

Palgrave Studies in the History of Science
and Technology

Series Editors

James Rodger Fleming
Colby College
Waterville, Maine, USA

Roger D. Launius
Smithsonian Institution
National Air and Space Museum, USA

Designed to bridge the gap between the history of science and the history of technology, this series publishes the best new work by promising and accomplished authors in both areas. In particular, it offers historical perspectives on issues of current and ongoing concern, provides international and global perspectives on scientific issues, and encourages productive communication between historians and practicing scientists.

More information about this series at
<http://www.springer.com/series/14581>

Thomas Heinze • Richard Münch
Editors

Innovation in Science and Organizational Renewal

Historical and Sociological Perspectives

palgrave
macmillan

Editors

Thomas Heinze
Interdisciplinary Center for Science
and Technology Studies (IZWT)
University of Wuppertal
Wuppertal, Germany

Richard Münch
University of Bamberg
Bamberg, Germany

Palgrave Studies in the History of Science and Technology
ISBN 978-1-137-59419-8 ISBN 978-1-137-59420-4 (eBook)
DOI 10.1057/978-1-137-59420-4

Library of Congress Control Number: 2016944788

© The Editor(s) (if applicable) and The Author(s) 2016

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use. The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Cover illustration: © StudioMI/Thinkstock

Printed on acid-free paper

This Palgrave Macmillan imprint is published by Springer Nature
The registered company is Nature America Inc.
The registered company address is: 1 New York Plaza, New York, NY 10004, U.S.A.

CONTENTS

- 1 Editors' Introduction: Institutional Conditions
for Progress and Renewal in Science** 1
Thomas Heinze and Richard Münch

- 2 Fabricating an Organizational Field for Research:
US Academic Microfabrication Facilities
in the 1970s and 1980s** 21
Cyrus C.M. Mody

- 3 From Salomon's House to Synthesis Centers** 53
Edward J. Hackett and John N. Parker

- 4 The Seventh Solvay Conference: Nuclear Physics,
Intellectual Migration, and Institutional Influence** 89
Roger H. Stuewer

- 5 "Preservation of the Laboratory Is Not a Mission."
Gradual Organizational Renewal in National
Laboratories in Germany and the USA** 117
Olof Hallonsten and Thomas Heinze

6	Institutional Context and Growth of New Research Fields. Comparison Between State Universities in Germany and the USA	147
	Arlette Jappe and Thomas Heinze	
7	Organizing Space: Dutch Space Science Between Astronomy, Industry, and the Government	183
	David Baneke	
8	“We Will Learn More About the Earth by Leaving It than by Remaining on It.” NASA and the Forming of an Earth Science Discipline in the 1960s	211
	Roger D. Launius	
9	Interdisciplinary Research and Transformative Research as Facets of National Science Policy	243
	Irwin Feller	
	Index	275

CONTRIBUTORS

David Banerke is Assistant Professor of History of Science at Utrecht University. His main research interests are history of astronomy and the role of science in modern society. He recently published *De Ontdekkers van de Hemel* (2015), a history of Dutch astronomy in the twentieth century.

Irwin Feller is Professor Emeritus of Economics at the Pennsylvania State University and former Visiting Scientist at the American Association for the Advancement of Science. Among his published works are studies of the diffusion of innovation, science policy, higher education, interdisciplinary research, and program evaluation.

Edward J. Hackett is vice provost for research and a professor in the Heller School of Social Policy and Management at Brandeis University. Prof. Hackett studies the organization and dynamics of collaborations in various forms and places, and has written about peer review, science policy, and the scientific career. He is also editor of *Science, Technology & Human Values*.

Olof Hallonsten is a senior researcher in the Department of Business Administration at Lund University and also affiliated with the KTH Royal Institute of Technology in Stockholm, Sweden. He specializes in the study of the governance and organization of large research organizations (“Big Science”) and is author of several important articles on a variety of aspects on this subject.

Thomas Heinze is Professor of Organizational Sociology and member of the Interdisciplinary Center for Science and Technology Studies (IZWT) at Wuppertal University, Germany. His research interests include scientific creativity, research breakthroughs, governance of research organizations, research evaluation, theories of institutional change, and organizational renewal.

Arlette Jappe is a senior researcher at the Institute of Sociology and the Interdisciplinary Center for Science and Technology Studies (IZWT) at Wuppertal University, Germany. Her research interests are in sociology of science, research evaluation, and environmental sociology.

Roger D. Launius is Associate Director for Collections and Curatorial Affairs at the Smithsonian Institution's National Air and Space Museum, Washington, DC. He is the editor of *Exploring the Solar System: The History and Science of Planetary Exploration* (2013, Palgrave) and several other works.

Cyrus C. M. Mody is Professor of History of Science, Technology, and Innovation at Maastricht University. He specializes in the recent history of the physical and engineering sciences in USA, with special emphasis on nanotechnology, commercialization of academic research, and university–industry–government collaboration. He is the author of *Instrumental Community: Probe Microscopy and the Path to Nanotechnology* (2011).

Richard Münch is Professor Emeritus of Sociology at the University of Bamberg, Germany, and Senior Professor of Social Theory and Comparative Macrosociology at Zeppelin University Friedrichshafen, Germany. He is a member of the Berlin Brandenburg Academy of Sciences. Among his recent publications is *Academic Capitalism. Universities in the Global Struggle for Excellence* (2014).

John N. Parker is a fellow at Barrett, The Honors College at Arizona State University, and associate research scientist at the National Center for Ecological Analysis and Synthesis at the University of California at Santa Barbara. His research focuses on the sociology of science, creativity, emotions, and small groups and has been published in venues such as *American Sociological Review*, *Social Studies of Science*, and *Bioscience*.

Roger H. Stuewer is Professor Emeritus of the History of Science and Technology at the University of Minnesota in Minneapolis. He has published extensively on the history of quantum and nuclear physics. He was awarded the American Physical Society and American Institute of Physics Abraham Pais Prize for History of Physics in 2013, the Distinguished Alumni Award of the Department of Physics of the University of Wisconsin in Madison in 2014, and an American Association of Physics Teachers Homer L. Dodge Distinguished Service Citation in 2016.