Chapter 7.14
Knowledge Transfer Between Academia and Industry

Franz Hofer
Graz University of Technology, Austria

INTRODUCTION

Many policy makers and researchers consider knowledge transfer between academia and industry as one of the most promising measures to strengthen economic development. The idea of linking academia and industry is not new. Back in 1910 research universities were established, which strongly emphasized industry-related research as part of their activities and were funded by enterprises in order to tap this knowledge (see Matkin, 1990, for the history of technology transfer at four U.S. research universities—MIT, U.C. Berkeley, Penn State, and Stanford). Knowledge transfer has increased considerably during the last few decades. Many universities have established offices aimed at improving relations with industry. The performance of these offices varies considerably. One example for a quantitative performance indicator is license revenues of U.S. universities

(Artley, Dobrauz, Plasonig, & Strasser, 2003). Only a handful of examined universities actually draw profit from it. The majority pay more for legal advice and fees than they earn from license income. It is obvious that the performance variances depend on many factors like staff resources at the transfer offices, type of university research (basic vs. applied, technical vs. non-technical domains), the brand of the university as well as prior industrial relationships, to name just a few. Not all of these factors can be changed in the short run, but knowing them and streamlining actions towards their improvement can lead to sustainable changes, in the end positively influencing economic performance. Despite the long history and recent efforts to improve university-industry collaborations, the full potential does not yet seem to be exploited (Starbuck, 2001). Jankowski (1999) and Clough (2003) confirm the decrease of federal funding for universities and point to

increasing collaborations between academia and industry, which in their view comprises the danger of leaving fundamental frontier research, vital for breakthrough innovations, behind. At the same time, industry increasingly relies on external knowledge sources to keep up with the pace of their competitors (Business-Higher Education Forum, 2001; Tornatzky, 2000). In many cases, these external sources are customers and suppliers (Adametz & Ploder, 2003; Dachs, Ebersberger, & Pyka, 2004). This may be due to similar rationales, profit, and already-existing customer-client relationships. However, industry more and more turns to universities when looking for support. According to Godin and Gingras (2000), universities are still one of the major producers of knowledge, despite an increase of other R&D institutions. Collaborations between academia and industry bring partners with different competencies together and cover the whole range of the R&D chain, from basic research to application. By fulfilling the needs of both partners, universities as well as enterprises, and building up trust, knowledge transfer leads to knowledge flows and production of new knowledge, and thus creates a fertile environment for innovation. The article at hand examines motives as well as barriers related to knowledge transfer out of a systemic as well as a process-related view and provides some general suggestions for further improvements.

BACKGROUND

The earlier focus of knowledge transfer between academia and industry was on technology, in the sense of technological processes and artifacts inhibiting technological knowledge without paying much attention to the soft facts important for the success or failure of the transfer. Nowadays, technology transfer often comprises more than technological knowledge, including data as well as technology-related organizational knowledge

(Abramson, Encarnacao, Reid, & Schmolch, 1997). As Schumpeter (1912) explained, technology is not exclusively the base of innovations. Using the term knowledge transfer instead of technology transfer reinforces Schumpeter's view of innovation, which additionally includes, for example, social innovations like new organizational structures or incentive systems (see Hofer, Adametz, & Holzer, 2004, for an example of a knowledge transfer program implemented by a university of technology in collaboration with a classical university). Knowledge transfer schemes range from regional programs and initiatives to national and international ones. Besides the different geographical focus, also the target group, at which knowledge transfer measures are aimed, can differ (broad approach vs. focus on specific industrial sectors). All these characteristics influence knowledge transfer at the operative level and require diverse additional partners and processes. Knowledge transfer between academia and industry as understood herein refers to activities, aimed at enabling and facilitating industry to tap knowledge produced at universities. The article examines knowledge transfer in general without limiting it to certain geographic borders. Knowledge transfer does not only comprise large collaborative R&D projects, but also measures like informal consulting as well as diploma theses commissioned by enterprises. The primary objective of knowledge transfer is to strengthen the competitiveness of both partners, leading in succession to improved economic development.

MAIN FOCUS OF THE ARTICLE

The article addresses regional as well as national governments trying to provide the right framework for parties involved in knowledge transfer—universities' managers, who would like to establish closer links with industry, as well as representatives of industry, who plan to

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