The George W. Woodruff School of Mechanical Engineering at Georgia Tech Presents The Annual Harold W. Gegenheimer Lecture Series on Innovation

Featuring:

Dr. Roger L. McCarthy, P.E.
Chairman of Exponent, Incorporated

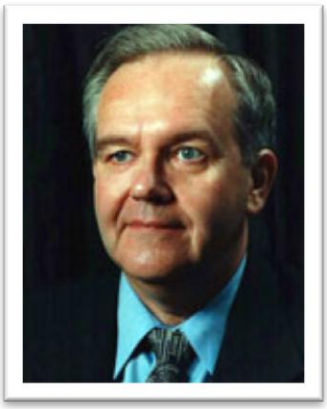
Speaking About:

Engineering Disasters: Those who cannot remember [innovation's] past are condemned to repeat it.

Thursday, October 31, 2002, 3:30 P.M.
Van Lee (ECE) Auditorium
Georgia Tech Campus, Atlanta

(Reception after the lecture)

Biographical Sketch



Dr. Roger L. McCarthy is Chairman of Exponent, Inc, formerly Failure Analysis Associates Incorporated (FaAA).He joined FaAA in 1978, becoming President and CEO in 1982, and Chairman of the Board in 1988. He took the company public in 1990. Exponent employs more than 700 full-time staff in 18 offices throughout the U.S., 400 of whom are degreed professionals, including more than 200 Ph.D.'s. Dr. McCarthy has been involved in many of the major national discussions of product safety, and acceptable levels of product risk, of the last two decades. He appears regularly on the History Channel and the Discovery Channel in programs dealing with failures and disasters. In 1992 he co-hosted the prime time NBC TV show based largely on the case history files of Failure Analysis Associates, entitled What Happened. Dr. McCarthy has also been involved in analyzing and reconstructing many of the major disasters of the last two decades, including the loss of the Amoco Cadiz, the grounding of the Exxon Valdez, the explosions and fires on the Piper Alpha and Glomar Artic II Platforms, the collapse of the walkways at the Kansas City Hyatt, and the roof of the Kemper Arena.

Dr. McCarthy earned his bachelors degree in mechanical engineering at the University of Michigan, as well as an A.B. in philosophy. He did his graduate study at the Massachusetts Institute of Technology, earning the S.M. degree, the mechanical engineers degree (Mech. E.), and a Ph.D. in mechanical engineering. He is a registered Professional Mechanical Engineer in Arizona and California, and a Registered Engineer in Georgia. He is a member of the Mechanical Engineering Department's Visiting Committee at MIT and a member of the External Advisory Board of the University of Michigan's Department of Mechanical Engineering. He is former

Chairman of the Safety Engineering and Risk Analysis Division of the American Society of Mechanical Engineers (ASME). He is currently a member of the ASME's Board of Safety Codes and Standards. Dr. McCarthy was awarded the Outstanding Civilian Service Gold Medal by the U.S. Army in 1998. In 1994 the University of Michigan awarded Dr. McCarthy the Alumni Society Merit Award in Mechanical Engineering. In 1992 President Bush appointed Dr. McCarthy to a two-year term on the President's Committee on the National Medal of Science.

Synopsis of the 2002 Gegenheimer Lecture

Disasters can and do result from innovators failing to remember the experience we gained from past innovation. Invention often tests the known and takes us into regimes where we have no experience, and unintended effects have to be accepted as a risk of this exploration. The challenge to present and future engineers is to insure that we only suffer the consequences of the unknown, lest we have to endure, again, the previously learned lessons of past innovation. A challenge to our system of engineering and scientific education is to formally teach students to learn and codify lessons gains from failure, as well as success. There is invariably deeper meaning in a disaster than the facts of the specific event. Most every engineering student emerges having seen some dramatic film footage of the Tacoma Narrows Bridge resonating in the wind prior to its collapse, illustrating the importance of both aerodynamics and vibration. However, how often is that spectacular example used to teach the principle that engineering disasters can result from known, but normally ignored, second order effects in a previous design becoming important first order effects in a scaled up design? This happenstance appears too often in engineering history. Exponent, Inc., formerly Failure Analysis Associates, Inc., since its founding in 1967, has emerged as the largest engineering and scientific firm in the world specializing in investigating failures and disasters. Our computerized accident and incident databases alone contain over 350,000,000 records. Over the past 35 years, we have learned some important lessons that we believe should be part of every formal engineering curriculum, and a few of the most important for innovators will be discussed in this lecture.

Cases of spectacular engineering innovation, such as the design and construction of the Titanic, the Piper Alpha platform in the North Sea, and the Space Shuttle Challenger, will be used to illustrate lessons gained from these remarkable engineering feats. The next generation of innovators will be taking the lead to raise our technologies to the next level and will be challenged to remember that while they often can and must "think outside the box" Mother Nature never leaves "the box." Inventors can attempt to operate outside the heuristic "six-sided space" formed by the three laws of thermodynamics and three laws of motion, but only at their peril.

About the Lecture Series

The Lecture Series on Innovation was established in 1995 through an endowment from Mr. Harold W. Gegenheimer (Class of 1933) to support student programs that encourage creativity, innovation, and design. Through the lecture series and support of capstone design projects, students are exposed to processes that stimulate creativity and lead to inventions and patents. The previous Gegenheimer lecturers were:

1995	Dr. Jerry M. Woodall	Distinguished Professor of Microelectronics at Purdue University	*Necessity Is the Mother of Invention, But Curiosity and Persistence Make It Happen*

1996	Mr. Burt Rutan	President and CEO of Scaled Composites, Inc.	*Innovation: Use It or Lose It*
1997	Dr. Jim Adams	Professor at Stanford University	*Creativity Versus Control: Their Impact on Innovation*
1998	Dr. George N. Hatsopoulos	Founder of Thermo-Electron Corporation	*Thermo Electron and the Spin-Out Business Design*
1999	Mr. Richard Teerlink	Retired President and CEO of Harley Davidson, Inc.	*Our Learning Journey*
2000	Dr. Woodie Flowers	Pappalardo Professor of Mechanical Engineering at MIT	*Innovator, Innovatee, or Somewhere Between?*
2001	Dr. Leo Beranek	Co-Founder, Past President, and CEO of BBN	*Concert Halls of the World and Their Design*

About the Woodruff School

The Woodruff School of Mechanical Engineering is the oldest and second largest of the ten divisions in the College of Engineering at Georgia Tech. The School offers academic and research programs in mechanical engineering, nuclear and radiological engineering/medical physics, paper science and engineering, and bioengineering. The enrollment includes 1674 undergraduates and 696 graduate students. Studies are directed by a full-time staff of 72 professors, ten joint faculty, 23 research faculty, and five academic professionals, who are supported by 43 staff members. The George W. Woodruff School of Mechanical Engineering is the only educational institution to be designated a Mechanical Engineering Heritage Site by the American Society of Mechanical Engineers. For more information about the Woodruff School contact:

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