ASHRAE Leadership Recall (formerly Leadership Recalled)

Transcription

Video Interview of: Barney Burroughs

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Interviewed by: B. J. Spanos

B. J. Spanos

This is Leadership Recalled and today we are interviewing H. E. Barney Burroughs who was president of ASHRAE in 1987 and 1988. Mr. Burroughs is a technical consultant in the field of indoor environmental quality and is a recognized expert in indoor air quality and air cleaning. He is president of Building Wellness Consultancy Incorporated, a film specializing in IAQ diagnostics and mitigation. He is also a prolific author and lecturer on IAQ and frequently leads seminars on that and related subjects. Mr. Burroughs is also a director and principle of Environmental Design International Limited, a building performance communication security and environmental engineering firm based in Atlanta Georgia. Mr. Burroughs was elevated to the grade of fellow ASHRAE in 1994. Welcome Barney. I'd like to start by asking you about your views of the major issues facing the HVAC&R industry as you began your career.

Barney Burroughs

Well, remember B.J. that was a good number of years ago so it was the late 60s when I became active in the HVAC business. And it was within the next 4 or 5 years the energy emerged to be the real issue not only for our industry before the nation at large. 73 and 74 were the energy crisis and of course the response of our society, the response of our nation was a pressing issue, it was a survival issue. I can remember back then landing in the middle of Tennessee and not being able to get gasoline for a rental car, that you can rent but you cannot find gasoline. So this was a widespread issue. Energy has been, is now, and will probably continue to be a pressing issue for both our society and our nation.

B.J.

How have these issues evolved over the years and how has ASHRAE technology impacted their evolution?

B.B.

Well, our response back then of course was to assist on a national level by the development of energy standards. Those “energy standards” emerged to be the driving document, not only for building design but for the entire building profession. So our response was of course standards, a response was technology as it always has been to train people to bring about a design that was energy wise and so on so the same traditional benefits that ASHRAE has sponsored, meaning research, standards, and technology exchange were still the practices that we respond to these issues about.

B.J.

Where is the role for ASHRAE in the IAQ debate?

B.B.

Well from the outset of indoor air quality ASHRAE has had a major role. Even as early as the early 70s when IAQ became apparent. Those early days we called it tight building syndrome. And that was in response to the fact that ventilation restrictions and so on, new construction techniques for tightening the building, all of those built a much more controlled, confined indoor environment. When we build off of that as a model it means that we have to have more knowledge about how that system performs, how the ventilation, energy, and indoor air quality interface. So ASHRAE's role has been a leadership role through that entire development of the last two and half decades. Now there are other folks that obviously are involved in the indoor air quality question. I mean in part of the difficulty of IAQ is that it is multi-disciplinary, there are so many complex facets of it, because we're dealing with air contaminants, we're dealing with transportation or exposure routes, we're dealing with health effects, we're dealing with those health effects impacting the productivity, the learning capabilities, the creativity of the individuals in the environment. So in a sense ASHRAE has been a focus to merge those disciplines, whether they be industrial hygiene, whether they be public health, whether they be pure design. To merge those innate understanding of how the building envelope responds to both its environment as well as the indoor environment and how the occupants interface with the air stream, interface with their activities, and interface with the building envelope. Our leadership role has been one to pinpoint the necessity for understanding those complexities and as early as the mid-80s ASHRAE put forward an annual conference. It was the first focused conference on a technical issue that we had sponsored and that was in 1985 and we have successfully repeated that event annually for the last 20 years. And so the repeating of that technology exchange has been a very successful demonstration of ASHRAE taking a leadership in technology exchange and training and education and in research. It's those kinds of things that we've done to actively assume and maintain that leadership role. There are other activities going on in the marketplace, many of them coming from an overseas base but in terms of North America, ASHRAE I think is the recognized focal point for IAQ as we now call it to the indoor environmental quality issue and that's probably going to continue to be a major driving issue as we go into the new millennium. I think indoor air quality will integrate through the entire building environment technology.

B.J.

How did you get interested in indoor air quality and filtration?

B.B

Well, actually I backed into the issue in the my early exposure was in filtration and I was a patent holder on a specialized gases filtration media that in fact was the original reason that I started my own company, which became Pureafil Incorporated. That patent, that technology drove me into the area of specialized air filtration. And as a specialist in air filtration we were dealing with clean air in literally every area of buildings, from industrial to clean rooms to specialized healthcare facilities and all of those merged together in a sense to become the building envelope and the environment within it. And dealing with that envelope in that environment put us into what eventually became the indoor quality business because in a sense indoor air quality equates back to clean air and being in the air cleaning business made us a natural to lateral and link into expertise and clean air control and that would be a commercial building as well as the healthcare and industrial areas that were in a sense the birthplace of

indoor air quality. In a sense I was in it all along we just and call it IAQ, we called it clean air and we called it air filtration which simply means that air filtration still even today is a very important component of the indoor environment. It's probably one of the areas that we need to take advantage of more. It's a in a sense underutilized technology even today.

