our automation classes held in our newly setup Binz Engineering Laboratory. These demonstration units were quite impressive, complete with sensors, switches, indicators, motors, encoders – most with access to computerized input. Vern taught many of these classes and related to the students his many experiences in designing systems for 3M's highly automated manufacturing facilities.

Vern came to us in an unusual way. Vern was an African American from New Orleans. His daughter was attending St. Thomas and he said, "I went over to the financial aid office and they pronounced me rich." So, we hired him as an adjunct professor.

The Binz basement worked out very well for us. Because of its expansive space, we were able to have the machine tools and the classroom in the same space, which added greatly to the quality of our instruction. The classroom was quite large. I had one of my classes in that room when there was there were 49 students in attendance.

We ran into a little trouble, though, with the coordinate measuring machine. The mover cracked the cantilever granite beam when they bumped into something during the move. The mover felt quite bad about it and promptly offered us $6000 so that we could have it repaired. The cantilever beam was the main structural element of the coordinate measuring machine by itself, so it was essential. However, a few weeks later I looked at the granite break and noticed it was a very clean break where you could almost put the two pieces back together and not even see where it was broken. So we called Dick Hartshorn at 3M who was a glue specialist. Dick came over with a special 3M product and glued the two pieces back together. To the best of my knowledge it is been that way since. Dick's wife, Lynn, was a professor in the chemistry department, so I am sure that was one reason why Dick was so accommodating.

Purchasing versus procurement

I'm not sure that any of the members of the early engineering department could be classified as consummate fund raisers. We were not total amateurs. We did receive money for an endowed chair from 3M and several other grants along the way. But, it takes a long time to do fund raising and usually needed something right away. So most often, we relied on in formal procurement methods often tapping people we knew and industry. Much of the laboratory equipment was actually donated on an informal, one-of-a-kind, basis from people we knew. For instance, on one occasion, Remmele Engineering was consolidating two of their plants and they provided us with a several year's supply of end mills, inserts, taps, and other consumable items that were absolutely necessary in the building of any laboratory apparatus. Not only was the quantity sufficient, but the quality was absolutely first rate.

One of the problems in building an engineering laboratory system is that the professors are constantly short of basic supplies such as miscellaneous pieces of metal, often high-grade alloy metal or stainless steel, and perhaps most acutely there was a chronic shortage of nuts and bolts. Bob Kierlan was the head of Fastenal at the time and also a member of the Minnesota State Senate. One time, we had $500 left over from one of the research grants. I wrote to Bob Kierlan and told him about our chronic shortage of nuts and bolts and our inability to forecast which nuts and bolts we would need. I asked him if it might be possible for us to pay $500 to Fastenal and if they could provide us with an assortment of nuts, bolts, and other fasteners that they thought we might need. Mr. Kierlan called back the same day he received the letter and said that he would be going to Winona over the weekend and he would take care of it. We didn't have to buy nuts or bolts for several years.

Not all of our scrounging avoided criticism, however. When we were roaming through the large warehouse that housed the decommissioned equipment at the IBM plant in Rochester, I noticed a piece of well engineered German equipment which inspired an ethnic attraction. It was a sand mill used for pulverizing iron oxide for coating on disk surfaces. We didn't think that we would be doing any of that type of coating, but I thought we could make use of the electric motors and other components of this rather expensive system for other projects. However the 3M people, who had extensive experience in this sort of thing just laughed. "You will never use," they said and they were probably correct.

Ed Rzepecky and John Povolny were both more essential to the engineering program than I was. John had been vice president of the magnetic tape and video cassette part of 3M. Ed was the technical director of the packaging part of 3M and one of the inventors of 3M's ubiquitous filament tape. Both were highly competent and extremely dedicated to St. Thomas and its programs. They also both possessed robust senses of humor, so they were not at all bashful about ridiculing my procurement of the sand mill. For two years I endured it. But the association was totally worth it because never have I worked with more talented people then add those two and some of the other 3M people and Honeywell people who were so instrumental in putting the engineering program on the map.

About two years after we procured the sand mill we received a panic call from someone seeking that very kind of equipment. So, sight unseen, they purchased it for $6000 thereby restoring my credibility with Ed Rzepecky and John Povolny.

Ed Rzepecky was a packaging expert, widely known and widely acclaimed. His main research interests surrounded designing packaging that would be more efficient and less costly to the environment. While he was at St. Thomas, Ed authored a book entitled *Packaging and Environmental Issues*, which was used in our classes and at other universities as well.

Ed worked for us for many years, even after his health declined and when he was on almost constant dialysis. Nonetheless, his sense of humor remained robust. I don't know the day went by without our being grace by some of Rzepecky's jokes. The 3M people were always in possession of clean jokes. Art Fry, the inventor of Posted-Notes for 3M, said that it was not unusual for members of the 3M engineering staff to walk all the way to another building just to hear a joke. I believe there advanced senses of humor helped in the development of major new 3M products. None of these people took themselves too seriously. They worked hard and had fun and, when they retired, they helped us for many years, usually at little or no pay.

