(right brain). This interdisciplinary approach for developing leaders has led to new Northwestern programs and initiatives for engineers and nonengineers and it has sparked partnerships between the McCormick School and Block Museum of Art, School of the Art Institute of Chicago, Shirley Ryan AbilityLab, Shedd Aquarium, and others.

In addition to his appointment as dean, Dr. Ottino is Distinguished Robert R. McCormick Institute Professor, Walter P. Murphy Professor of Chemical and Biological Engineering, and professor (by courtesy) of mechanical engineering. He started his career at the University of Massachusetts Amherst, has held chair and senior appointments at the California Institute of Technology and Stanford University, and has supervised more than 50 PhD theses. He is the founder and former director of the Northwestern Institute on Complex Systems (NICO).

Acceptance Remarks by Julio M. Ottino

Julio M. Ottino

Receiving this award is an incredible honor, and I share it with many people.

In cases like this, one is supposed to say something about how the idea emerged. With this there is a temptation to beautify the path of how things came about, describing things—to paraphrase someone famous, Hermann Helmholtz—as a smooth royal path rather than as a shaky ladder. Or, as Ludwig Wittgenstein put it, when reaching the top, to kick the ladder altogether, erasing the trail of missteps, errors, and difficulties, and often presenting things as epiphanies.

I do not believe in epiphanies, at least I cannot tell you I have ever had a clear one. I have had two, maybe three good ideas in my career. But for me, ideas emerge in a kind of cloudy state, with lots of components, some very amorphously defined, that sort of dance in your brain. Sometimes you have to let them self-organize, and at some point there is one piece, no more special than the others, that makes the picture more complete. In this case, it was coming up with the term "whole-brain engineering."

When I first began as dean, the school was largely disconnected. I needed to connect the school with the larger fabric of the university. This was more than creating structures. It was about creating the right kind of people. The people are the connectors. We had to change the culture through individuals.

The quickest way to do this was to change our undergraduate experience. By integrating right-brain thinking into the undergraduate curriculum, we could excite a new generation of engineers. This is the quickest way to do anything. If you give young students a match, they will bring you a forest fire.

We began to reframe engineering at Northwestern. We began to see ourselves not as a distinct school but as part of a system, a network of disciplines and ideas. We began to intertwine learning and doing, which is the way things work in the arts but a more uncommon approach in engineering. And we began to see collaborations as investments. We targeted activities with every school at Northwestern as well as partners outside the university.

Now if I look at this in hindsight, whole-brain engineering is really about something called complementarity or the principle of complementarity. Niels Bohr made sense of the quantum world by holding two separate ways of describing a system in his mind at the same time. Light is both a particle and a wave: light travels as a wave but interacts with matter as a particle. Both descriptions—light and wave—are correct and useful, but ultimately they are incompatible. It is about seeing two extremes at the same time.

Complementarity applies to art/science, abstraction/realism, rationality/intuition. F. Scott Fitzgerald said, "The test of a first-rate intelligence is the ability to hold two opposed ideas in your mind at the same time and still retain the ability to function." Complementarity is not about just being able to function. It is about thriving.

This is the view from 10,000 feet, which I have because I am the dean. But of course it must translate down to our many courses, majors, research projects, and programs, and for that I am grateful to the many, many people on whose shoulders I rest to be able to have this view.

For design, I thank Greg Holderfield, Bruce Ankenman, and Ed Colgate for their original vision in incorporating design into our curriculum and for continuing to innovate every day. I also benefited from many conversations with Walter Herbst, Don Norman, Bruce Mau, and others.

A big part of our design curriculum, the entry point to everything, is Design Thinking and Communication (formerly Engineering Design and Communication), and for that I thank Steve Carr, Ted Belytschko, and Penny Hirsch for their hard work in helping to create this course.

Another big part of our design efforts is the student initiative Design for America, for which I thank Liz Gerber, Mert Iseri, Yuri Malina, Hannah Chung, and Aaron Horowitz.

For our entrepreneurship efforts I must thank Mike Marasco and Mark Werwath, and for our leadership efforts I thank Adam Goodman. Joe Holtgreive has helped us to develop a truly distinctive vision of personal development.

Northwestern has been full of good partners, people who have stretched in multiple directions. Many are here today, such as Lisa Corrin of the Block Museum of Art, Saul Morson from Weinberg, and Daniel Diermeier from the University of Chicago. In this vein I should thank also Mark Mills of Forbes—I have exchanged views with him on a multitude of topics, including the very first published versions of the whole-brain paradigm.

Many of the McCormick Advisory Council members, represented here by Ken Porrello, have given many hours and words of advice as we charted this path, and for that I am grateful. I am especially thankful to the MAC members past and present who travelled here—there are at least four from California.

I have been tremendously lucky to have an outstanding team working with me. Thank you to the many members of the McCormick leadership team, particularly Rich Lueptow, Ajit Tamhane, Joe Schofer, Alice Kelley, and Wes Burghardt.

Finally, I have to thank my toughest critic, my wife Alicia, who keeps me grounded, humble, and on my toes.

I conclude by thanking Morty Schapiro and Dan Linzer—they have been very big supporters of these ideas—as well as many other members of Northwestern's leadership team, and my fellow deans, for allowing me to follow this vision throughout not only McCormick but the university.

Eventually, from one idea comes a network of ideas, and the network of ideas becomes a system and a culture. I am not going to be shy—the ultimate goal is to make Northwestern a whole-brain organization. I think that this is where we are going. This prize will allow us to keep plowing forward to make that a reality.

Thank you.

Georgia Institute of Technology Hosts NAE Regional Meeting on Data-Enabled Design and Manufacturing

The Georgia Institute of Technology hosted an NAE regional meeting April 19–20 at the Historic Academy of Medicine in Atlanta, attended by approximately 70 members of the engineering community.

The event began with a dinner at the Georgia Tech Hotel on April 19. **Rafael Bras**, Georgia Tech provost, welcomed the attendees and introduced the speaker, Brian Krzanich, CEO of Intel. Intel has a long-standing relationship with Georgia Tech as both a recruiter and benefactor and has played a significant role in funding Georgia Tech's efforts to recruit and retain underrepresented minority engineering students.

On April 20 attendees were welcomed by **C. D. Mote, Jr.**, president of the National Academy of Engineering, who congratulated Gary May, dean and Southern Company Chair of the Georgia Tech College of Engineering, on his new position as chancellor of the University of California, Davis in August. G.P. "Bud" Peterson, president of Georgia Tech, gave an overview of the institute and was followed by Dr. May, who discussed student innovation and the Grand Challenges Scholars Program, which gives students the opportunity to focus on one of the NAE's