B.J.

How do you see ASHRAEs technology contributing to the industry air quality movement today and into the twenty-first century?

B.B.

Well, obviously again the traditional posture of ASHRAE has been to support the research, to develop the standards of care and standards of application and design, and then to educate and do the technology exchange. So those roles have not changed. What it has meant is a shift in focus, a shift away from the more traditional refrigeration areas, the more traditional air-conditioning per se, with a broader view of the indoor environment.

B.J.

I would now like to talk with you about your career in ASHRAE. Why did you decide to join ASHRAE?

B.B.

Well, those early years were very active years because I was starting my own business. We grew fast and so there were lots of management demands on my part but I felt I needed - see I did not have an engineering degree - I had a multidisciplinary scientific degree but it was not pure engineering so I'm a little unique as both a president and a member of ASHRAE to not have formal engineering education and I went to ASHRAE as a resource early on to learn the particulars and specifics. And I learned what CFMs are, things like that that came to me through the local chapters and I was very active chapter level from my first year in ASHRAE in 1968. And so I became active at chapter level and grew into participation. I was never, incidentally, a chapter officer. I was always the news letter editor because of my ability to write and communicate. That was my assignment so unique in my regional experience was the fact that at chapter level I was never a chapter officer but I attended more chapter meetings and more board of governors meetings than probably any other officer of the Atlanta chapter. Because of that and because of my involvement I became the local resource for what's going on because I, as part of the newsletter had to know regional business, and society business, I did know what was going on in the chapter and merged all that into our monthly newsletter and as such I became the resource for information. I became in a sense the chapter memory as we went from one year to the next. As part of that I attended all of the CRCs, Chapters Regional Conference. In that that point of time region four, as we were known, was really what we currently know as four and twelve. So we were 16 chapters spreading all the way from Georgia and the Carolinas to and including Puerto Rico. So it was a very large chapter and I attended every single one of those CRCs. And one fine day they seeing my face that many times nominated me for a regional position so my society activities have really come through the chapter base. First as chapter newsletter editor then I was the first really successful research promotional vice chairman or region four. And when I started as RP, as we call them, the RPVC we had collected I think in the order of $24,000 in the dual, old dual region and when I left three years later we were bringing $24,000 out of the Atlanta chapter alone. So we made tremendous progress out of research promotion and even to this day I have a very fine place in my heart for the activity that the RP guys bring forward because, you see, they fund our research which now is a $3-$4 million process. So

my first success was in bringing funds into the society to do the support for research the regional RP work. As President I probably served in every major position there was. On the technical side I was very active in TCs and I ended up because of my expertise in gases filtration I authored the first original chapter on gases filtration, chapter 33 was then known for the fundamentals. That got me involved at society level on the technical side and I was active both in TC 2.3 and 2.4 and have been for now over 25, 30 years. Now obviously committees are, rotate on and off but I've been an involved member and a voting member when it was appropriate. And I still maintain my linkage. I have been a voting member of 2.4 until last year and I'm still active in 2.3 so they're still dear to my heart in terms of linking to the technology. As I went on through other committees and on through all of those steps that you go through to obtain the presidency, there were some interesting times back there. For example, I was the chair of the Publishing Council and we have been struggling for 10 years to bring out a special document to communicate just with the membership and under my internship then as part of the publishing Council chair position I was able to bring out what we now call *Insights*. So *Insights* happened under me and under my leadership at that point in time. Beyond there are some other things that occurred that I'm quite proud of. And on into the presidency as you probably are aware I put us, ASHRAE right in the middle of the CFC issue. And I declared at that point in time that ASHRAE as the primary technical organization and refrigerants, as the primary focal point of that technology, needed to take a very, very strong position. And I called an industry wide conference to deal with CFCs and to deal with policy in response to the Montreal protocol. The Montreal protocol which was international agreement was in the process of being agreed to by the United States judiciary, I'm sorry legislature, and I felt that ASHRAE needed to be leading that from the technology standpoint so I encouraged ASHRAE and ARI to cosponsor that conference and it in fact was very successful and put us in the leadership of that issue now for well over a decade. So I'm very, very proud of that accomplishment. When I was in the area of going through the chairs, each president literally by virtue of VP or treasurer ship, chairs all of the committees and councils as we go through that process but I was never chair of the membership committee even though that was my grassroots interest and my grassroots path to the presidency. That was the one area that I did not become involved in but in that process the year I was President we passed and improved for publication standards 62-1989. That standard was one I have been involved in, in all four of its iterations. I was involved in the very first one that was, That came out in the mid-70s. Again I was I monitored as a subcommittee member in the 1980 version, I was active in its revisions that later became – 89, that is the current standard. And a vice president for my company was the voting member but I got all my information and made my input through him as a voting member of that standard and currently I am still involved in monitoring that standard and I'm a voting member on standard 62.2. So that standard has been in a sense a pinnacle and a demonstration of ASHRAE leadership and involvement in indoor air quality. I have been very pleased be a part of that historically. So there are some significant things along the pathway that I have had to do with. One which I think my region still benefits from. Through the leadership of Hugh McMillan, a prior president of ASHRAE and a member of his executive committee Bob McDonald, a prior president, we instilled and adapted MBO, Management by Objectives. And I took Management by Objectives from the society level down to regional level and applied it in my region, region four and that became the prototype for using MBO, Management by Objectives, at a functional level, at grassroots in the society. So I carried forward that message from Bob McDonald and implemented MBO in both my own region and society wide. So I'm

