

Insights

Journal Issue

Publication date:

1998

Permanent link:

<https://doi.org/10.3929/ethz-a-004350911>

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Originally published in:

Insights

New Technology Needs New Leadership



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Technology Leadership: A Corporate Blind Spot

Wizards and Their Wonders: Portraits in Computing is a "gallery" at Boston's Computer Museum, of photographs and bio-sketches of almost 200 individuals who have led the development of the world's computer industry. Among them: Mitchell Kapor, founder of Lotus Development Corporation and designer of the widely used spreadsheet application 1-2-3, and Bill Gates, founder of the Microsoft software empire.

Across the economic spectrum, in any industry sector where technology is an important success factor, one could name legions of other wizards and other wonders: Howard Head with skis and "Prince" tennis rackets, Edwin W. Land with Polaroid, Robert Bosch with automobile and electrical equipment, and Soichiro Honda with vehicles, to name but a few. All of them have two things in common: they worked at the forefront of their own area of technological competence; and they were able to combine this competence with the leadership required to create and develop new enterprise.

What is less often recognized is that the vast majority of these "technology enterprise leaders" initially made their mark **outside of the corporate sphere** – mainly by starting up their own entrepreneurial ventures and developing them only later into major corporate giants. Corporate examples are few and far between: Ferdinand Piëch at Audi and Ryuzaburo Kaku at Canon remain exceptions, rather than the rule.

The matter is made worse if we consider that technology will play an even larger role in the future than it has in the past, and that more industry sectors than ever before will be "technology-intensive". We can see this not only in such new "high-tech" growth industries as telecommunications, biotechnology, and environmental products and services, but also in traditional heavy industries such as steel and chemicals which are being transformed by new technologies and processes, and even in service sectors such as banking and finance, distribution and logistics, which have traditionally been viewed as "low-tech" or "no-tech".

Thus, the need to leverage technology into market opportunity through capable leadership is, if anything, likely to be even more of a pressing issue in the future, and corporations that fail to recognize this are likely to be severely handicapped. Entrepreneurs have been much quicker to capitalize on this new swing towards technology as a key driver than have established corporations.

Why don't technical wizards emerge more often as enterprise leaders in corporations? And, perhaps a more pertinent question for senior corporate management, what can be done differ-

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ently to capitalize on the enormous technical potential which resides inside most large corporations, but which seldom produces the enterprise breakthroughs of the entrepreneurial wizards and their wonders. If entrepreneurial experience is anything to go by, capitalizing on this potential could not only open up vast opportunities for growth and profitability, but also reverse the alarming trend of increasingly “anorexic” corporate downsizing, and heavy reliance on smaller entrepreneurial enterprises for net new job creation.

Why Don't Corporations Do Better?

There are two fundamental differences between the “technology entrepreneurs” (Bill Gates et al) and corporate technologists: the first difference relates to the organizational roles which technically trained individuals play; the second resides in the persons themselves and their personal development.

Organizational Roles

By and large, technically competent individuals in today's corporations work on the “resource” side of most organizations, in R+D, product planning, technical sales, design, engineering, manufacturing, maintenance, hardware and software “support” services, and of course, increasingly, IT/IS. “Program” management positions in product management, market management or project management, as well as profit center responsibilities, are filled predominantly from non-technical backgrounds and disciplines. In the entrepreneurial world, by contrast, successful technology enterprise leaders define themselves as “program” managers – they **are** the business leaders.

Since the early part of this century when technically trained individuals such as Ford, Edison, Carnegie, Siemens, and Matsushita, **did** lead the corporate world, we have seen these early engineers replaced by lawyers, controllers, and more recently marketers, in general management and top corporate positions. The reason, I believe, is simple: we have passed progressively in the corporate world from a belief in real technical pioneering, to a belief that what really mattered was order and cost management, to a more recent belief that technology is itself not a driver, but merely a facilitator in overall business strategy innovation. In many corporations there appears to be an increasing reliance on non-technical sources of innovation – in services, convenience, supply chain management and the like. While necessary, this is often not sufficient, if fundamental technical innovation is short-changed. One result is that much corporate innovation has become an incremental improvement process rather than the basis for fundamental redefinition of an enterprise or even a whole industry. The ubiquitous MBA, where the basic “métier” is business itself, nicely feeds the corporate system which has resulted.

Some will say here: yes, but technology and innovation **is** getting more corporate attention as R+D becomes more market driven, as “process reengineering” streamlines new product development, and as “innovation teams” and chief technology officers (CTOs) increasingly make their appearance at boardroom level. But all these integrating mechanisms, built around technologists as resource managers, still beg the question of how to drive new corporate technology-based business into the market place. These new corporate advances are simply no match for the Bill Gates of the world – who **combine** technology and leadership in a single role.

The Technical Individual and Typical Development Patterns

The second difference concerns the technically trained individuals themselves. We can usually detect that their **primary** interest is in the technology they work with, not the business opportunity that their technology could make possible. To use the old analogy of drills and holes, they define themselves as improving drills, not creating better holes.

