



Editorial

Innovation Management Education in the First Quarter of Twenty-First Century Innovation: Meeting the Challenges and Opportunities

Mel Horwitch

Director, Institute for Technology & Enterprise, Polytechnic University

The readers of this journal are well aware of the importance of innovation for well-being in the modern economy. Without innovation—the exploitation of technology and knowledge to create improved and new value with regard to markets, firms and other organizations and society at large—we face a gloomy and unappetizing zero-sum future. Maybe that is why so many of us devote significant professional time trying to help others learn how to do a better job creating new things under the sun.

Worth repeating, as we also know, innovation is not easy. Successful modern innovation is dynamic and complex, involving an ever-changing and delicate blend of technology, receptive markets and users, effective organization and personal commitment.

A major challenge confronting those of us involved with innovation management education is that the dynamism and complexity characterizing innovation are increasing. The innovation geographic centers of gravity, the substance of innovation and the way innovation is carried out all constitute accelerating moving targets.

Innovation in the first quarter of the Twenty-First Century is undergoing a noteworthy metamorphosis in several important ways, with at least five new important distinguishing features. The *first* major change in innovation concerns *shifting sectoral venues*. For much of the Twentieth Century innovation centered on producing new and improved physical products and processes. Until quite recently innovation was largely associated with R&D, high-tech startups, productivity improvements in manufacturing operations and the industrial application of radical scientific breakthroughs in a range of sectors. “High

technology” in the latter part of the Twentieth Century, perhaps with the important exception of software, represented primarily physical-based innovation.

However, new value creation now increasingly deals with that part of the economy we call *services*, which represents over seventy-five per cent of the US economy. Services innovation is more pervasive, diverse and fungible than stereotypical high-tech innovation. Certainly technology *per se* is crucial and necessary. The expansion and changing nature of such sectors as financial services, hospitality and travel and retailing depend on advances in information technology, e.g. computer processing speed, communication network capacity and software capability. But technology alone is usually not the sole or even dominant differentiating factor in services. Much of innovation in services takes place “on top of” technology that is often developed elsewhere. Innovation in services often entails creative business adaptation by firms and other users, along with possibly the assistance of a growing cadre of middlemen (e.g. professional services firms, which are themselves often examples of services innovation).

A *second* distinguishing aspect of emerging innovation is the *central and broad role knowledge plays*. Increasingly, a differentiating success factor lies in the ability of professionals and organizations continuously to access, assemble and deploy knowledge for creating new value and to develop and implement solutions anchored on such knowledge. This often requires applying new methods, personal and organizational sharing, organization-wide learning, operating across functions and blending disciplines.

A *third* important characteristic of emerging innovation concerns the *geographic loci* of innovative activities. The importance of *high-technology regional clusters* is well established—exemplified by regional technology powerhouses like Silicon Valley, Route 128/Boston, Research Triangle in North Carolina, Austin, Texas and others in the US, as well as non-US clusters like Cambridge, UK, the Tel Aviv-Haifa-Jerusalem triangle in Israel, Helsinki for mobile technology, Munich, Singapore, Seoul and Taipei. New high-tech clusters are rising, such as Estonia, Bangalore and Hyderabad in India, and Beijing in China.

But knowledge-intensive innovation now often requires diverse organizations, talented professionals and creative artists collaborating closely for varying lengths of time. This kind of in-gathering and heavy interaction often occurs in cities. Hence, a possibly new kind of regional innovation cluster may characterize much of emerging Twenty-First Century innovation—the *value-creating global city*. Such urban settings play host to innovation in the fast-growing media and entertainment industry. Hollywood is in Los Angeles; Bollywood is in Mumbai; and Nollywood—the world’s third largest film sector—is in Lagos Nigeria. Financial innovations—comprising the mathematical, systems and technical bases for the on-going transformation of financial services—are clustered in such cities as New York City, Chicago, London, Tokyo

and others. Cities themselves are major innovators—blending “smart” technologies along with the active involvement of government, business, technology providers, other constituencies and ordinary citizens.

A *fourth* distinguishing characteristic of emerging innovation is *its diverse and increasing scale and scope*. Start-ups and large firms remain critical. But in the first quarter of the Twenty-First Century humanity has to innovate in dealing with global-scale challenges, e.g. global warming, energy, disease, environment, mega-cities, competitiveness and security. While corporate R&D is becoming globalized and revitalized and while entrepreneurship is rightfully seen as essential for lifting nations out of poverty, government once again is also becoming a major, distinct and explicit innovation actor.