pleased to have at least made that impact at regional level across the society. In other activities I've been involved in a lot of standing committees and part of the role of a past president is to head up what is called strategic planning. And under my leadership of the long range planning committee, we put together the format and driving factors of the current strategic plan that drives the long range direction of the society. So I was involved in that process. Now that was not the first strategic plan that was to drive the revision and is in place right now. So I was not only involved In MBO, which is annual objectives, I was involved in long range strategic planning for the society and I've been very strongly involved in strategic planning, not only in the society but in my professional activities. So I've had, I've had a lot of opportunity to impact significantly major things that we today almost assume as being ASHRAE but through the last 30 years it has been this kind of leadership from a various amount of presidents that have impacted the society.

B.J.

During your presidential year, your theme focused on ASHRAE technology and the human destiny. Why did you choose this theme?

B.B.

It took a lot of thinking to come up with that theme because I felt, number one I wanted to be different, number two I wanted this to be a theme that reached out and told a story to the general public. Not only about ASHRAE but about engineers and engineers generally are unassuming, they are not necessarily outgoing people, they are not necessarily folks that do a lot of hoopla about their activities and about their successes. I felt that the engineers were the doers and the dreamers of this society. And that as doers and dreamers they actually were responsible for the success and progress of the human race and I felt that we get too little credit for our input into that process. And I wanted to focus on the real meaning of engineering, the real meaning of building and the significance that engineers have on the human destiny. It was engineering that took us to the moon, it was engineering that allows us to manufacture, contrive and control an indoor environment. And when you think about the fact that we spend now in modern society over ninety percent off our time indoors it says that the control and the performance of that indoor environment is a significant influence on our wealth and well being. And the influence that we have as engineers, the influence that we have is ASHRAE on the health and welfare of modern human race is substantial and significant. So I just felt we needed to say something to the general public about that role and that importance of how significant engineers are to what we do today in modern society. So what was behind that was really a statement to the world a recognition of the role and importance of engineering and as one of the significant learned societies of the world that ASHRAE was in fact part of that outreach and part of thay significance.

B.J.

During your year, in focusing on the human destiny and ASHRAEs contribution to the human destiny, you focused on several initiatives. Would you please tell me about your initiatives and where you've seen them evolved to today and maybe their influence into the next millennium.

B.B.

Well I'd have to say and admit as many presidents have before me and since that one year is indeed a short time to try to influence, to try to implement substantive programs and to bring about change. I've already talked about the kind of character and personality generically that the engineer has, one of those characteristics is that they don’t like necessarily to change. So it takes perhaps a lot of effort,

