

ASHRAE Leadership Recall (formerly Leadership Recalled)

Transcription

Interview of: Gerald Groff

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Interviewed by: Rod Kirkwood

Rod Kirkwood

Okay, this is the start of our annual series on Leadership Recalled in which we interview leaders within ASHRAE and within our heating, ventilating, and air conditioning, refrigeration industry. The first interview is about to start now, is Gerald C. Groff. He is a long time participant of this industry and worked for a number of major companies and currently is functioning in his own consulting business, Gerald Groff Associates. I start our interview off by asking you if you would give us a little bit of background behind your years of experience and what have you found most interesting in heating, ventilating, and air conditioning.

Gerald Groff

Actually I guess when you have been involved with the industry as long as I have there's no little background. There is usually a lot of background. In my case my introduction to the air-conditioning, heating, ventilating, and refrigeration industry came when I was a student at the University of Minnesota. And at the time the University of Minnesota was a very strong institution in a number of areas related to heating and ventilating. One of the more notable ones being, it's activity as a source of information on the thermal conductivity of materials and the U values associated with various types of construction. In fact as an undergraduate and as subsequently as a graduate student, I think I had something like 15 or 16 courses in the heating, ventilating, air conditioning, refrigeration area. Minnesota was on a quarter system so those would translate into a few less in terms of a normal University program. But nevertheless I think it is indicative of the type of training that was available to young engineering students related to our industry back in those times. And this was in the 1952 to 1955-56 period. I was very fortunate that I had some wonderful faculty members at the University of Minnesota who became my faculty advisors. These included gentlemen like Axel Oggren, Clare Lund, Roy Threlkeld, Richard Jordan, who was head of the department, all of whom were really important contributors and pioneers to research in our industry and as practitioners of the arts and sciences of air-conditioning and refrigeration. As a undergraduate, Minnesota at the time was a five-year engineering school but if you had adequate grades it was possible to take a bachelors degree in engineering at the end of four years and start graduate work early. I took advantage of that option and then became a graduate student and teaching assistant working under those faculty members for the fifth year that I was in school. And during that time I had the chance to teach some laboratory courses in refrigeration and air-conditioning which were, was really quite a helpful experience for me. I then left the University. I was a naval ROTC and spent three years on active duty. And I had a rather interesting job. I was with

the U.S. Navy Civil Engineer Corps which is probably best known as the group that the CBs are involved with. But in my case, my assignments were involved in construction management and so I spent three years on Whidbey Island in Washington State supervising major military construction projects. Included in those were a number of air-conditioning installations in buildings so I was able to continue my interest in the field at that time. In June of 1959, I returned from the Navy to complete my graduate work at Minnesota and during the following year I had the opportunity to not only work with the refrigeration and air-conditioning faculty but also with what had become an important part of the program while I had been away, the heat transfer department under the leadership of Dr. Ernst Eckert who was one of the leading German scientists who had joined the faculty here in the United States following World War II. As a consequence of those experiences I was recommended by my graduate advisor to Carrier Corporation in the spring of 1964 on a special assignment to work as the assistant to Carlyle Ashley. Carl was nearing retirement but at the time he was Carrier Corporation's chief staff engineer. They had determined that it would be useful to have a young person join the company to work with Carl preceding his retirement in the hopes that some of the experience and knowledge that he had gained as a pioneer in the industry would rub off on them and they would maintain some sense of continuity of this knowledge within the company. I'm not sure that happened but nevertheless it was a wonderful opportunity for a young engineer and I was pleased to take advantage of it. So with that we moved to Syracuse, New York and I became Carl's assistant. There were a couple interesting things going on in the industry at that particular time. One was the effort on the part of ASHRAE to adopt a new psychometric chart. And this was a rather interesting experience for me because there was one competitive chart put forth by Roy Threkeld who was my graduate advisor in Minnesota and I was very familiar with his work. When I got to Carrier there were two gentlemen putting forth proposed charts. One was Carlyle Ashley and the other one was E. P. "Bud" Palmateer. In this was a period in which there was a lot of debate over the exact form that the ASHRAE chart would take so it was very interesting for me to be able to see at least two sides of that issue at the time. The other thing that was going on that was of importance in the industry was an issue of how to measure the sound power generated from air-conditioning refrigeration equipment. And Carl Ashley was very much immersed in that problem when I joined and as his assistant I became also immersed in it very quickly. And I think here a little anecdote on the background of air-conditioning sound and Carl in particular might be of value. Early after joining Carrier I discovered a photograph of Carl as a younger person sitting at a table with this quite crude looking instrument. And so I asked him what that all was about and it turned out to be a sound level meter. And Carl went on to explain to me that noise became an issue for the air-conditioning equipment back about 1931 when talking movies first came to being. And up to that point in time the intense heat generated by lights on the movie set were handled by large cooling fans and various types of means to mitigate the heat from the lights. But when talking pictures came in this cooling equipment was far too noisy and intruded into the soundtrack so there was an intense effort made to try to find some more quieter way of handling this. And Carl worked on that problem back in that period and as a part of that work he joined with an electrical engineer doctor from Boston, who later founded the General Radio Company. And together they developed the first sound level meter. By the time I got to Carrier, our challenge was a little bit different. It was, what form should the testing procedures take that would be used to measure the sound from this type of equipment. And there were two again competitive approaches being considered. One was the measurement of the sound pressure level in an

