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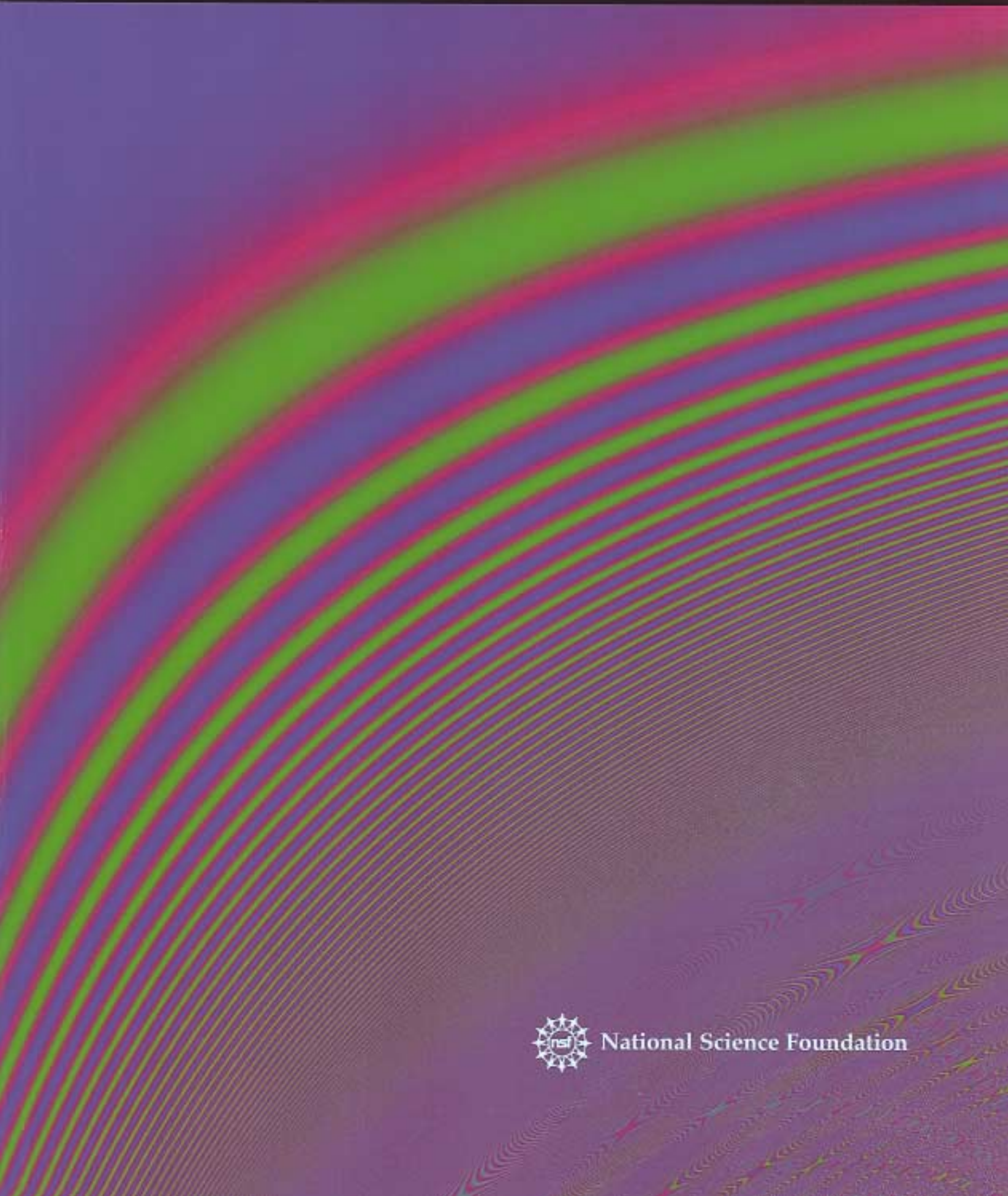

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The Cover

The cover shows the evaluation of a mathematical function. This mathematical visualization image was created by Nicholas Priebe, an undergraduate student at the San Diego Supercomputer Center (SDSC), a national laboratory for computational science and engineering established by the National Science Foundation. The color of each pixel in the 4096×4096 matrix represents the value of that point of the function

$$\sin(t^{(n+1)}/(n+1))$$

where the value of t ranges from 0 to π and of n from 0 to 10. An interactive function parser developed by Priebe evaluated the expression. The values of the function were calculated using 48 nodes of SDSC's Intel Paragon supercomputer.