focus, and motivation to change the engineering personality and then to have to do that in a one year presidential term is almost a monumental task. I had the unique and fortunate situation of first of having taken early retirement, first retirement as it were, from my role in leading Purafil Incorporated. And so I left that role and literally from half way through my president elect year which is the year of ascendency, which you do most of your planning, you do most of the thinking, you develop your theme and you do those kinds of things, I had the discretionary time to be able to focus on those issues. So when I became president I was first a full time president and I don't know that I am unique as having been the only full time president of the society but I think I'm in a small minority of being able to devote that kind of attention and focus on the job. Secondly I had the advantage, although staff did not always agree with me, of being in Atlanta. So when I was not traveling for ASHRAE, I was working at this building. So I came to work here Monday morning if I was not on the road for ASHRAE affairs. That allowed me more time, it allowed me more interface with staff, it allowed me to be more effective communicating and in follow up on goals and objectives. So I was uniquely blessed in both the proximity and the ability to devote the amount of time I did to that process. But secondly I was able to articulate the kinds of things that I wanted so I was able to work more closely with the standing committees, was able to work with the executive committee in order to implement concepts and implement my own ideas and objectives. I already mentioned the CFC program and I must confess that was not a well received concept within the society. CFCs were brand new as a concern. There was a very wide, and still is major concern that perhaps this was being driven by inappropriate science so there was a lot of really solid scientific evidence that we were, through the Montreal protocol, imposing a lot of constraint and cost on our society, small s, without proper scientific basis. But I felt strongly that if we did not, that we ASHRAE did not take a leading position then in fact we would be driven by other interests. And those interests might not be favorable to our technology. There was even hysterical legislation going on at state level that we were going to ban air conditioning as state laws because of the concern for the survival or civilization. There was just rampant panic going on because of inappropriate interpretation of both the realities and the fiction of the science of the time. I sat through an interview, very much like what we're going through, in which the, with full seriousness the interviewer asked me, "Mr. Burroughs, how can you sit there as a representative of ASHRAE and be responsible single handedly for destroying civilization in 2020?". That brings a very serious kind of focus on how you deal with a live camera in front of a live audience of, and this was going on network television. And here our society is responsible for destroying civilization. It meant that this was a serious and real issue to even educated people. And so I felt really important that ASHRAE take leadership, get the real technology out, unify all of the groups, both trade groups in terms of manufacturing, those folks responsible for installing so the mechanical contractors, the dealers, the folks that were actually involved in the process of installing and maintaining as well as the regulators who were being swept up with the passion of the moment to the point we could have easily had legislation come out of Washington banning air conditioning across this country. And I just felt the impact on the human destiny of that kind of a decision being irrationally but passionately backed would have been disastrous. So I took the bull by the horns as it were and did the unpopular. I pulled together a meeting that was unprecedented and it was called Barney's Folly for a number of weeks. Until after the meeting and it suddenly became clear, crystal clear, that the issue was real but the issue was controllable with technology and that ASHRAE, with its research and those kinds of focuses was in fact the leader in that technology. So it was an

extremely successful effort. That effort has had long term impact, A in having ASHRAE still be the leader in that technology, but secondly we still have CFC conferences about every three years as an update to that technology. I felt all along that our international posture by virtue of the Montreal protocol but also by the virtue of the fact that air-conditioning was being found in the developing countries and that our technology on food preservation and the refrigeration side give us two very, very strong motivators to have an international role and a very high profile. And even though thematically other presidents prior to me focused on international in a sense I took that to the functional level. I took it to the functional level first domestically because I aligned and repositioned us better with ARI, the Air-Conditioning Refrigeration Institute, which in a sense is that trade or manufacturer side of our technology with us being the science and the technology and the learned portion, I felt it was important to work more closely. There has been a lot of antagonism and a lot of turf issues prior so I felt important to mend those fences. So I started that domestically and then I went international and mended our relationship with the IIR, which is the International Refrigeration Institute, that in a sense in Paris is the keeper of the technology of the world on refrigeration. Food which is a major issue of course for the world. And I felt that linkage was critical and important and I cemented that relationship again domestically through our relationship with the IIAR, which is the ammonia refrigeration Institute that is a major factor of refrigeration technology using that refrigerant ammonia and its basic technology I felt was important to integrate back in. And that organization having spun out really of ASHRAE perhaps not doing as much as it could have or should have for that technology I felt was important to bring us back together. The impact of that is yet to be felt but I think that before too many years will be back together and ought to be because the technologies are so integrally involved. So the international theme became a very important one to me at functional level and at that point in time through the leadership of other presidents we had sponsored chapters around the world and I felt it was important to bring those chapters more in to the mainstream of the society and so with a lot of effort we made the rounds. And we visited and invited everyone of those chapters to link up and I started president which is now grown into their own region so I feel good about the way we have actually at functional level integrated with our chapters internationally. And I feel good about the way that we integrated with our sister associates societies as a result of that effort. Those particular incentives I feel very good about having at least contributed to that perhaps even in some cases initiating those processes.

B.J.

I recall reading about your international travels and I was particularly struck by the phrase you used in your state of society address Kodak diplomacy. Could you please tell me about that?

B.B.

Kodak and the other alternative is Coca-Cola. Both of those at that point in time were emerging national multnational Corporations and I felt that they represented in a sense what ASHRAE either was doing or should be doing and of course the Coca-Cola being right here in Atlanta I use them even more strongly because Coke at that point was emerging and going back in to the developing countries. They had just aligned with Red China for example, and when Sandy and I visited Beijing we helped sponsor and commission the China Refrigeration Association, the air-conditioning association. At that event it became very clear that Coca-Cola was in a sense how the local Chinese looked at America. I'm not saying that they looked at us through the end of a Coke bottle but in a sense that was their window to us. Now another interesting thing that happened there was Mr. Nixon with all of his problems politically

