



# Reprising the Renaissance

By Shirley Ann Jackson, Ph.D.

From the  
President's  
Office

Shirley  
Ann  
Jackson,  
Ph.D.

There is growing appreciation in education today for the equal and equitable nature of the scientific and technical disciplines and the arts. As we adjust to an international market economy and the growing global community, we see the need for new approaches to education—approaches which synthesize technology and the arts, educating students to make substantial contributions to a changing society.

During the Renaissance, there was little or no distinction between engineering and the arts. Leonardo Da Vinci, who painted and sculpted some of the world's greatest art treasures, designed machines for human flight and called himself simply an "engineer."

Michelangelo, who designed and built the dome of St. Peter's Basilica in Rome, had to oversee the quarrying and transport of the marble he intended to carve. Michelangelo spent years in the Carrara Mountains, building mountain roads and often devising special mechanisms to move the huge marble blocks.

In the Renaissance, to be an artist required being an engineer. Learning and creating at the nexus of the engineering sciences and the arts led to major achievements in art and in technology.

Later, in the middle of the 19th century, representatives of the new Industrial Revolution technologies began to challenge the concept of the classical, liberal arts education.

But John Henry Cardinal Newman, who established the National University of Ireland, countered their challenge with his classic defense of, and case for, the liberal arts, in discourses titled, "The Idea of a University." In this timeless work, Cardinal Newman maintains that the liberally educated person "possesses the knowledge, not only of things, but also their mutual and true relations; knowledge, not merely considered as acquirement, but as philosophy." He asserted that "all knowledge forms one whole."

Cardinal Newman's approach is needed more today than ever. All fields of study narrow as specialization increases. The totally narrow view is nearsighted and ultimately faulty. The antidote is to learn—and, to learn to think—in context, derived from a basis in the liberal arts, and a multidisciplinary approach to problem solving.

Increasingly, technology creates the settings for, and the means of, human interaction; therefore, a grounding in the liberal arts is becoming a necessary component of a science and engineering education. Here are some of the reasons:

○ To be effective, scientists and engineers must commu-

nicate clearly. The graduate entering industry will spend a good deal of time explaining science and technology to lawyers, consumers, legislators, judges, bureaucrats, environmentalists, the media, and the general public.

- Broadly educated graduates heighten respect for scientific and technological solutions among policy makers and the public, and mitigate a cultural fear that can challenge progress.
- Scientists and engineers must sense the social consequences of their work. This becomes a question of ethics: it *can* be done, but *should* it be done? A broad education enables ethical thinking.
- A broader education ultimately makes students more creative by expanding minds and exercising imaginations.

At Rensselaer, we begin with basic sciences and math that will change very little over the course of a career. We also offer a foundation that includes humanities and the social sciences, and the study of how disciplines work together to formulate solutions to complex problems.

To this, we have added a degree program in the electronic arts which augments the traditional performing arts, and we are building an Experimental Media and Performing Arts Center (EMPAC), encouraging study and research at the convergence of art and technology, and creating a broader, richer sense of the world and its possibilities. Rensselaer will utilize EMPAC to extend the Renaissance at Rensselaer through the curriculum. By this measure, we embody the qualities of Leonardo Da Vinci—inquiry, imagination, scientific and technological rigor, vision and creativity—applying them to individual and to converging disciplines.

To teach at the intersection of technology and the arts requires creating inter- and multidisciplinary experiences for students to learn in team environments, paralleling what they will experience in real-life technological situations. We are doing this through technology-enabled interactive learning in studio classrooms, and through our multidisciplinary design laboratory, where students work on real-life engineering problems. They also work with teams in industry over the Internet, where teammates represent multiple disciplines and, often, several cultures.

This unfolding approach to science and engineering education—linking the sciences and technology to the arts—prepares graduates to think, to plan, to consider in context, to discern ethical implications, to communicate and, most importantly, to lead.