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R. Bruce Thompson: Making a difference to safety and the NDE community

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R. Bruce Thompson: Making a difference to safety and the NDE community

Abstract

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Keywords

engineering education, nondestructive testing, safety

Disciplines

Engineering Education | Materials Science and Engineering

Comments

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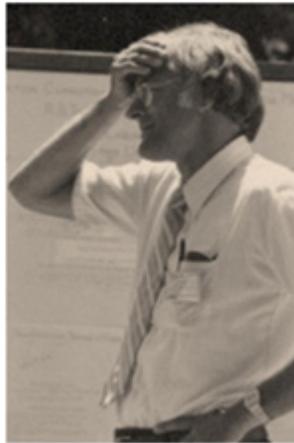
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R. BRUCE THOMPSON: MAKING A DIFFERENCE TO SAFETY AND THE NDE COMMUNITY

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At the 2011 QNDE conference and at a special symposium at Iowa State University in October, we paid tribute to a friend, a mentor, and a colleague, R. Bruce Thompson. In several presentations, we heard of the contributions that Bruce made to Iowa State University and the Ames Laboratory. At ISU, Bruce was a Distinguished Professor in Aerospace Engineering and Materials Science and Engineering. During his 30 plus year tenure at ISU, he worked with hundreds of students in the NDE education and research programs, including serving as the major professor for over 30 students. Bruce also served as the Deputy Director for Science and Technology for the Ames Laboratory prior to his service as the Director of the Center for NDE. In addition to his technical guidance of the Ames Lab, Bruce was active in the education outreach functions of DOE, serving many roles in the K-12 programs, including the annual Science Bowl. While those activities give a glimpse of the breadth of his impact, the speakers that followed gave a view of the depth of that impact. Like many of the speakers, I've had the privilege of working with Bruce for much of my whole career and on a daily basis. It is hard to think about the Center for NDE and not think about Bruce. The photo shown here is how I remember Bruce when I first met him. It was taken at a QNDE meeting. For those less familiar with NDE, one of the contributions that Don and Bruce Thompson have made to the field is the establishment of the Annual Review of Progress in Quantitative Nondestructive Evaluation. Don Thompson, the founding director of CNDE, started the conference as a contract deliverable on the first DARPA program that initiated the concept

of applying quantitative nondestructive measurements to the detection and sizing of defects and damage that could impact flight safety of critical aircraft components. The meeting that began as data sharing in Don's backyard in Southern California, has grown to the preeminent research conference in NDE with over 350 attendees from over 20 countries. Bruce was committed to transfer of results and one mechanism he used was participation in the QNDE conference. I have not done a comprehensive search, but I'm pretty sure that Bruce published more papers in the QNDE proceedings than any other author. There are 253 QNDE papers listed on his vitae, beginning with a paper in Volume 1 that Kevin Smith used in his presentation. That easily means that Bruce's papers, some of which he served as co-author, would comprise one volume of the QNDE proceedings. In the papers written from these tributes, you'll find summaries of some of the primary topics from collaborators who have worked with Bruce, beginning with his career at the Rockwell Science Center and continuing thru his tenure at Iowa State University and the Center for NDE. Bruce came to ISU with Don Thompson, the founder of the QNDE conference and of the Center for NDE at ISU. It might not surprise you that Don always worked to have Bruce take more responsibility for QNDE but Bruce resisted to the extent you can resist Don. Looking at the number of papers that Bruce generated, I'd have to say Don was successful! **Bruce has had a major impact on the NDE profession.**

I want to return your attention to the photo of Bruce. If I were to guess, I'd say that Bruce was in conversation with a colleague, and whether it was the first time Bruce met this person or someone he had known for his whole career, Bruce considered that person a colleague. At Bruce's passing, I heard from NDE professionals around the world. If there was a consistent message in those thoughts, it was that Bruce always listened with respect and no trace of condescension. In working with Kevin Smith and Tim Gray in their preparation for their tribute presentations, we arrived at two primary conclusions. If you review Bruce's first QNDE paper, you'll find some consistent themes with his long term work. We arrived at the conclusion that Bruce spent his career helping us to understand things that he already knew. But to his credit and our benefit, Bruce also spent his career listening to the perspective and needs of others. While we miss Bruce immensely, he has left us with a strong message to guide our lives and our careers: There is value in collaboration and to be an effective collaborator, you must also be an effective and willing listener. **Bruce made a difference in the NDE community.**

Over Bruce's career he collaborated with numerous university and industry partners. Kevin Smith who also participated in this tribute, first worked with Bruce in a collaboration, known as the "Retirement for Cause" program, an Air Force program that had as its goal to use NDE to determine the health of engine disks and if no defects were found, return those disks to service rather than retiring them because they had reached a predetermined lifetime. Retirement was based on expected life with a conservative safety factor applied across the population rather than retirement because of the condition of an individual part. That program enabled damage tolerance design approaches to be applied to aviation propulsion, saved the Air Force millions of dollars over the past 25 years, and provided safety for our warfighters. **Bruce made a difference to the safety of our military.**