and with all of the Halo that has gone about from his US presidency, he was next to God in China. And it was Mr. Nixon, Coca-Cola, and ASHRAE that were toasted at most of the cosponsored events. He represented the linkage to the modern world and Coca-Cola functionally represented that in every place we went in China which at that point in time was only barely emerging in terms of its modern development, you could find a bottle of Coke. Now an interesting side story that came out of that was that long before, and that was in 1932, there was an original franchise let by the Coca-Cola Company into Shanghai. And we met and our host in Beijing, was Mr. Grou (spelling?) as the volunteer side leader of the Chinese air-conditioning institute. His father, Mr. Grou was the first holder of the international license for Coca-Cola in the Pacific Rim. The interesting thing about that story is that he paid for it with $10,000 in that was the cost of the Coca-Cola franchise back then but it had to be paid for in hard currency and it was paid for in silver dollars carried to the transaction by donkey to the meeting. I thought that was an interesting story to Coca-Cola diplomacy but in a sense it illustrated what ASHRAE needed to be doing in terms of linking up with emerging countries because of their desperate need for the technology, their desperate need for food preservation in refrigeration technologies, which is the hard-core and foundation technology many emerging nations need.

B.J.

I recall also reading that been one of the international conferences that you attended even though there were many international delegates from all over the world and the language spoken at the conference was broken English in a sense.

B.B.

And in fact the storyline and the phrase is not mine - the phrase comes from the leader of the international refrigeration association but he says it very eloquently, he says "the language of technology is broken English". Because of in this half Churchill have kind of English, a German professor language, that just is very, very crude. But he is true. As we went from Australia, which is of course English-speaking although you can't quite tell it sometimes, to Hong Kong, to Japan, to Dubai, to Paris, Rome, to London England, to Canada, and home, you got there those countries and whether the local language is English or not you're speaking about air-conditioning and refrigeration in English and so ur technology and the American aspect of our technology is a very strong one and for that reason I supported, several years ago we looked at changing the name of ASHRAE and making it perhaps ISHRAE, meaning international society. And in truth we are the American society and I think that probably needs to stay because of the respect and the inherent worth and value that that name and significance of our technology and our history means to the world. That we are ASHRAE, we are the pinnacle of technology, we are the pinnacle of technology exchange, we are the pinnacle research, and we are looked up to around the world.

B.J.

I understand that you've been involved with the ASHRAE foundation and now the ASHRAE Learning Institute. Could you please tell me about your activities in these areas and where you see these two initiatives going in the next millennium.

B.B.

Well I, during the presidency big made the brash statement. My vision is that by our Centennial, that was in 1987, our Centennial was 94. I want to have my 1990 $400 million in trust fund, I didn't make it. But I started the process and now we do in fact have a foundation with a multimillion dollar trust that is

in place that is there to fund two major activities as we go into the new millennium one of which is education and the other of which is research. To build a substantial amount of money through donations, endowments, testaments, and those kinds of techniques, a substantial amount of money to preserve our technology and to make sure that we maintain our leadership in both research and education. So I'm very proud that the foundation does exist today under its leadership. The fact that it doesn't have a hundred million dollars yet, that I would like to see changed. Were changing that as we start to build the momentum in that particular activity is going very well. As a part of that I was asked to look at the whole field of education and what we needed to do as a society to perhaps solve a small society wide problem. That issue is that we have a serious and becoming much more serious shortage of engineers in North America. The engineers that are graduating many of them are foreign-born and we are doing our best education for those who will no longer serve us but will serve the emerging world. And as a result we have a serious need for engineers, graduating engineers in North America, more specifically perhaps even more of a concern is that HVAC&R is not being taught at baccalaureate level which means a graduating engineer perhaps even in our area of discipline the mechanical area will come forward with a generic engineering degree with specially in mechanical but will not understand, as I did when I started in 1968, he won't know what a CFM is. Meaning we got to start at square one with graduate engineers to teach him HVAC&R and whether it is a manufacturer that does that in one of their schools, whether it is postgraduate work, whether it is in some sort of continuing education, some sort of focus and training by consulting engineering firms that is a serious additional cost. And what we're finding is in at least in our modern situation the cost of reeducating or completing the education of a graduate engineer is in the order of $200,000 to bring that individual up to capacity, up to capability, up to understand HVAC&R application and design. Now all of that work is being done currently on a piece meal basis by in many cases the trade side or manufacturing side of the industry. There are multiple schools to bring graduate engineers up to HVAC&R understanding competency. And we are in a sense repeating across the country a dozen times over the need for undergraduate competency in this area. There are less than half a dozen schools in North America which provide an undergraduate or baccalaureate level specialty in HVAC&R. Most of those are in the area of architectural engineering which is not even a recognized discipline yet what this does is integrate the building of the envelope with the indoor environment and in a sense they're doing a better job and architectural schools giving us an engineer who understands the role and the performance and the proper design of HVAC systems. So we in a sense have to learn from that so my recommendation to the executive committee who in turn will report to the board of directors at the Toronto meeting coming up in just two weeks, they will be looking at the possibility of a ASHRAE learning Institute that focuses and provides the core technology to institutions to teach HVAC&R specialties at undergraduate level. We're going to be looking at techniques for advance learning and develop an ASHRAE masters degree program. We're going to be looking at distance learning techniques using modern communications networking, using CD-ROM and computer aided learning techniques so that we can take education, take knowledge to the individual to the member, to the students. Today the cost of a standup classroom situation, other than a baccalaureate learning Institute for someone to go back and relearn in three days as a part a of a specialized seminar with a specialist in front is such a costly process. It's costly to the participants in the fees, it's costly to the sponsors in terms of the experts in the personal conduct that has to happen but the real cost the real hard-core cost is the three days away from a job. When we look at transportation,