This problem is often compounded by a lack of understanding of the complex process of **realizing** a technology-based business opportunity – the issues of distribution, financing, strategy and market definition, and above all the human problems involved in convincing others inside and outside the organization of the **market** merits of a particular new technolo-



The combination of improperly defined organizational roles and inadequate leadership development of technically trained individuals produces predictable, and deadly, results.

gical breakthrough. Basic business competences and perspectives are simply lacking.

At root, too many technically-trained individuals who have the potential to lead **define themselves** too narrowly. Believing that they are in the "technical business" not in the "technical business business", they suffer from a "career myopia" exactly analogous to the "marketing myopia" which Theodore Levitt¹ noted nearly 40 years ago is the curse of many firms who define themselves strategically by their products and not by the functions they perform for their customers.

Deadly Combinations

The combination of improperly defined organizational roles and inadequate leadership development of technically trained individuals produces predictable, and deadly, results: Good technology managers have neither the organizational experience nor credentials and motivation to make the transition from resource management to "taking charge"; and at the top, senior corporate executives pull out their hair as opportunities to convert technology to new customer value business, are missed. This lack of "technology enterprise leadership" is felt at multiple levels – at the top itself, at division or business unit level, at product-market segment levels, and particularly in the leadership of completely new business ventures.

What Can be Done Differently?

Making "engines" out of corporate "engineers" (using the term broadly to cover all technical disciplines) is no easy task. But nor is it impossible. In fact, some leading global corporations (ABB, Credit Suisse, Hilti, Hewlett Packard, Nestlé and Tetra Pak among others) are working with us² to try to understand how to do this better.

What we are discovering is that the new leadership needed requires a fundamental re-think of career strategies for selected individuals, coupled with a completely new approach to investment in their "education".

New Career Strategies

While managerial competence can grow by successive moves up the managerial hierarchy within a particular technical function (whether it is R+D, engineering, operations, technical sales, or IT/IS), enterprise leadership competences can be developed only through "program" management assignments which entail "generalist" responsibilities. Practically this means redefining the roles of certain selected key technical managers from resource positions to program management positions.

To be effective, this should probably happen in the early stages of a career, and certainly not later than the late thirties. It is probably better for long term career development to have the total responsibility for a small venture, product, market, project, division, or geographical area than to have a much larger but still functionally-bounded responsibility. An example: Canon Corporation recently appointed one of its key young technical managers to head up its new multi-media business venture. This was not just a promotion; it was a fundamental redefinition of roles. In this new job, and career path, the technical manager becomes de facto an enterprise leader, responsible not just for technology, but for all aspects of creating and developing a vibrant business.

New Educational Investments

New career strategies are necessary but not sufficient. In addition, some portion of the funds currently being invested in technology and its development must be redirected towards investment in people, namely in those technology managers who have the potential to make the transition to real leadership roles. Roughly speaking, every million dollars invested in technolo-

¹ Marketing Myopia, Harvard Business Review July-August 1960

² The two Swiss Federal Institutes of Technology ETH Zürich and EPF Lausanne, have entered an alliance with IMD Lausanne to conduct research and run executive development programs aimed at leadership of the technology enterprise

The requirement to achieve technology enterprise leadership is not to "de-specialize" - on the contrary it is to lever-up on technology and combine these competences with the broader competences needed for leadership.

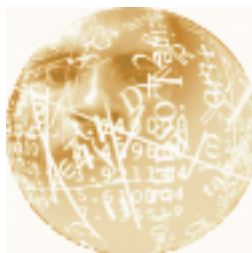
gy would pay for the development of 20 capable technical managers in a long general management development experience (eg 8 to 10 weeks). Not only is it likely to be a good use of the marginal dollar invested in technology, but it may also be the way to ensure that the rest of the huge sums which are being invested in technology and innovation processes produce a proper return.

Most general management education programs until now have assumed that the task of broadening engineers and other technical managers is essentially the same as "de-specializing" other managers from other functions. These programs pride themselves therefore on mixing different functional backgrounds together in accomplishing this de-specialization process. But the requirement to achieve technology enterprise leadership is not to "de-specialize" - on the contrary it is to lever-up on technology and combine these competences with the broader competences needed for leadership. This requires a totally new approach geared specifically to those with technical backgrounds and to those who ultimately will be required to lead with technology as a trump card.

We have found that this cannot be done by a business school alone. It explains the "raison-d'être" for the alliance between IMD and the two Swiss Federal Institutes of Technology, and the launch of the program entitled "Leading the Technology Enterprise"³.

Corporate CEOs, human resource officers, and particularly technically-trained managers who would like to be Bill Gates' corporate clones, take heed!

³ Brochures and information about the program can be obtained directly from CTM or CTM's website on Internet www.ctm.ethz.ch



Insights originates from the joint work of professors from the two Swiss Federal Institutes of Technology and IMD. It is published three times each year, distributed free of charge and is also available on Internet www.ctm.ethz.ch.

Contents focus on issues of high concern and relevance to leaders at key vantage points in technology-based enterprise. Generally a specific issue of *Insights* will fall within one of six areas at the interface of technology and management disciplines. These are:

1. Technology "forefronts" and their likely impact on industry structures and competition.
 2. Strategic management of technology.
 3. Technology-based entrepreneurship/start-ups.
 4. Large public/private infrastructure financing and project management.
 5. Sustainable development.
 6. Leadership development for the technology-based enterprise.
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