The image conveys the beauty and elegance of science and represents the value that the National Science Foundation places on the integration of research and education. The entire computation, including function parsing and disk I/O, took only 1 minute. This image demonstrates the power of parallel computing for interactive tasks, such as trial mathematical functions evaluations, thereby highlighting the impact of advancements in computing instrumentation in spurring progress in numerous fields of science and engineering. For further information, contact the San Diego Supercomputing Center at Webmaster@sdsc.edu.

Cover design by Pat Bryant and Rachel Delgado-Simmons, National Science Foundation

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Letter of Transmittal

NATIONAL SCIENCE BOARD
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

January 11, 1996

The Honorable William J. Clinton
The President of the United States
The White House
Washington, DC 20500

Dear Mr. President:

It is my honor to transmit to you, and through you to the Congress, the twelfth in the series of biennial Science Indicators reports, *Science and Engineering Indicators – 1996*. The National Science Board submits this report in accordance with Sec. 4 (j)(1) of the National Science Foundation Act of 1950, as amended.

Continued investment in science and technology is critical to protecting our Nation's economic growth, the vitality of our industries, the productive use and husbanding of our resources, and the health and well being of our people. *Science and Engineering Indicators* contributes to a better understanding of this Nation's science and technology capabilities and helps to illuminate the importance of our investment in research and education and of strengthening the ties between them.

In an era of increased emphasis on assessment of government and university performance and industrial benchmarking, *Science and Engineering Indicators* provides decisionmakers and analysts in both the public and private sectors with a broad base of quantitative information and analysis regarding science, engineering, research, and education in the United States. Additionally, the Indicators report offers valuable comparative information on science and technology in other countries—the result of long-term collaborative efforts to support the continuous improvement and comparability of international data sources. The Board is proud to note that *Science and Engineering Indicators* has become an international standard for reporting on trends in science and technology and is much emulated by other nations.

The National Science Board expresses the hope that you, your Administration, and the Congress will find this report useful as you deliberate on and determine the policies and priorities for our Nation.

Respectfully yours,

Frank Rhodes

Frank H.T. Rhodes
Chairman

Acknowledgments

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Contents

Letter of Transmittal iii

Acknowledgments v

Table of Contents vii

Introduction xiii

Overview. Science and Engineering at the Crossroads xv

Chapter 1. Elementary and Secondary Science and Mathematics Education . 1-1

Highlights 1-2
Introduction 1-3
Chapter Background 1-3
Chapter Organization 1-3
Student Achievement 1-4
Trends in Achievement: The National Assessment of Educational Progress (NAEP) 1-4
Changes in Overall and Specific Mathematics and Science Proficiencies 1-4
Changes in Overall and Specific Proficiencies by Sex and Race/Ethnicity 1-6
Trends in English Proficiency Among Hispanic Students 1-10
Mathematics Content Area Proficiency by Sex and Race/Ethnicity 1-10
Changes in Student Background and Mathematics Achievement Score Trends 1-10
International Comparisons of 9- and 13-Year-Olds 1-11
Differences Among States in Mathematics Achievement 1-12
Comparisons of NAEP National and State-by-State Data with International Data 1-16
Experiments with Constructed Response Questions for Assessing Mathematics Achievement 1-16
Curriculum and Instruction in High Schools 1-17
Trends in Completion Rates of High School Mathematics and Science Courses 1-17
Coursetaking and Student Achievement 1-20
Relationship of Performance to Instruction 1-22
Computer Use in School and at Home 1-23
The Impact of High School Coursework in Science and Mathematics on Transitions to College and Work 1-24
College Instructors' Views of Incoming Mathematics and Science Students' High School Preparation in Science and Mathematics 1-25
Teachers and Teaching 1-26
Teacher Awareness of National Science and Mathematics Standards 1-26
Characteristics of High School Science and Mathematics Departments 1-27
Qualifications for Teaching Mathematics and Science 1-29
Qualifications, Experience, and Student Achievement 1-31
Recent Training 1-32
Conclusion 1-33
References 1-35