when we look at the cost of salaries and fringes, if we look at the total time cost of a standup interface type of teaching lecturing situation other than in a lecture room and a dedicated learning institution we are looking an extremely expensive, a very, very poor cost effective way of educating. That's why we have to focus on distance learning. The fact that we would go on and do distance-learning will enable us to do several things at all at the same time. First it enables us to get baccalaureate level meeting engineering degree level knowledge out to many more institutions so that management of those institutions can easily and cost-effectively apply this curriculum into their particular institution. We secondly need to be developing and cooperating with perhaps no more than 15 leading institutions the distance learning concept so that we can advance our HVAC knowledge into the masters degree level bring about specialties that will coincide and for example with the testing and granting of a professional engineering degree. So in a sense we are matching up baccalaureate with an EIT which is the initial engineering training concept but at the same time developing a master degree program that uses the technique of distance learning in such a way that one component of the program will be developed by one institution and download to others whereas they will be the recipient of download to other partners who will take a different component of the requirements. So controls may come out of a state college in Penn State, design and advanced application may come out of Manhattan, Kansas, from a different institution and download to the other partners. With the evidence of completion and the evidence of having participated and learn from this process being an ASHRAE granted certificate of accomplishment and achievement meaning an ASHRAE diploma. So that in a sense ASHRAE becomes both the driver and the awarder of this competency. The benefits of all of this I see first, getting more graduate engineers with HVAC&R competency. That makes them capable of going immediately into a small firm and being cost productive for that small firm who would not normally be able to afford educating them. Secondly, it enables us to match up specialties at masters degree and specialty degree levels. Match that with both the PE and match that up to people's disciplines as they're out and earning an income and doing it in such a way that they can do both. And thirdly, using the advanced techniques of computer aided CD-ROMs, we can make this technology available to anyone, anywhere who has access to an advanced computer so that access to the computer becomes access to the classroom and in so doing we are able to manifest a tremendous step forward in technology exchange. Now you see the great advantage of the distance-learning aspects particularly at the baccalaureate level and CD-ROM level means that those learning experiences can go anywhere in the world that there is a computer. And so you do not have to be in Atlanta for a seminar, you don't have to be in London for a seminar. You can be in an emerging country and so as long as you can get to an electrical outlet and get to a computer you can learn HVAC&R as it applies to your needs at your level. So I think the whole concept of learning is critical to ASHRAE's outreach. I think it's probably going to be the most important thing that we do into the new millennium to both assist the general welfare of the public because we are going to bring more engineers into the arena and secondly, we will benefit greatly our manufacturing partners because we will have simplified and made more cost effective tremendously their training efforts so that they can focus on culture exchange product information and not have to teach fundamentals. Leave the fundamentals to ASHRAE and the ASHRAE core curriculum as a onetime investment and we can leverage tremendously the amount of money that's being spent on this effort.

B.J.

Who influenced you and inspired you most in your career professionally and in ASHRAE?

B.B.