There is also a renaissance occurring in *systemic, society-wide, macro-innovation undertakings*. But mobilizing massive resources or technology is insufficient in dealing with societal-wide problems. The poor performance of the US Department of Homeland Security and FEMA during the Katrina emergency in New Orleans demonstrates what can go wrong regardless of size and funding. Effective macro-innovation now requires complex sophistication, nimbleness and the recognition and tapping of diverse capabilities of key participants. Also, success in dealing with complex issues depends on developing tools and methods, mobilizing knowledge-intensive resources and creating appropriate and responsive organizations.

Fifth, to a degree hitherto unknown, key components of emerging innovation are increasingly *interlinked and networked*. Until recently, the diverse worlds of innovation remained largely separate. But a blending and integration of a previously disparate and fragmented innovation activities are now taking place. New value creation is becoming more multi-sectored, more inter-linked organizationally and more a mixture of physical and digital activities. The incorporation of digital (and now wireless) platforms and venues has reduced certain transaction costs, permitting wide-spread collaboration and the networking of various tasks. We see this growing networking of innovation happening in such fields as retailing, financial services, logistics/supply chain, education, healthcare, and the design, building and renovation of new infrastructure.

Emerging innovation has major implications for innovation management education. Above all, this development *creates both significant hurdles and great opportunities for innovation educators*. The problems lie especially in the need to reconfigure educational programs to better serve students and other educational clients. Educational professionals need to adapt. This is never easy. Innovation educators must now innovate themselves!

The bright side is the enormous opportunity that awaits us. There is increasing demand for innovation management education that is relevant and effective. The market for innovation management education should grow substantially in terms of size, diversity and complexity.

Meeting this demand, however, is not a matter of simply providing more of the same. To start with, the overarching viewpoint regarding innovation needs re-conceptualization. Until recently, modern innovation diffusion was largely seen as a process beginning in advanced firms, locales and markets and then spreading into successively lesser developed environments. Moreover, such settings were basically physical.

Innovation management courses and programs now must be anchored on other lines of thinking. A *more relevant underlying perspective* increasingly needs to underpin innovation management education. Advanced innovation can now emanate, often concurrently, from many parts of the world, and can then be connected immediately, network-like, with complementary activities elsewhere. Also, the environment in which all this happening is both digital and physical. Linkages are easier to establish and more malleable. Consequently, new ideas, products and services can spread much more quickly across the globe.

Therefore, new *curricular conceptualization* is required to make innovation management education more relevant and meaningful. Global innovation, services innovation and managing innovation networks are just a few of the topics that will require increased emphasis.

All this triggers a *new wave of curriculum and case-study development* in the innovation management arena. For example, conceptual material and background readings need to encompass a wider space, going beyond small firms and large firms—beyond the private sector itself—to include public-sector and societal-wide innovation issues.

The *venues* for various cases and the settings for innovation management programs and courses are becoming more diverse. For example, while such subjects as high-tech, corporate R&D and new product development remain important, the role of government in macro-innovation, not-for-profits, NGOs, etc. require renewed attention as we all attempt to innovate in tackling the global challenges confronting us. The differences (and similarities) between physical and digital-based innovation also need highlighting.

The way innovation management education is *designed and offered* and the *types of educational materials used need to change*. Practicing what one preaches and learning by doing necessitate innovation management educational experiences that emphasize the global, project and interlinked-team dimensions. This material should encompass new concepts, case studies and, especially relevant and exciting, project-based learning. Educational venues are increasingly hybrid—combining the best of physical classroom experiences with increasingly high-powered and responsive attributes of digital-based learning. Materials are increasingly hybrid as well, with digital materials providing appropriate new analytics and educational tools.

Finally, in the face of increasing demand for and complexity of innovation management education, the challenge of *teaching effectively looms large*. Faculty must learn and adapt in order to prosper and contribute. Educators now need to be

able to design, integrate and employ diverse learning approaches and to be comfortable in varied educational settings, including physical and digital; local and global; and instinctual and analytical.

As we can see, the coming decades herald the advent of significant changes for innovation management education. But they also represent a period of enormous opportunity—perhaps on a scale hitherto unimaginable in the innovation management education field—for making major contributions. This is clearly an exciting and opportune time to participate actively in technology management education. Our impact can be deep, broad and powerful, provided we can rise to meet the challenges before us.

