



# An Introduction and Celebration

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In introducing my perspective on five decades of education in the field of technological innovation and its management, I am delighted to be able to celebrate the launch of the new *International Journal for Technology & Innovation Management Education*. My article points out how the predecessor and continuing field of engineering and R&D management began to show up as a topic for learning and understanding in universities and professional journals. The field has grown steadily and impressively on an international basis, moving from a focus upon quantitative techniques and tools for managing scientific and engineering work, to increased assessment of the issues involved in stimulating and coordinating the technical people themselves, to searching for understanding new and different ways of organizing internal-external and local-global technical endeavors, to current heavy interests in creating and building entrepreneurial organizations and regions. At MIT we have persisted over this entire time period in promoting the importance of the field of study and practice by creating research centers with various but all related themes, education programs ranging from growing a large number of individual courses to initiating mid-career short executive programs and then our truly pioneering launch of our mid-career MIT Management of Technology Program, which we proudly sense has encouraged the field globally.

Over these years we have learned that technological innovation is a complex process that needs to be managed. The lives of companies and countries depend upon their success in their innovation management efforts, whether in regard to the add-ons of improvements to existing lines of competing products and services, or the development and introduction of wholly new products, product lines and businesses. Innovation Management, as a discipline, is fundamental to the success of leaders of most firms, large and small, old and new. Yet management schools in general have not recognized this centrality of innovation management, of course with notable exceptions scattered world-wide. (I find it quite interesting that it is the engineering school, not the business school, that has leapt forward in adopting this field readily, despite the typical paucity within the engineering departments of faculty well-trained in economics, behavioral science, and strategic analysis.)

The challenge to educators in the field of technological innovation management is to better understand, and to contribute through their own research studies and publications to advancing that understanding, a growing series of

fundamental learnings. This journal will be encouraging the communication of both the insights to innovation management as well as the new approaches to communicating the lessons that are learnable to both new and experienced managers.

Let me guide you briefly with some overall lessons that I have learned and shared in regard to the most strategic level of innovation management. In future issues and future years, many others will be adding to this short list. First, technology and the organizations that create and/or develop it, cannot be held apart from the rest of the corporation. Linkage of technological considerations must always be fostered with market, financial and overall strategic elements of the company. The linkages that matter most are human, and at the top of the company, via engagement of senior executives and especially the CEO with technology innovation endeavors. Linkage is reflected in budgets, which must convey the technology-tied strategy of the firm in terms of amounts and allocation of funding, paying special attention to the time-distribution of intended investment outcomes. A company that invests predominantly in the short term will soon be outstripped in the marketplace by more far-sighted competitors. It is not more risky for the firm to invest in the future. It is dramatically risky, and foolhardy, for the firm to NOT do so. Secondly, the firm's internal knowledge and capabilities and locally accessible resources must be leveraged by technology capabilities and accomplishments of other organizations and other regions. This means that partnerships of all forms, with universities for research, with suppliers and others for development, need to be encouraged and implemented. The organizational tasks of achieving this leverage are formidable. Older firms need to find ways to leverage their accomplishments with the ideas and energies of emerging companies, via investments and working relationships. And all of these new organizational ties need to be done in geographic areas that may well be remote to the company's traditional locations and existing strengths. Today this means that large companies in Europe, the U.S. and Japan must be partnering in every way with companies and technological organizations in China, India and Israel, to list just a few of the most prominent high-technology centers. Similarly, if your firm is a well-established pharmaceutical company in Germany or Switzerland it needs to be allying or even relocating to those parts of the world like San Francisco and Cambridge, Massachusetts where emerging biotech start-ups are dramatically altering the technological landscape. Finally, firms seeking to succeed in their industries must recognize that pushing hard for technological leadership is critical. The implication is that settling for second-best (and surely not second-rate!) technologically among a company's key competitors is unacceptable. Companies have to try to stay at the forefront of their cohorts in the areas where they hope to be able to survive.

Congratulations on following the highest traditions of scholars: to encourage others to learn by sharing your own knowledge and perspectives. I am proud to be part of your initiative.

