Technological Prospects and Population Trends

Edited by Thomas J. Espenshade and George J. Stolnitz

AAAS Selected Symposium **103**

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About the Book

The world's population is now estimated at over 5 billion, and projections call for a continued high growth rate, predominantly in the less-developed countries. Concern over the consequences of this situation has led to numerous public policy debates, and the complex interrelationships between population and technology have become an important new topic in demographic research. The papers in this book are based on a symposium entitled "Technological Prospects and Population Trends" arranged for the 150th National Annual Meeting of the American Association for the Advancement of Science in New York City in May 1984. The book focuses on clarification of the impact that technological development and population change have on one another. For instance, how may population and related socioeconomic trends be conditioned by expected or foreseeable technological changes? What is the impact of population on technology in both the developed and newly industrializing areas of the world? Linking demography with developments in the major areas of agriculture, education, contraception, longevity, and health care, the distinguished contributors offer diverse yet integrated perspectives on what is fast becoming one of the major issues of our time.

About the Series

The *AAAS Selected Symposia Series* was begun in 1977 to provide a means for more permanently recording and more widely disseminating some of the valuable material which is discussed at the AAAS Annual National Meetings. The volumes in this *Series* are based on symposia held at the Meetings which address topics of current and continuing significance, both within and among the sciences, and in the areas in which science and technology have an impact on public policy. The *Series* format is designed to provide for rapid dissemination of information, so the papers are reproduced directly from camera-ready copy. The papers are organized and edited by the symposium arrangers who then become the editors of the various volumes. Most papers published in the *Series* are original contributions which have not been previously published, although in some cases additional papers from other sources have been added by an editor to provide a more comprehensive view of a particular topic. Symposia may be reports of new research or reviews of established work, particularly work of an interdisciplinary nature, since the AAAS Annual Meetings typically embrace the full range of the sciences and their societal implications.

ARTHUR HERSCHMAN
Head, Meetings
and Publications
American Association for
the Advancement of Science

About the Editors and Contributors

Thomas J. Espenshade is a professor of sociology and associate director of the Population Studies and Training Center at Brown University in Providence, Rhode Island. Formerly the director of the Program in Demographic Studies at The Urban Institute in Washington, D.C., his research has included estimates of the economic costs parents incur in rearing children, a longitudinal analysis of changes in U.S. family and household structure, and the economic and social impacts of immigration to the United States. He is the author of several books including The Fourth Wave: California's Newest Immigrants (with T. Muller; The Urban Institute Press, 1985) and Investing in Children: New Estimates of Parental Expenditures (The Urban Institute Press, 1984).

George J. Stolnitz is a professor of economics and director of the Population Institute for Research and Training at Indiana University in Bloomington. His principal fields of interest are demography and population-development interrelations, and he has published numerous scholarly papers on these topics. Dr. Stolnitz is a past president of the Population Association of America and he has served as a consultant for the United Nations and many other international organizations.

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Sheldon J. Segal, director of Population Sciences at the Rockefeller Foundation, is the author of over 200 publications in the fields of endocrinology, embryology, fertility, and family planning. He is the editor of Gossypol: A Potential Contraceptive for Men (Plenum Press, 1985) and Chorionic Gonadotropin (Plenum Press, 1980) and the author of Analysis of Intrauterine Contraception (American Elsevier Publishing Co., Inc., 1975). In 1984 Dr. Segal received the United Nations Population Award.

Preface

The relationship between population trends and technological change is reciprocal. Demographic change can influence the pace of technical change through alterations in the size, age distribution, density, spatial composition, and other aspects of the population. In like fashion, technological developments can have an independent influence on demographic variables. The most evident examples are in means of fertility control and medical breakthroughs affecting the length of human life.

In 1986 the National Research Council published Population Growth and Economic Development: Policy Questions. This report concluded that much more research is needed:

> The scientific literature contains few adequate studies of the effects of slower population growth in developed countries and fewer still on the effects in developing countries. Consequently, there is much less certainty than we would like about the specific quantifiable effects of different rates of population growth on human capital formation, on physical capital formation in firms, on technical progress and its diffusion, and on the numerous other questions that are addressed [here] (p. 6).

Technological Prospects and Population Trends is a partial response to the need for more research. In addressing itself to interrelations between population growth and technical progress, this volume focuses attention on questions of aging in developed countries as well as rapid population growth in poorer countries. Both

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sets of circumstances present societies with major challenges. The book is divided into two sections. Chapters 2, 3, and 4 deal with population growth from a broad institutional and behavioral science perspective, including issues such as the degree of indigenous technical change in agriculture induced by increased population density and also the pair-wise interrelations among population, education, and technology. Chapters 5, 6, and 7 are somewhat more narrowly focused on technological developments in contraceptive methods and on the prospects for extending life expectancy and the life span through advances in medicine.

Responsibility for editing this volume is shared jointly. In chapter 1, Espenshade drafted the section "Recent Developments," and Stolnitz prepared "About this Volume."

Thomas J. Espenshade
George J. Stolnitz

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