anechoic room, the very super quiet rooms. Which involved some mathematical computations then to compute the power generated from the equipment. And the other approach was what was called the reverberation room method. And in that approach the equipment would be set up and operated in a very hard acoustical environment with the idea that you would try to get all of the sound generated from the equipment radiated out into this space where it would reverberate, create a diffuse sound field and then microphones could be moved through the field to average the power level. So my job, when I first joined Carrier, was in doing a number of studies comparing these methods, attempting to develop actual practical techniques for doing it and as a side project I was asked, by the way would I do some work to try to make the room air conditioners that were being produced by the company a bit quieter. So one of my first tasks was to create a simulated wall of a residence and work on a room air conditioner and attempt to quiet its operation. So I worked with Carl for a while on a wide variety of problems because Carl was really a generalist. He was a very special person. He had been the first person hired by Carrier to do research. He was hired at the age of 16 in 1916 subsequently left to go to college and then came back and joined the company at a later date. And through his entire career Carl would be characterized best by being a person of intense curiosity. He also happened to be the person who designed the first condensing residential gas fired furnace in the first line of residential air-conditioning equipment. After Dr. Carrier had come to the conclusion that providing engineering services would not be a long-term success for the company but they would really have to have a line of products that they could sell. In my own case after working with Carl I continued to work for Carrier for 27 years, spent almost all of that time in research and development area moving from research engineer to research group leader to research manager and ultimately to director of Carrier's research and development laboratories, a position I held from 1968 to 1974. I'm sorry, 1978 to 1984. In 1984 the decision was made to change the structure of Carrier's research after the company had been acquired by United Technologies, and I was asked to take a special assignment and spend some time helping to plan how the company would coordinate its engineering activities worldwide. And that was a very interesting year because I had the chance to visit a number of other companies, both US companies and foreign companies, to look at the way in which they coordinated engineering activity. Following that I was asked to move to Europe to be Carrier's director of technology and also of product management. Carrier had acquired several companies in Europe and was interested in that time in beginning to do product development for the foreign markets in the zone in which they would be sold. So I had an interesting assignment and period of time there working with these companies and I returned to the US in 1987 and later that year left Carrier took an assignment as Director of Solar Research at the Solar Energy Research Institute in Golden, Colorado. The Institute is now called NREL, the National Renewable Energy Laboratory. While I enjoyed the position very much and had responsibility for a number of the government's renewable energy programs, during that period of time I was invited to come back to the Syracuse area, where we had lived for a long time, and to take a position as president of a German privately owned manufacturing company. The company's name is Marquardt Switches and I was responsible through that company for the company's activities in North America which included manufacturing design and the sale of the Marquardt products. The Marquardt products included switches and switching assemblies used and household appliances, air-conditioning equipment, power tools, and automotive systems and that became really quite an interesting position. I was with the company for 11 years until my retirement. During that time we managed to increase the sales in North

America by more than a factor of four. Made a little money in the process and for me it was really a very nice- into a professional career and that I was able to apply to a smaller company a lot of the learning and hopefully many of the ideas of handling people that I had learned working for the larger corporation as long as I had. So I completed that tour in 1999 and since that time I have been spending most of my time back with interest that I have developed early on in my career working with ASHRAE, with the International Institute of refrigeration, and with the International Energy Agency's heat pump technology programs. And I'm continuing to do this today. I serve as a consultant to the Department of Energy mostly on international programs and I've had the chance to participate in a number of international activities. For 11 years I served as the chairman of the International Oversight Committee and I have been involved in the organization of some international conferences including one that we will be holding in the spring for the heat pump program.