The St. Thomas Administration

We were exceedingly fortunate to work with an exceptional cadre of highly competent and effective university administrators. The top four were:

- Father Murphy, President
- Dr. Charles Keffer, Provost
- Dr. James Reid, Vice President of Academic Affairs
- Dr. John Nemo, Dean

All of these people were very good at what they did, though a few faculty members from other departments would occasionally refer to them as "The Gang of Four." From our perspective, though, we thought of them as administrators of the highest quality.

Father Terrence Murphy had been a general in the chaplain's core of the U.S. Army. He was a kind and considerate person and only rarely, and when we fully deserved it, did he exude his authority. He was eminently practical and harbored a great dedication to the University of St. Thomas and its particular programs – as did Father Dennis Dease, his successor.

One time in the late 1980s, *City Business Magazine* listed the salaries of all of the college and university presidents in Minnesota. Father Murphy's salary was listed as $26,000 but then there

was a footnote that said he annually donated $10,000 back to the University. We got our president for $16,000 a year.

Father Murphy would preside over the faculty meetings of that era. At one meeting, the faculty discussion had degenerated to considering something many of us thought was exceedingly trivial and not worth anyone's time. Finally somebody said, "Why don't we vote?" Right away, Father Murphy said, "There is a motion that we vote. Is there a second." Somebody said yes. So then father Murphy then said, "All those in favor of voting say aye." Quite a few of us responded by saying, "Aye." After Father Murphy had called for the no vote, there was a fairly loud and voluminous saying "NO!" After that, Father Murphy announced, "Motion carried we'll vote." Some people objected, but many of us were quite relieved that Father Murphy's practicality had again prevailed.

At another faculty meeting, one of the professors who was actually I good friend of father Murphy and one of his admirers was arguing in favor of less stringent acceptance standards for admission. The fellow went on for some length talking about how his daughter, who was a National Honor Society student, on the swim team, and an excellent student, etc.,etc.,etc.,,,, was finding it difficult to pass all of the entrance requirements to get into St. Thomas. Finally in an effort to keep the meeting moving, Father Murphy responded with good humor by asking, "Takes after her mother does she?" They remained close friends in both laughed about it.

Dr. Charles Keffer was the number two person at our university and a hard-working, dedicated, and very capable individual. He was a physicist and was a great admirer of objectivity. He had an enormous capacity to handle a wide spectrum of disparate activities in short periods of time without losing track of anything he was doing. His efficiency in handling meetings prompted light-hearted comments on the part of faculty. A special unit of measure soon became adopted. A meeting that effectively covered all that needed to be covered in a minimum period of time was deemed to be a one Keffer meeting. As long as Charlie ran them, most of them were one Keffer meetings – or at worst maybe a 1.5 Keffer meeting. However, not everyone has these skills – in academia or elsewhere. Now that I am approaching my 80th year, I shudder to consider how many seven and eight Keffer meetings I have attended.

In spite of his consummate efficiency, Dr. Keffer was a person of very heartfelt dedication to St. Thomas. He certainly deserves much of the credit for the building of the engineering program as it now exists.

Dr. James Reid was our vice president of academic affairs and a political scientist by training there was nothing wrong with them he had integrity and appropriate forcefulness when needed. We liked him very much. He didn't know very much about manufacturing but he was willing to be supportive of us in many ways. He took time out of his busy schedule to travel with me to one of the Autofact trade shows in Detroit in 1985. Along the way, we had some very nice chats.

Dr. Reid arranged for me to serve on the St. Thomas Dean's Committee. I wasn't a dean but only an acting program director. However the experience helped me to know a great deal more about how the University worked and it also provided a setting for me to get to know many of the other deans and program directors better.

Dr. John Nemo was a professor of Irish literature who had studied in Ireland, even though he was actually Italian. Dr. Nemo brought much informed subtle levity to the dean's meetings by quoting excepts from literature at appropriate times. On one occasion, we were considering a proposal by some consultants to do some work for St. Thomas. I can recall John saying, "My favorite part of Huckelberry Finn is about the Duke and the Dauphin. These two scallywags would roam from town to town on the river boats milking the locals for everything they could get. Somehow, these consultants remind me of the Duke and Dauphin." We decided not to hire the consultants.

Along about 1990, Dr. Reid accepted a position as Provost at the University of Dallas, another Catholic school. John Nemo became are acting vice president of academic affairs. He was quite popular with us, but unfortunately he was struggling with a serious case of cancer at the time. To the best of my knowledge, we all attended his funeral which was held in the St. Thomas chapel in about 1993. I continue to remember him as a colleague, mentor, and friend.