Chapter 2. Higher Education in Science and Engineering 2-1

Highlights 2-2
Introduction 2-4
Chapter Background 2-4
Chapter Organization 2-4

Global Diffusion of Science and Engineering Education 2-4
First University Degrees 2-4
Demographic Changes 2-5
International Comparison of Science and Engineering Degree Trends 2-5
Access to Higher Education and Science and Engineering Degrees 2-5
The International Faculty Survey 2-6
Characteristics of U.S. Higher Education Institutions 2-6
Bachelor's Degree Level 2-7
Master's Degree Level 2-7
Doctoral Degree Level 2-7
Carnegie Classification of Academic Institutions 2-9
Undergraduate Science and Engineering Students and Degrees 2-9
Recent Trends in College Enrollments 2-9
Engineering Enrollments 2-9
Characteristics of American College Freshmen 2-11
Associate Degrees in Science and Engineering 2-12
Associate Degrees by Race/Ethnicity 2-13
Bachelor's Degrees in Science and Engineering 2-13
Technical Education in Germany, France, Japan, and South Korea 2-14
U.S. Higher Education Faculty 2-16
Graduate Science and Engineering Students and Degrees 2-17
Trends in Graduate Enrollment 2-17
Master's Degrees in Science and Engineering 2-18
Doctoral Programs in the United States 2-19
Worldwide Doctoral Reforms and Comparison of Degrees 2-20
International Comparisons of Foreign Students 2-23
Major Sources of Financial Support 2-30
Support for Overall Graduate Students in Science and Engineering Fields 2-30
Sources of Support for Foreign Students in the United States 2-32
Conclusion 2-33
References 2-33

Chapter 3. Science and Engineering Workforce 3-1

Highlights 3-2
Introduction 3-3
Labor Market Experience: Recent Science and Engineering Bachelor's and Master's Graduates 3-3
Market Conditions 3-3
Unemployment Rates 3-3
In-Field Employment 3-3
Median Annual Salaries 3-3
Sectors of Employment 3-4
Labor Market Experience: Recent Science and Engineering Doctorate Recipients 3-5
Unemployment Rates 3-5
Involuntarily Outside of Doctoral Field 3-6
Adjunct/Non-Tenure-Track Positions 3-6
Postdoctoral Appointments 3-7
Occupations 3-8
Professional Society Data 3-9
Selected Characteristics of the Science and Engineering Population 3-9
Basic Characteristics 3-9
Age Distribution 3-10
Relationship Between Occupation and Education 3-11
Salaries 3-11
Women in the Science and Engineering Labor Force 3-12
Racial/Ethnic Minorities in the Science and Engineering Labor Force 3-14

Industrial Science and Engineering Job Patterns . . . 3-15
Manufacturing Industries . . . 3-15
Nonmanufacturing Industries . . . 3-16
Federal Employment of Scientists and Engineers . . . 3-16
Agency of Employment . . . 3-17
Work Activities . . . 3-17
Demographics . . . 3-18
Salaries . . . 3-18
Supply and Demand Outlook for Science and Engineering Personnel . . . 3-18
Operations of the Science and Engineering Labor Market . . . 3-19
Projected Demand for Science and Engineering Personnel . . . 3-19
Science and Engineering Employment: Projecting the Demand Side . . . 3-19
Science and Engineering Employment: Projecting the Supply Side . . . 3-20
Supply-Side Responses . . . 3-21
Supply Flexibility . . . 3-21
Immigrant Scientists and Engineers . . . 3-22
Science and Engineering Workforce Issues in an International Perspective . . . 3-24
Science and Engineering Employment as a Proportion of the Labor Force . . . 3-24
Employment of Women . . . 3-24
Employment by Sector . . . 3-24
Research and Development Employment . . . 3-25
References . . . 3-26

Chapter 4. Research & Development: Financial Resources and Institutional Linkages . . . 4-1

