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INSIDE THIS ISSUE:

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RESEARCH IN INDUSTRY STUDIES

by Frank Giarratani

A new academic community is coalescing around the idea that industry-based research can meet scholarly and practical objectives more effectively, if faculty members are informed by direct, personal contact with people who work in the subject industry. The Alfred P. Sloan Foundation has been the catalyst for the creation of this new community of scholars, and the foundation's investments in Pittsburgh have been some of the most important in the community's development.

The Center for Industry Studies at the University of Pittsburgh, which was endowed by an anonymous gift to the university in 2001, is a direct outgrowth of the Sloan Steel Industry Center. From its beginning in the early 1990's, the Sloan Industry Centers' program (www.industry.sloan.org) has targeted investments toward excellence in academic research in order to promote industry expertise in key academic research institutions. There are now more than 20 Sloan Industry Centers, but the Sloan Steel Industry Center was one of the first. It was established in 1991 as a partnership by the University of Pittsburgh and Carnegie Mellon University, through the joint leadership of Roger S. Ahlbrandt (Pitt) and Richard Cyert (CMU).

The success of the Sloan Steel Industry Center helped

to stimulate interest in industry-based research here in Pittsburgh, and this led to the establishment of the University of Pittsburgh's Center for Industry Studies (www.industrystudies.pitt.edu/), as well as two new research centers at CMU — the Carnegie Mellon Electricity Industry Center and the Software Industry Center. Collectively, this places Pittsburgh, Pennsylvania with Cambridge, Massachusetts, as currently the two largest geographic concentrations of academic industry-based research coming out of the Sloan program.

The key to our success is that faculty members build partnerships with industry. At a minimum, the partnerships involve direct access to people in their places of work and access to plants, where first-hand experience and primary data can be obtained. Some of the partnerships developed by Sloan Industry Centers go much further and may involve advisory boards, financial support, and contract research targeted to the needs of specific companies. The research is often multi-disciplinary, and always involves scholars who are willing to invest the substantial time that is required to truly understand the markets and institutions in which firms compete in particular industries — nationally and globally.

Continued on page 3

RESEARCH IN INDUSTRY STUDIES (cont'd)

Continued from page 1

This approach works because it takes advantage of the natural inclination that faculty members have toward problem-solving. Scholars are driven in their research when they are confronted by interesting puzzles. The trick is to point them toward interesting puzzles that address truly important problems. By visiting plants and building partnerships with industry, scholars are more likely to get their facts straight and more likely to be confronted with problems that matter. In fact, the historical basis for this approach to research and its success can be traced back, at least, to British economist Alfred Marshall (1842-1924), one of the most important economic theorists of all time. Marshall visited manufacturing plants over a 50-year career precisely so that he could get his facts straight and be pointed to problems that affected the well being of society.

A brief description of projects at the Center for Industry Studies will help to explain how this work is accomplished.

The Steel Plant Database, Frank Giarratani, Gene Gruver, and Carey Treado, Principal Investigators

The database compiled at the Center for Industry Studies to support research on the steel industry is extensive, and it includes records related to all plants in the United States with raw steel-making capacity from 1978 onward. We track steel-making and casting capacities by drawing data from industry sources, and the data can be analyzed using relational database software. When questions about basic data arise, we turn for help to industry partners and consult with technology experts. The database is now a powerful tool for economic and geographic analysis related to steel markets in the United States, and public access to the data for Pennsylvania plants is available free-of-charge via the internet (www.industrystudies.pitt.edu/

[database.htm](#)).

The U.S. Regional Ferrous Scrap Model, Gene Gruver and Frank Giarratani, Principal Investigators

Ferrous scrap markets are an important factor determining the competitiveness of American steel producers. In order to better understand how events, like changes in regional steel-making capacity, can link to the price of ferrous scrap, we developed a computer-based model that solves for the structure of ferrous scrap prices, given the observed distribution of supply and demand across the continental United States. Place-specific prices are generated for 1,212 supply and 240 demand regions, and the model also describes detailed flows of ferrous scrap across regional boundaries. Maps of the solution clearly delineate price gradients that are highly characteristic of known geographic pricing patterns.

Industry Clusters Related to Steel Minimills, Frank Giarratani, Gene Gruver, and Randall Jackson, Principal Investigators.

The advent of slab casting in electric arc furnace (EAF) steel mills resulted in a new wave of minimill construction during the 1990s. In less than 10 years, 11 plants were constructed in the United States based on this new technology. Some were built in established steel industry agglomerations, but others were built in regions that had little or no prior steel-making activity — known as greenfield locations. Our research compares key characteristics of the inter-industry relationships that developed around steel plants in greenfield locations with those of new slab manufacturers who located in established industry agglomerations. In this way, we bring new evidence to bear on: (1) the strategies adopted by EAF steel plants for market entry; (2) the beneficial economic effects of collocation by steel makers and related facilities; and (3) the process of ag-

glomeration in greenfield locations. Our goal is to identify the most important aspects of agglomeration economies for firm competitiveness in the steel industry, especially as they relate to product and process innovations.

In each of these projects, scholars rely on contacts with partners in industry to help bring about research results. We use this approach when we lay the groundwork for new projects. In April 2004, for example, the Center for Industry Studies and the Katz Graduate School of Business organized a workshop on Globalization in the Steel Industry. The goal of the workshop was to help establish a research agenda that would engage scholars from around the world. With financial support from the University Center for International Studies and the International Business Center, academic steel experts from Asia, Europe, and North America came to Pittsburgh, where they learned from leading American and European steel executives how the industry views the problems and promise associated with this important phenomenon.

The goal of research in the Center for Industry Studies is excellence in scholarship and public service. Education also is an important part of our mission. Because our scholarship is grounded in real world problems, the partnerships that we develop with industry lead to research that also can be effective in practical ways. In particular, our ongoing project related to steel industry clusters may be especially relevant to steel industry specialists in Pittsburgh and to those interested in this region's economic development. We will look forward to reporting our findings from this study in a later issue of the *Pittsburgh Economic Quarterly*.

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