R.K.

Well that's very helpful. We certainly have a much better understanding of your background. Very helpful to understand the depth of it. There are some other thoughts that we would like to get from you. Understand how you came into the HVAC industry through a college level, but how did you decide to pick mechanical engineering to begin with?

G.G.

A very interesting question. Like a lot of young people in high school I was not very clear on what type of career I was interested in pursuing. I envied greatly those who had a clear-cut idea of what they wanted to do. So I think primarily through a reliance on the things I seem to be able to do best, which were science and mathematics, I was steered by my faculty of high school, advisers, towards the engineering profession. Everyone seemed to think at that time that this was a great field of work for those who are qualified to do it and I really didn't focus on mechanical engineering per se until I think about my freshman or sophomore year in college. Those first years you're taking a variety of basic courses and I think I found the mechanical engineering courses a little more to my liking in ability than some of the others.

R.K.

Thank you. You pretty well covered the industry subjects but the point that was specifically added, I thought related to you, but how was the industry as far as the overall picture to you at that time. Did you see as you came out into the business side of your life, did you see a good future there and something of interest and challenge?

G.G.

I think in those earlier times the role of an engineer in our industry, and the industry itself were remarkably different than they are today. At that time engineering as a profession I think was perhaps viewed as a much more honorable goal in itself than it is perhaps today. Being an engineer was a very honorable job to be undertaking, working for a large company with an engineering department was a very attractive thing to do. I think we took it for granted, that the financial awards associated with that would come naturally if you were doing your job well, you were learning and growing. In my own case I elected to go back to school. I had received both a bachelors and masters degree in mechanical engineering at the University Minnesota and after I moved to Syracuse after a few years at Carrier I went back to school and finally completed what we would call a technical MBA. The formal title was a Masters Degree in Engineering Administration but I was very much interested in not just doing research

and engineering work by and being in a position where you would be participating in the planning of the activity and in the administration of it as well. I think most of us would say we didn't really plan to be managers, it kind of just happened and usually it happens if you have some acumen and abilities in that area that are recognized by others. So at that time there were a number of major companies manufacturing air-conditioning and refrigeration products, each of which had large engineering staff. And the industry was provided a number of jobs every year to graduating engineers and it was I think it was important growing up process in the company where each generation provided mentoring and counseling to the next generation and that preceded to individuals who had been in these companies for long periods of time. In fact when I joined Carrier there were a number of people who I worked closely with that had been associates of Willis Carrier, although Willis Carrier had actually died before I entered college. But there was still a very strong Willis Carrier presence within the company. In that provided an incentive to the younger people to want to grow and to learn and to achieve and be able to contribute as predecessors did. I think through particularly the late 1970s early 1980s that tended to disappear from any of the companies perhaps in conjunction with some other industry forces. There began the consolidation of activities and the number of companies began to be reduced as companies would join together and the industry took on much more a I think a financial management point of view. In the past there have been traditionally engineers as presidents and CEOs of these companies and that shifted I think during that period of time and as I say the stock market prices and other things began to play much larger role than the orientation of the companies. I think today it's quite a little different. First of all I think today we see that there are fewer college level programs oriented towards training engineers who would work in the air-conditioning refrigeration field. This left more to the employers, the consulting engineering firms, and others to provide that type of specific training and background. Actually the engineers, number of engineers employed by the large manufacturing companies has diminished greatly, again both through continued consolidation in a number of companies and also in the type of activities those companies engage in so it's quite a little different activity today. And I think the industry is suffering somewhat because we don't have continuity of a chain of recruitment, a consistent recruitment program in part of young engineers and also to the means by which they are mentored and trained as they grow in the engineering field. And I believe that we see some of the ramifications of that within ASHRAE. And the change in the complexion of the ASHRAE membership that has occurred over these years.

R.K.

Well that brings up the ASHRAE for the next subject. When did you join ASHRAE?

G.G.