Highlights . . . 4-2
Introduction . . . 4-4
Chapter Background . . . 4-4
Chapter Organization . . . 4-4
National Trends in Research and Development Expenditures . . . 4-4
National Research and Development Trends by Source of Support and Performing Sector . . . 4-5
Research and Development Support and Performance by Character of Work . . . 4-9
Definitions . . . 4-9
Alternate Models of R&D and Innovation . . . 4-10
Research and Development Patterns by Sector . . . 4-12
Industrial Research and Development . . . 4-12
"Biggest" Problems Facing Technology Leaders . . . 4-13
Industrial Research and Development Planning Environment . . . 4-14
Defense Conversion: Will it Prove Successful? . . . 4-17
SBIR Program Expands Support for Small Business R&D . . . 4-19
Federal Research and Development . . . 4-21
Federally Funded Research and Development Centers . . . 4-26
The National Laboratories—A New Role? . . . 4-28
Geographic Distribution of Research and Development Spending . . . 4-30
Leading States and Sector Performance Patterns . . . 4-30
Research and Development Intensity of State Economies . . . 4-32
State Cooperative Technology Programs . . . 4-32
Experimental Program to Stimulate Competitive Research (EPSCoR) . . . 4-33
Defense-Related Issues . . . 4-33
Guiding Principles for Science and Technology Management . . . 4-34
International Comparisons . . . 4-35
Research and Development Funding by Source and Performer . . . 4-35
Total Research and Development Trends . . . 4-36
Nondefense Research and Development Trends . . . 4-38
Government Focus by National Objective . . . 4-38
U.S. Funding Priorities . . . 4-39
Health Continues to Absorb Increasing Share of National Research and Development Budget . . . 4-40
International Comparisons . . . 4-41

Internationalization of Research and Development and Technology 4-42
International Strategic Technology Alliances 4-43
U.S. Industry's Overseas Research and Development 4-44
Foreign Research and Development in the United States 4-45
U.S. Research Facilities of Foreign Firms 4-48
References 4-49

Chapter 5. Academic Research and Development: Infrastructure and Performance 5-1

Highlights 5-3
Introduction 5-6
Chapter Background 5-6
Chapter Organization 5-6
Financial Infrastructure for Academic Research and Development 5-6
Academic Research and Development in a National Context 5-7
Sources of Academic Research and Development Funds 5-7
Federal Academic Research Funding and National Priorities 5-9
Recent Developments on the Indirect Cost Front 5-10
Distribution of Research and Development Funds Across Academic Institutions . . . 5-10
The Composition of Institutional Academic Research and Development Funds 5-11
Academic Research and Development Expenditures by Field and Funding Source 5-11
Selected Research on University/Industry Research and Development Linkages 5-12
Support of Academic Research and Development by Federal Agencies 5-12
The Nature of Engineering Research at U.S. Universities 5-13
Federal Academic Research Funding by Science and Engineering Field and Federal Agency 5-13
The Spreading Institutional Base of Federally Funded Academic Research and Development 5-14
Physical Infrastructure for Academic Research and Development 5-14
An Overview of Academic Research and Development Facilities 5-15
Academic Research and Development Facilities, by Field of Science and Engineering 5-17
Instrumentation Expenditures and Funding Sources 5-18
Characteristics of Academic Research and Development Instrumentation 5-19
Use of Computers in Academic Research and Development 5-20
Human Infrastructure for Academic Research and Development 5-21
Academic Scientists and Engineers 5-21
Academic Research Personnel 5-22
Data Sources: Nature, Problems, and Comparability 5-23
Graduate Students in Academic Research and Development 5-23
Teaching and Research 5-25
Primary Work Responsibility 5-26
Women in Academic Research and Development 5-28
Minorities in Academic Research and Development 5-28
Federal Government Support of Academic Researchers 5-28
The Changing Age Structure of the Academic Faculty 5-29
Article Outputs from Scientific Research 5-30
Article Outputs, by Country 5-31
Distribution of Articles, by Field 5-33
The United States in the International Context 5-33
Differences in Field Distribution Among Nations 5-34
International Scientific Collaboration 5-35
Trends in International Scientific Collaboration 5-35