Warren Junker, from Westinghouse, was on our original agenda. We ask Warren to speak because he worked with Bruce in a different industry that relies heavily on NDE to assure safety, the nuclear power generation industry. Warren called me last week from Spain. He was called away to deal with inspection related issues and would not be able to make it back in time for today's remembrances. Warren was disappointed about not being able to be attend. I asked if he had slides or comments he wanted me to share. He responded saying that it would be difficult for someone else to convey his story. He

planned to relay to us the details of an early presentation that Bruce gave at QNDE. Warren did not tell me the technical details but he did say it is the only NDE paper that he can remember every detail and it has made a difference in how he approaches problems even today. **Bruce made a difference in the safe operation of our nuclear power systems!**

Like Kevin and Warren, and many others, Bruce played an instrumental role in my development as an NDE professional. While I met Bruce during my graduate career and interacted with him when I first began my CNDE career as a research associate, it wasn't until I began as the Assistant Director at CNDE and took on program management responsibilities for the FAA-funded Engine Titanium Consortium (ETC) that I really came to know Bruce. As the program manager for ETC, I had responsibilities for coordinating the efforts of the scientists at ISU with the efforts at General Electric, Pratt & Whitney, Honeywell, and Rolls Royce. The ETC program has as its objective to provide improved inspection tools for jet engine materials and components in a cost-effective manner. This collaborative program with four competitors solved very challenging technical issues, but also required strategic attention to political, business, and interpersonal factors. Bruce and I spent many times together in airports, board rooms, and restaurants discussing the intricacies and ramifications of next steps. Together, we were able to step our way thru sometime tense situations between the regulator and the industry being regulated. We did that because in the end, we knew the work being done by ISU and our partners was making a difference. **Bruce made commercial aviation safer.**

Dave Hsu spoke on behalf of George Alers on EMATs, electromagnetic acoustic transducers. While this was not a focus for Bruce in the past few years, you'll hear about the foundational work that he did that impacted the whole industry. Earlier this week I had information from a colleague at BP that he was in the North Sea, validating an EMAT method for their offshore assets. **Bruce made the petrochemical world safer.**

When I became Associate Director at CNDE, my focus was to be on transferring the results from CNDE to industry. I've had the privilege of working at the interface between our scientists and the industry users. I remember a conversation with Bruce about the challenges associated with moving technology into practice. We had enjoyed success in transitioning some of our ultrasonic simulation tools to Pratt & Whitney and were in discussions to expand that collaboration. Bruce commented that all interesting phenomena take place at interfaces and the transition of technical results is no different. He also said that having the patience, stamina and stubbornness to work at that interface is rare. Occasionally, it's a little messy. If you've ever seen Bruce's office, you'll know he did not mind messy. We have been sorting thru Bruce's office and found the card that you see here. Who sent the card isn't noted. But whoever it was, I'm sure they were aware Bruce was not afraid to bridge that gap between research and implementation. **Bruce made a difference in technology transfer.**

We have all struggled over the past year to understand and cope with the loss of a dear friend and colleague. Bruce has been a mentor to many of us, a job he did well and accepted readily. John Mittleman, one of Bruce's PhD graduates, will share perspectives from the students this afternoon. I want to make you aware that the Thompson family has established the R. Bruce Thompson NDE Scholarship Fund which will be used to support graduate student fellowships at the Center for NDE at Iowa State University. Details are at



<http://www.cnde.iastate.edu/rbtmemorial>. This is a fitting tribute to Bruce given his interactions with students and his excitement in teaching all of us. There is still much NDE work to be done and Bruce's legacy will continue thru the work of his colleagues and those that we assist in entering the NDE profession thru this scholarship. **Bruce made a difference to NDE education.**



There is a story that was shared by Bruce's sister at his passing. It turns out that Bruce loved baseball – not a surprise to anyone that knew him and his love for the Boston Red Sox. That love started young but then as a player. As Nancy told the story, their mother was always worried that Bruce was too skinny and that would reflect negatively on her. His mom insisted that Bruce have a peanut butter and banana sandwich before he could go out for play. On the path to go outdoors was a refrigerator that apparently was an excellent hiding place for sandwiches you did not want to waste time eating. When the refrigerator was moved some time later, a whole collection of old sandwiches was found behind it. That may be the only case of Bruce rejecting food! Bruce showed that same passion “to go out and do” in all that he did and he shared that with us each day. I hope you'll each take that passion with you after today and make your impact on the world. Like Bruce, made a difference and do it with enthusiasm and a smile. Bruce would probably be embarrassed by the focus of attention on him. He would point out that he didn't make these contributions alone. He did it by working with his colleagues. In the presentations and papers from this tribute, you'll hear from those that worked closest with Bruce. You'll learn some about EMATS and ultrasonics. From Bill Meeker you will learn about his contributions to reliability and POD. You'll learn that while you might not think about CNDE without thinking about Bruce, in his professional life, Bruce always thought about CNDE first. We have benefited from his intellect, his humor, and his partnership. For that, I extend my appreciation to Ann, and their family for sharing him with us. **Bruce made a difference to all of us!**