

## Industrial Performance Center

The Industrial Performance Center (IPC) is an interdisciplinary community of researchers dedicated to the study of productivity, innovation, and industrial development in the United States and around the world. The IPC carries out field-based, often large-scale research projects bringing together scientists and engineers with scholars from the social sciences and management disciplines. Our research teams observe strategic, technological, and organizational developments in industry and analyze the implications for firms, their employees, and the societies in which they operate. Through this research we seek to help leaders in business, government, and education better understand global industrial developments and develop practical new approaches for strengthening public policies, business strategies, technical practices, and educational programs. The IPC serves as a focus at MIT for interdisciplinary research on the rapidly changing global economy, monitoring and analyzing patterns of organizational and technological practice in different countries, interpreting them for our partners and sponsors, and feeding our observations and insights back into the core disciplines and educational curricula of the Institute.

### Research Highlights

The center's research is organized around three major themes: Systems and Strategies for Innovation; Globalization and Its Implications for Industry and Society; and Technology and the Changing Workplace.

This year the center continued its research program on Local Innovation Systems. An international team of researchers led by Professor Richard Lester is studying the conditions of innovation in selected industries in more than 20 locations, including both high-technology agglomerations and less favored regions, in the United States, Finland, Japan, the United Kingdom, Taiwan, Ireland, Israel, and Norway. A particular focus is on the role of research universities as contributors to innovation and economic growth in these regions. The IPC-based team also includes researchers from the University of Tampere and Helsinki University of Technology in Finland, the University of Cambridge in the United Kingdom, and Rogaland Research Institute in Norway. It is sponsored by an international consortium of governments and foundations.

Professor Lester and Professor Michael Piore (Economics and Political Science) continued their studies of design and new product development. Their new book, *Innovation: The Missing Dimension*, summarizing a decade of research on this topic, was published this year.

The center continues its studies of globalization. The term *globalization* refers to the changes in the international economy that are tending toward the creation of a single world market for capital, goods, and services. In each of these dimensions, globalization raises new challenges for sustaining innovation, growth, societal well-being, and broad political legitimacy in the nations it encompasses. The IPC Globalization Study focuses on one aspect of these developments: the fragmentation of the production systems of firms in the advanced economies and the relocation of parts of these enterprises to

other societies. Research on this topic is underway in the United States, Europe, and Asia. Interviews have been carried out at about 600 firms, roughly half in China and the Chinese-speaking economies. The IPC Globalization Study team is led by Professor Suzanne Berger (Political Science) and also includes Professors Tayo Akinwande (Electrical Engineering and Computer Science [EECS]), Don Lessard (Sloan School of Management), Richard Lester (Nuclear Engineering), Charles Sodini (EECS), Edward Steinfeld (Political Science), IPC senior research affiliate Tim Sturgeon, and several doctoral students, as well as researchers from the United Kingdom, Germany, Japan, and Taiwan. The first major publication from this project, *Global Taiwan*, was published this spring.

In related work, Professor Edward Steinfeld continues his studies of industrial upgrading and competitiveness in developing countries. A major focus of Professor Steinfeld's research is the political economy of reform in China. Dr. Tim Sturgeon, a cofounder of the Global Value Chain Initiative, continues his research on modular production networks and with Professor Frank Levy (Urban Studies and Planning) is leading a group of scholars drawn from several US universities in an examination of the measurement issues associated with the offshoring of service work.

With support from the Hewlett Foundation, the IPC and the Sloan School are collaborating on another globalization-related research initiative. The Globalization, Economic Development, and Standards project focuses on the investment and contracting practices of multinational corporations in emerging economies, the implications of these practices for sustainable economic development, and the role of labor and environmental standards and related codes of conduct. The project is led by Professor Richard Locke (Management and Political Science) and Professor Michael Piore. In January Professor Piore hosted an international seminar on "Work Inspection and Labor Market Regulation," attended by labor ministers, other senior officials, and scholars from several countries in Latin America and Europe.

Professor Frank Levy and his students continue their studies of technological change in the workplace and its implications for education and the organization of work. This year the research has focused on the evolution of medical imaging technology and its implications for the radiology profession and the offshoring of radiology services. The research is supported by a grant from the Sloan Foundation.

Also this year, the center launched a new research project on the development of China's energy sector. Led by Professors Edward Steinfeld and Richard Lester and with support from the Energy Foundation and Shell, the research group focused in its first year on the introduction of clean coal technologies in China. The project is closely coordinated with MIT's project on the Future of Coal, based at the Laboratory for Energy and the Environment.

Finally, during the fall semester several IPC faculty combined to present a special seminar series on "Technology, the Economy, and the American Elections." The series was designed to serve as a forum for the MIT community to debate the direction of the American economy and the long-term economic implications of technological change.

## People

Professor Suzanne Berger was awarded the Chevalier de l'Ordre National du Merite by the government of France.

Professor Edward Steinfeld was selected as a member of the Public Intellectuals Program of the National Committee on US–China Relations (2005–2007).

IPC doctoral student Edward Cunningham was selected as a US Fulbright fellow for 2005–2006 to pursue his studies of China's energy challenges at Tsinghua University in Beijing.

Former IPC doctoral fellow Pierre Azoulay was awarded a Sloan Industry Studies Fellowship for 2005.

Visitors to the center this year included Professor Arnaldo Camuffo of the University of Padua, Professor Markku Sotarauta of the University of Tampere, Dr. Celine Druihle of the University of Cambridge, and Mr. Vladi Finotto of the School for Advanced Studies in Venice.

**Richard K. Lester**

**Director**

**Professor of Nuclear Science and Engineering**

*More information about the Industrial Performance Center can be found online at <http://web.mit.edu/ipc/www/>.*