Who Collaborates with Whom? 5-36
Sectoral Distribution of U.S. Scientific and Technical Articles 5-37
Cross-Sectoral Collaboration in the United States 5-37
Cross-Sectoral Citation Patterns 5-38
Citations in U.S. Patents of the Scientific and Technical Literature 5-39
International Use of Scientific and Technical Articles in Subsequent Scientific Research 5-40
The Advent of Electronic Publishing 5-41
Academic Patenting 5-41
Patents Awarded to U.S. Universities 5-41
Income From Patenting and Licensing Arrangements 5-42
References 5-44

Chapter 6. Technology Development and Diffusion 6-1

Highlights 6-2
Introduction 6-4
Chapter Background 6-4
Chapter Organization 6-4
The Market for Technology Products 6-4
U.S. Trade in Advanced Technology Products 6-5
The Importance of Technology Product Trade to Overall U.S. Trade 6-6
U.S. Exports of Technology Products 6-7
World Export Shares in Advanced Technology Trade 6-8
U.S. Imports of Technology Products 6-11
U.S. Technology Imports from Newly Developed and Developing Economies 6-12
Royalties and Fees Generated from Intellectual Property 6-14
International Trends in Industrial R&D 6-15
Overall Trends 6-15
R&D Performance by Industry 6-16
Patented Inventions 6-18
Granted Patents by Owner 6-18
Patenting Outside the United States 6-19
Top Patenting Corporations 6-20
Patents by Patent Office Classes 6-21
Patent Activity in Six Commercially Important Industries 6-22
Technological Importance of Patented Inventions 6-23
Industry's Use of New Technologies 6-24
Establishment Characteristics Associated with Technology Use 6-27
Prevalence of Individual Technologies 6-27
Small Business and High Technology 6-27
Trends in New U.S. High-Tech Business Startups 6-28
Foreign Ownership of U.S. High-Tech Companies 6-29
Characteristics of Innovative U.S. Firms 6-29
Description of U.S. Pilot Innovation Study 6-29
Summary 6-30
References 6-31

Chapter 7. Science and Technology: Public Attitudes and Public Understanding 7-1

Highlights 7-2
Introduction 7-4
Chapter Background 7-4
Chapter Organization 7-4
Interest in Science and Technology 7-4
Interest in Science and Technology Issues 7-4
Knowledgeability of Science and Technology Issues 7-5
Attentiveness to Science and Technology Issues 7-6

Understanding Basic Scientific and Technical Concepts 7-7
Understanding Basic Concepts 7-7
Understanding Scientific Inquiry 7-8
Understanding Environmental Concepts 7-11
The Thinning of the Ozone Layer 7-11
The Acid Rain Issue 7-11
Public Understanding of Environmental Concepts in 20 Countries 7-12
Understanding Basic Economic Concepts 7-12
Sources of Scientific and Technical Information 7-13
General Patterns of Information Acquisition 7-13
Use of New Information Technologies 7-15
Looking Deeper 7-15
Attitudes Toward Science and Technology Policy Issues 7-16
Perceptions of Benefits and Risks 7-16
Computer Access for the Next Generation 7-17
Perceptions of Nuclear Power 7-17
Perceptions of Genetic Engineering 7-18
Perceptions of Space Exploration 7-19
Summary 7-19
References 7-21

Chapter 8. Economic and Social Significance of Scientific and Engineering Research 8-1

Highlights 8-2
Introduction 8-3
Economic Studies of Productivity Growth 8-3
Rates of Return 8-5
Industrial Innovations Arising from Academic Research 8-6
Contribution of Scientific Knowledge to Productivity Growth 8-8
Quality Improvement, Cost Reduction, and New Goods and Services 8-8
Average Versus Marginal Effect, and Other Considerations 8-9
Illustration of the Difference Between Average and Marginal Effects of Research 8-9
Potential for Additional Research on Social and Educational Indicators 8-9
Conclusion 8-10
References 8-11

Appendix A. Appendix Tables *(No link provided: In this PDF version, Appendix Tables have been separated by chapter, and links to them are provided within each chapter document.)*

Appendix B. Contributors and Reviewers 323

Appendix C. Abbreviations 325

Appendix D. Index 327