

THE NEW ENGINEERING RESEARCH CENTERS: PURPOSES, GOALS AND EXPECTATIONS

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This book is the outgrowth of a symposium, "The New Engineering Research Centers: Factors Affecting Their Thrusts," held on April 29-30, 1985, under the auspices of the National Research Council's Commission on Engineering and Technical Systems (CETS).

The new Engineering Research Centers (ERCs) program was initiated by the National Science Foundation. Selected from 142 proposals, six Engineering Research Centers (involving a total of eight universities) were announced in early April of 1985, and are now in operation.

The papers published in this book were presented at the symposium to introduce the new centers to the engineering community at large and are grouped under the captions: 1) The National Goal, 2) The Center as a Reality—Plans, Mechanisms and Interactions, and 4) The Future—Challenge and Expectations.

Dr. George A. Keyworth II, Science Advisor to the President, described the "national goal" with this statement: Improving the U.S. position in international industrial competitiveness.

From several sections of the book the following quotations will highlight the important concepts behind the creation of the ERC program.

The ERC program is a result of the realization that our engineering schools are becoming increasingly engineering-science oriented, with greater and greater emphasis on analysis of narrowly focused topics. While analysis in engineering science is an important facet of engineering, it is clear that we have neglected synthesis-oriented skills such as design, optimization of engineering systems, and system integration. (p. 39)

We have to increase our effort in the kind of research that bridges the gap between fundamental scientific research and application. This kind of research is engineering research. (p. 20)

We need more engineering research, and we need more engineering graduates who understand how to do engineering research. We need to put them to work in those areas where economic competitiveness is at stake; and we need to make

sure that the knowledge they generate and the guidance they provide permeate the whole engineering community, not just the research community alone. We need wider and stronger bridges between the people doing engineering in industry and the people teaching engineering and doing research in universities. (pp. 22-24)

The Engineering Research Centers are to "Bridge Gaps" (pp. 23-26): Bridging Gaps Between University and Industry; Bridging Gaps Among Engineering Disciplines; Bridging Gaps Within the Innovative Process.

The ERCs are required to have "industrial participation" and, in addition to research, must also have an "education" component.

The six new Engineering Research Centers are

Systems Research Centers (University of Maryland, Harvard University)

Center for Intelligent Manufacturing Systems (Purdue University)

Center for Robotic Systems in Microelectronics (University of California, Santa Barbara)

Center for Composites Manufacturing Science and Engineering (University of Delaware)

Engineering Center for Telecommunications Research (Columbia University)

Biotechnology Process Engineering Center (MIT)

The six ERCs are only the first contingent of what the NSF expects eventually to grow to some twenty centers, each with an average annual budget of \$2-5 million. This book will be valuable to those schools with the aspiration to apply for a new Engineering Research Center. □

ENGINEERING GRADUATE EDUCATION AND RESEARCH

Panel on Engineering Graduate Education and Research, John D. Kemper, Chm., National Academy Press, Washington, D.C., 1985. \$14.95

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This monograph is part of an overall study of engineering education and practice in the United States conducted under the auspices of the National Research Council. As the title implies, the study examines the present status of graduate engineering education and its relationship to graduate research. In the conduct of the study, the Committee reviewed the data and conclusions of previous comprehensive engineering studies including the *Report on Evaluation of Engineering Education* (Grinter Report), the President's Science Advisory Committee report entitled *Meeting Manpower Needs in Science and Technology* (PSAC Report), and the *ASEE Goals of* Continued on page 193.