I joined ASHRAE as I was, just as I was graduating from the university as an associate member because I had had my strong involvement in the field through my coursework. I was encouraged by my professors to become interested in the Society. Certainly they were all active in ASHRAE and it was more or less brought to our attention that this was what one did if you were going to be a true professional in the field. And that was reinforced greatly when I got to Carrier because of course walking up and down the halls at Carrier we would pass the offices of the people whose technical papers we had been studying and referring to for some time so it was somewhat of a who's who of ASHRAE. And in fact I'm somewhat embarrassed to say when I go to ASHRAE headquarters in Atlanta and look at the wall of the photographs of the ASHRAE presidents, I have worked, I can say I've worked and knew them all of them

back to the second photograph on the wall which is that of Walter Grant. And subsequently I worked with Bill McGrath and Stan Gilman and Don Rich and Bruno Morabito and a number of the others that were not at Carrier. Chuck Sepsy, and many of the others who are on that wall. And they have provided, I think, role models and an incentive to the younger engineers to follow in their footsteps. And they have of course all, including yourself, left a great heritage for the newer generation to build on.

R.K.

Well that's a good basis then for ASHRAE as it was then and as it's changing as we go along of course. But nothing stays the same.

G.G.

No, absolutely not.

R.K.

You're presenting a paper soon, is that the case?

G.G.

Yes, I, actually I'm presenting a paper at an International Energy Agency conference that will be held at the end of May. It's the Eighth International Energy Heat Pump Technology Conference. The paper I'm presenting is a little bit different than what I have normally done. In planning for this conference we were looking at topics that would be, topics that would capture the attention and interest of a broad group of participants from all over the world. And one of the individuals whose with a major air-conditioning company said, more or less cynically, well what someone ought to do is to explain who uses heat pumps and why. And so we went through a little bit of a process trying to find an appropriate person who had an international perspective to do that and so in the end I was asked to do that. So what I'm doing is actually going back to the Lord Kelvin in 1852 who first proposed the concept of the heat pump and going to talk a little bit about the heat pump introductions that have occurred over a number of years and what was behind them. One of the more notable American experiences is one of a very well known ASHRAE engineer J. Donald Kroeker From Portland, Oregon who employed large well water source pumps on a famous building in Portland, Oregon and then subsequently applied the technique to some other installations including a very large shopping mall in Minneapolis that was installed in 1956. And I was a little bit aware of that because as one of my course projects at the University of Minnesota, when that installation was being made I had an assignment to go out and talk with the engineers and to bring back a report on the design and performance expectations for that installation. What was significant about it was it was the first fully enclosed climate controlled shopping center in the world. And there were - Mr. Kroeker employed a number of techniques to get the maximum efficiency from the system and it was a really important installation. So my paper is covering the period from 1852 to the present day and looking at heat pumps in a generic sense to what is the advantage of using them and what is actually going on worldwide with that technology.

R.K.

The number of heat pumps being sold per year now is up in the millions now I guess.

G.G.

There are probably close to a hundred and fifty million installed worldwide. There are very close to 20 million a year being sold in the Far East alone. The US sales are in the order of 2 million and even Europe, who has had such a long-standing, let's say abhorrence of having air-conditioning because they felt it was a luxury and unhealthy and an energy consuming thing, air-conditioning is growing very

rapidly in Europe and keep on sales are growing even in areas where one with the least expect them like in Norway and Sweden. So it is actually a very vibrant, robust industry at the moment.

R.K.

Well is there anything else you like to add before we close this out? I think we're about at the end of it.

G.G.

No, I appreciate very much the opportunity to talk a little bit about my own background, the little bit about what's going on in the industry. I happen to think that this industry, far from being a very mature and perhaps stagnant place for engineers to work, is today perhaps one of the most exciting places that a young engineer could hang his hat and part of the rationale for that is the fact that there is a very important world need for individuals to design and apply and improve energy systems. And as a part of that building and industrial refrigeration air-conditioning systems are an extremely important part. That is unfortunately compounded by the fact that there are fewer engineers who seem to find interest in the field today. One of the reasons being that these fields of engineering have become less visible to the public. They are more supportive technologies than things like the biomedical field or others that may seem to be a little bit more exciting or the space industry. But in order to achieve the things that people want to do in virtually every type of societal endeavor there is an engineering person or persons involved with the support systems, the life-support systems, the energy systems behind them and that is an extremely important contribution that can be made.

R.K.

The future is something we can't pick out easily, but we can look forward and see the directions we're going and try to plan for it. And this is something that ASHRAE's job is made out for. That's what they need to do to help lead it and it will take leaders like you to help guide it.

G.G.

Well thank you.

R.K.

Anything else you'd like to add?

G.G.

No. I think...

R.K.

That's it? Well we thank you very much.

G.G.

Well you're more than welcome.