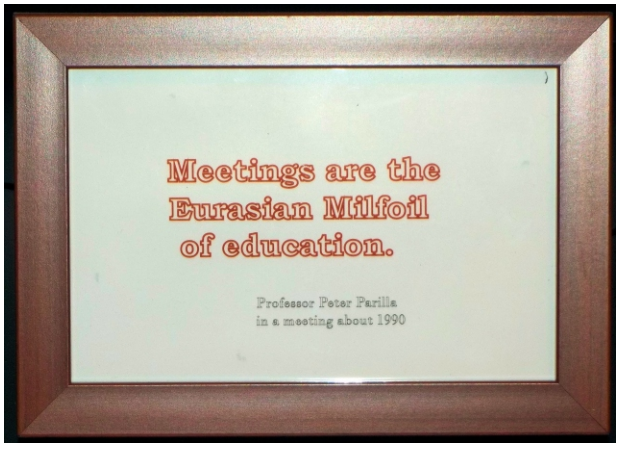
Beyond the people specifically mentioned above, the faculty and staff of St. Thomas helped us in so many ways. The physical plant staff did many favors for us, most of them on short notice. Roger the painter provided us with sufficient quantities of the St. Thomas penitential purple paint so that we could paint the engines we received from General Motors. The philosophy and the allergy departments were very helpful in key votes on degree titles and other matters. The St. Thomas Public Affairs Department helped us with our publicity. The librarians were wonderful and universally helpful to both students and faculty. They gave speeches for us and appeared in our classes as did people from the history, chemistry, and business departments. The list goes on and on and on. We feel very fortunate to have been associated with an institution with such a vast talent.

Meetings and Search Committees

Once in a faculty meeting, my good friend Peter Parilla of the St. Thomas Sociology Department set forth a memorable quote, "Meetings are the Eurasian Milfoil of Education." I was so impressed with sagacity of his statement that I make a plaque out of it and have it in my office yet today.

I had my own assessment which, for several years, was an informal scribbled sigh on my wall, "Meetings are worth the cube root of an Essex carburetor." Essex cars were produced during the 1920s and carburetors aren't used in cars at all anymore. But, Peter's quote was better, so that is the one I framed.

However, the most historical comment on the efficacy was delivered by John Boyle, a distinguished Professor and an expert on the life of our Patron Saint, Thomas Aquinas. Professor Boyle reported that Saint Thomas Aquinas actually prayed that he not be put on a committee.



I mentioned this to my friend Professor John Brandl who was Dean of the Humphrey Institute of Public Affairs at the U of M. John Brandl, who was a St. John's graduate, said "I knew I should be praying more."

The Catholic Intellectual Tradition

The Catholic intellectual traditions did provide purpose to our program from the very beginning. In about 1985, the Catholic bishops had issued a pastoral letter on the economy which described the dysfunction that can befall on both families and communities when industry is not competitive. I honestly believe that our staff and faculty clearly sensed the deep responsibility of providing innovative engineering education that would help both families and communities face the future with less destruction and deprivation.

Librarians

Some extra notice should be taken of the important role that the St. Thomas librarians played in the launching of the engineering program. Eric Kallas, Jan Orf, Janice Kragness, Marianne Hagemann, Earl Belisle, Susan Price, and so many others went well beyond the usual call of duty in helping both our students and our professors. The librarians are so integral to both teaching and research that I always thought we should not give anyone tenure unless they were recognized by at least three librarians.

Our original library philosophy was quite straight-forward. We would buy books for things that did not change much; like steels, metals, and quality systems and buy periodicals for things that did change like robotic systems, CAD/CAM, etc. In any case, the St. Thomas library people have certainly served us well.

July of 1995

The University of St. Thomas had a rule that department chairs could serve for only ten years, which is no doubt a good rule. By 1995, we had quite a few capable people in the department and it was time some constructive changes. Ron Bennett was ready to take over and our family had experienced some time-consuming health care problems stemming from our son Hans' long battle with lethal cancer. So, I became involved with my one and only sabbatical and did a six month stint as a Visiting Scholar at the University of Minnesota Humphrey Institute of Public Affairs which was very close to the hospital where our son was being treated. During that time, I complete the manuscript *Measurement of the Industrial Economy*. I returned the following semester as a professor and continued full time in that role retiring at age 71 in 2006. My association with the University of St. Thomas School of Engineering has been both enjoyable and invigorating. I am so pleased to see the School doing so well with so many good people involved with it.

Apologia

I hope the reader can recognize that there was nothing particularly notable in the building of the engineering programs at St. Thomas and, most assuredly it's formation was product of the efforts of many good people. I feel grateful to have been a part of it the early days, but I do know I was only a small part.

One of my former bosses used to say, “No amount of careful planning can replace dumb luck.” We were indeed very lucky. We had many friends. We served under a capable and dedicated administration. St. Thomas’ long-established legacy of goodwill most certainly helped to advance our program and to bring in many donations. We were blessed by beginning our efforts in an industrial community that cared about being competitive. We had been provided with the excellent fund raising activity of Quent Hietpas, Father Murphy, Father Dease, Charles Keffer, and others. We were lucky enough to attract some extraordinarily capable people who did not care about rank, tenure, pay, or governance. They simply wanted to see the industrial sector of the United States continue to provide employment for millions of Americans in the future.

Best wishes to you all and keep up the splendid work.

Sincerely,

Fred Zimmerman

Vol. 3 No. 1 Spring 1990

The Journal of Applied Manufacturing Systems

COLLEGE OF St.Thomas

Vol. 3, No. 2 Winter 1990

The Journal of Applied Manufacturing Systems

UNIVERSITY OF St.Thomas