Well surprisingly enough my professional career was influenced by someone who probably doesn't even, isn't even aware that he influenced. It was my boss from the old Borg Warner days. I came through the Borg Warner Corporation, the chemical division and the influence came from my supervisor and what I learned there was what not to do. And so most of my success as a manager and owning my own business came from making sure that I did not do what that particular individual did and that became a driving force for me to not repeat the mistakes that I had seen earlier, to not trod on the feet, to not, not to bruise the way I saw that happening. I also learned from that individual that it's far better to look at the bright side and the positive side then the negative so I've always been a very positive thinker as a result of that experience and I always try to find the silver lining so that was just a resounding influence on me in a negative way that made me positive but it came about that way. But the influence to me in ASHRAE and in the specific profession that I'm involved in first came from an emerging leader amongst ASHRAE management and that is George Jackins. George was an early contact that I had in the late 60s, taught me a lot of fundamentals, taught what a CFM is and some things like that so he had influenced me greatly. He influenced me because he was a consulting engineer but he also understood refrigeration and was in the process of being crowned the King of chillers because he sold so many of them, installed so many of them back then. More than that however, and more on the serious side Bob McDonald was probably noteworthy mentor for me in the leadership portion of ASHRAE. I was unique in ASHRAE from several standpoints. First, I came through the regional activities as I said earlier I didn't hold a chapter office except I was there and I knew more about what was going on and I had come up through regional activities and had just come off of a three-year term as regional director for region four. I carried that region as an infant, and had been split apart from the old region 12 so it was new, it was fledgling. My predecessor, Benny Bootle was a master at working with the chapters and he did a lot to bring the regional, region around in terms of its activities and success. When I took that and went forward with it to the leadership in our region four for several years running was the top region and the society because of that activity. Well what that did was position me with a high profile to the board of directors and of course Bob McDonald at the time was on the executive committee. I was not being considered to come in to the leadership, the ladder as we call it. Actually I was nominated but was not successful. And later that year I was appointed the treasurer so my entrée into the leadership was not by election but by appointment. The treasurer at that point was suddenly and very, very horribly died in office with no advance notice and so the board of directors under Bob's leadership appointed me for the balance of that year as treasurer. That dumped me into the board and into the XCOM, it dumped me into a situation at a role at leading the financial aspects of the society that I had no preparation for, I had no orientation and had not served on the financial committees. So I was in a sense dropped into a large pool of water and had to survive. Bob, because of his role in because of some of the leadership aspects that I've learned from him, management by objectives and so on, taught me a lot and how to handle myself in the committees and so on. So at the end of that year I had learned so much from Bob that I decided that I would in fact seek later and further involvement with the management of the society. But rather than go forward with automatic nomination in to the vice presidency, at that point in time you are treasurer, vice president for two terms of junior and senior vice president and then went on to the ladder. What I did was stood for election for a second term. So I was treasurer for two years the first year being an appointment the second year being elected and then was

elected for the rest of my exposure to the executive committee. An interesting thing happened on the way to the presidency however, and that is I was following as the junior vice president, Press McNall, who could not go forward to the presidency and become President-elect. So not only did I stand twice in one role as the elected treasurer, I only was one year vice president, I was thrust immediately a year ahead into the presidential elect, President-elect position. Which again put me in a position of needing some leadership and I got that leadership from Bob McDonald and from Don Bahnfleth and the presidents that were part of my executive committee as the kind of the young fledgling coming in at treasurer level. So Bob McDonald I think was truly a significant factor for me, is presidency was very successful and of course he went on to found the Hong Kong chapter so he had some excellent impact on the society through his presidency.

B.J.

What advice would you give a young person entering this field?

B.B.

Well, my first bit of advice is to enter the industry to begin with because so many engineers are seeking what they think to be more glamorous, what they think to be more exciting, what they think to be more challenging kinds of engineering degrees and a look at unfortunately some of our heritages. Oh, a bunch of hardware guys and a bunch of metal bangers and a bunch of that sort. Now we're losing a lot of that but I think we have to first do is convince young people that this is in fact an exciting industry. Engineering is an exciting profession and we have to build some of that excitement back in. I love to go to work, I'd love to be in Milt Garland's position. At a hundred and two going to work every day if I chose to. That kind of dedication, that kind of enthusiasm is in fact the message to young people. The fact that I iterated earlier we are in the controlled environment 90% of the time. Just think of the environments that were going to be dealing with as we go into the 21st century. My guess is within my lifetime, and I firmly expect to be around just like Milt Garland, in my lifetime I think we will have life in artificial environments in some kind of a space situation. Now that space may be outside the universe and outside the earth's boundaries, it may be within the Earth's boundaries under the sea. But those contrived artificial in a sense manufactured environments are going to depend on the youth of today and I think that is just going to be an exciting possibility. When you think of what engineering is doing, when you think of what communication is doing that is dependent on each engineering profession, when you think of being able to control our environments as we now can inside buildings were just starting to see the envelope open of the exciting surprises of new technology. So my message to young people is join the industry. It's going to be an exciting time. But secondly my advice is don't be satisfied with the 8 to 5 job, that's survival. It's the extra. The extra that you put in, the extra that you get out, that makes for not only excitement, but it makes for success. And part of that putting back, and part of that input is through organizations like ASHRAE. ASHRAE is like the traditional jellybean bowl. You put some jellybeans in you've got jellybeans to take back out. So I'm a believer in the traditional position of putting back and so ASHRAE is a way for you to give and then get back perhaps even tenfold of what you put in. So my second advice to younger engineers is becoming involved in ASHRAE. They are not. Unfortunately our society membership is graying just like a lot of other demographics. But it's graying because the younger engineers are going home at 5:05. My message to the younger people is an organization like ASHRAE is an investment. Guess it does take input but that input year after year after year magnifies and leverages not just for that individual but for industry and the general good of the

public. So my second message to young people is to become involved in ASHRAE and actually make input to the society. They will find as I found that the more you put in the more you get back in terms of satisfaction, the more you get back in terms of technology, the more you get in return on investment on both time and money. So in my opinion both engineering is a good investment and exciting opportunity but so is ASHRAE. An excellent investment opportunity and an exciting kind of experience. So those are my words of wisdom to the youth. I would say also be patient. I find that, and I was the same way when I was that age, but today I find young people want everything tomorrow and it takes more time than that. It takes investment, it takes effort. Part of that investment is education. Part of that investment is in terms of time. Part of that investment is in contribution to people and it takes time to mature and so be patient. But I think the millennium just in and of itself is going to bring about such a focus of excitement. If you get light, trite and talk about well one of the big fixes is how are we going to make everything work. You know all of the computers are going to die at year 2000, they can't cope with it. We'll fix that, that's fixable. So that's not going to stop time but what is going to do is demonstrate how significant and how important that milestone is. And I hope to be very busy and active well into the 21st millennium to be able to revisit this kind of interview and say I told you so, I told you so. This is an exciting industry and I think we need to let our students know that, are young people know that and so we got to communicate amongst ourselves the excitement and enthusiasm and the passion.

B.J.

And do you have any other comments that you like to share with us today as a conclusion to our interview?

B.B.

A couple. Number one I think it's exciting and really beneficial for ASHRAE to be doing this. To be doing some downloading. One of the great wastes I see in the society, I don't know how to fix this nor do any of the past presidents have any great inspiration because we all wrestle with this issue. The presidency is like climbing a mountain and when you're on the mountaintop you are in an atmosphere that is ethereal. You are close to heaven. And the day after the presidency, you're down in an abyss that in a sense forgets that you were ever there. I was particular fortunate because I was able to devote sufficient time to, I feel, then some things. Bring about perhaps of course a few degrees of change so I feel good about that. But the frustration is that we have such a reservoir of talent in not only are presidential members but in the fellows of our society who are experienced, knowledgeable and you are ready and willing to share that knowledge. And so anything we can do like this to share the knowledge, to share experience, to share the insight and to build some of the excitement and passion that we must for the young people is a project well served. I commend you for this process. Don't put it under a bushel. Do something with this activity not with me specifically but with the presidents so that this becomes not something that goes into the archives but is a living memorial to the leadership of a truly dynamic and powerful organization. So A, I commend you for this process. B, I would like for the membership at large to understand how fortunate they are, how truly fortunate they are that they have volunteers who are willing to take the time and in the case of my year and back spend a lot of personal money. Because you see back then we didn't reimburse expenses for anyone other than the president so not only did you donate your time you donated your money. So that has been a serious obstacle and problem to some ascending potential leaders. So having changed that I'm proud to say that we today have a reservoir of truly capable people that are devoting a good portion of their discretionary time to

the leadership of the society, to the benefit of the members, and to the benefit of the general public. And we need that message repeated again and again and when you see this lineup of individuals you're seeing with every one of them leadership skills, power, and clarity and credibility that they have brought to ASHRAE. It in a sense ASHRAE is a combination of all those leaders for a number of years. The membership are very fortunate that we have access to that brainpower and into that leadership and to those leadership skills. So my message secondly is to the membership of the value of the folks that do in fact lead the society and its committee work and in its management. And thirdly, I contacted and have been involved in a lot of societies through both my professional work and my representation of ASHRAE and so on and I'd have to say that the society needs to really appreciate the fact that it's got one of the best staffs that I have come across in any of the trade and technical associations. So part of the strength of ASHRAE is the fact that it got a truly capable and committed staff that support these volunteer leaders and so I think that message is important and critical. I could not have done the work I did without a really truly committed incapable support activity from staff. So no president can survive that year without really good strong leadership. The last comment I've got is kudos to the spouses. The spouses in this society are both expected but secondly have the opportunity to participate in ways that are truly unique two societies like this. And so I have to be expressing for, on behalf of Sandy, the fact that she truly both enjoyed and was challenged by the opportunity to support the activity. Sandy was in fact during those years at Purafil and later a member of the society. So she felt more closely linked to the technology because it was her profession and her outreach as part of the management of Purafil. But that aside the spouses who support the leader should be commended because of the commitment and time they take to make the process work. And so we need to remember that. That's pretty well wraps it for me. It was a great year. I still see things, I still hear stories, I'm still able to identify as I make chapter visits, significant factors that are happening today that I touched or was involved in or had some influence on a decade ago. So I truly feel that I did in fact affect the pathway, I truly do feel that as an engineering society and as having been a leader of the engineering society I did a little bit of impact on the human destiny.

B.J.

Thank you Barney, it has been a pleasure to talk with you.

B.B.

My pleasure.