

CAPTURING OPPORTUNITY IN DISRUPTION: STRATEGIC CAPABILITIES AND ORGANIZATION FACTORS

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Abstract

Contrary to wide-spread perception, disruptive innovation is not only about “stealth attacks” on incumbent industry leaders. In fact, disruption has consistently demonstrated its potential for triggering total market growth in those industries that have been changed by it. Opportunities for capturing the benefits of disruption exist for incumbents as well as for upstarts. Disruption introduces new rules in a new playing field. It demands new sets of knowledge and appropriate organizational structures, processes and culture. Moreover, it challenges the very mindset of incumbents that have been successful in the past, but are now in danger of succumbing to that legacy.

How can firms capture opportunity from disruption? The authors explore this question by examining the role of the firm’s strategic capabilities and the enabling organization (structure, processes and culture) around these in capturing opportunity from disruptive innovation. They identify appropriate levers and stumbling blocks, and derive and discuss implications for management.

Keywords: Disruptive innovation, knowledge sourcing, knowledge integration.

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Introduction Much has been written in the recent management literature about disruption and its potential for impact in the market place. Disruptions are typically associated with disruptive technologies, technological discontinuities, emerging technologies or radical innovation. They have been defined as science-based innovations that have the potential to create a new industry or radically transform an existing one. Science-based innovation is used broadly to infer the process of transforming basic knowledge into useful application, whereby disruptive innovation triggers (1) expansion of the knowledge base, (2) change in existing markets, and (3) the creation of new markets (Day and Schoemaker, 2000a). More often than not, disruption has been viewed to be a threat to industry incumbents that must be met with defensive counter measures. Indeed, as Bower and Christensen (1995), and Christensen et al (1997; 2000) in their seminal work on disruptive technologies have shown, disruption has caused many established industry leaders to fail and will likely continue to do so. Disruptive innovation, however, is inherently more about new opportunities than it is about destruction. For example, Gilbert (2003) argues that in every industry changed by disruption, the net effect has been total market growth, and moreover, that disruption can be a powerful driver of growth through new market discovery for incumbents as well as for upstarts.

Disruptive Innovation: Opportunity or Dilemma? Disruptions, Gilbert (2003) points out, are often thought of in terms of sudden occurrences that emerge out of nowhere to upset the established market. Not so, he argues, and goes on to describe three distinct phases of disruption (Figure 1). In the first phase, innovation creates a new, non-competitive market space outside of the existing market. In the second phase, the new market encroaches on the existing market; growth of the established market slows as a result. The third phase sees acceleration in the growth and maturation of the disruptive innovation and a significant reduction in the size of the existing market. Managers of incumbent companies typically fail to recognize disruptions as opportunities because the potential new markets

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lie outside their existing resource base. Incumbents may perceive markets developing, but legacy thinking prevents their management from recognizing the developing market for the threat it really poses to them. For example, in the early days of Microsoft's *Encarta*, the idea of a digital version of an encyclopedia was not taken seriously by Encyclopaedia Britannica's senior managers. In dismissing Microsoft's *Encarta* as a frivolous toy, they failed to recognize the threat of the new digital disruptor entirely. The emergence of mass digitalization had introduced a new twist to the value proposition of the market traditionally served by Encyclopaedia Britannica. "Assuaging parental guilt", long the implicit driver of EB's success in its traditional printed encyclopedia market, was now being achieved by the personal computer. Hence, the personal computer had emerged as the new, real competitor to Britannica's printed version of encyclopedia. *Encarta* was merely the mock-up competitor. For Encyclopaedia Britannica's management, this realization came almost too late. Disruption has since forced the 235-year old firm, still producer of the most venerable and most authoritative encyclopedia in the English-speaking world, to relaunch itself as a dot.com in a digital world. Past successes and strong corporate cultures are irrelevant in the face of disruption; in fact, they tend to blind business leaders to developments in the market place that do not fit into their collective mental framework (Evans and Wurster, 2000; Shapiro and Varian, 1999).

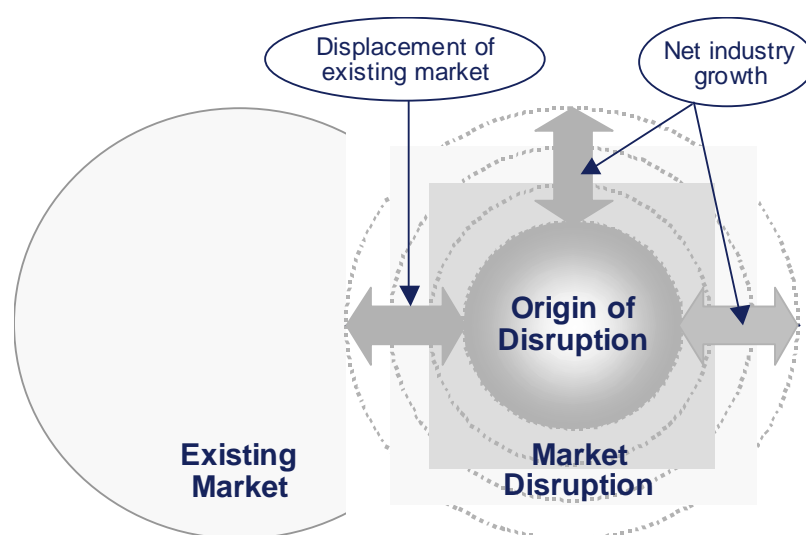


Figure 1. Origin and growth of disruption in the market (Gilbert, 2003)

Opportunities Perspective of Disruptive Innovation New and revolutionary technologies represent new market opportunities, even though they initially deliver performance that is inferior to established products, and therefore do not appeal to an established customer base. This makes them unattractive to successful players, who are dependent on growth based on economies of scale. At the disruptive phase of an innovation, customers do not yet know what they want. Investors are equally reluctant to sink capital into ventures for which markets are only emerging. Disruptive technologies do, however, possess features that appeal to a new and different group of customers. These may include new technical functionality, convenience or price. The early users of the disruptive technology are a much smaller and less profitable group than the customers for an established product¹. A new market around these early users emerges and early entrants to the playing field drive the disruptive innovation along a trajectory featuring high market opportunity (Figure 2). As the disruptive innovation evolves and matures to acceptable performance and superior pricing, it encroaches on the market of the established technology. With time and maturation, the initially "disruptive" innovation becomes ever less so, attracting more and more entrants to the market. This results in a drop in the curve.

Potential players, whether incumbent or entrant, initially find themselves positioned in the left segment of the lower curve, as depicted in Figure 2. Disruptive innovations typically make claim to: (1) a new value proposition, (2) a new business model, and (3) new sets of knowledge (typically embedded in the new technology, although new knowledge often also extends to new ways of approaching the business opportunity). It can be argued that for most firms, the major challenge lies in getting the knowledge part right; the challenge being building and deploying new strategically relevant knowledge in the form of capabilities - and this faster than the competition. Players in the new market must meet these requirements in order to compete. The challenge for firms wishing to compete on the basis of the new disruptive innovation translates to moving upward along the curve representing the market opportunity, for illustration purposes, from point (b) to point (a) in Figure 2. This segment of the curve represents the firm's growth path. As the firm builds capabilities, it builds competitive strength and positions itself for competing in the new market. At point (a), the firm has succeeded in acquiring the requisite knowledge position in terms of its strategic capabilities and has built the enabling organizational environment (structure, processes, culture) around these. The name of the game is to arrive at point (a) before the competition.

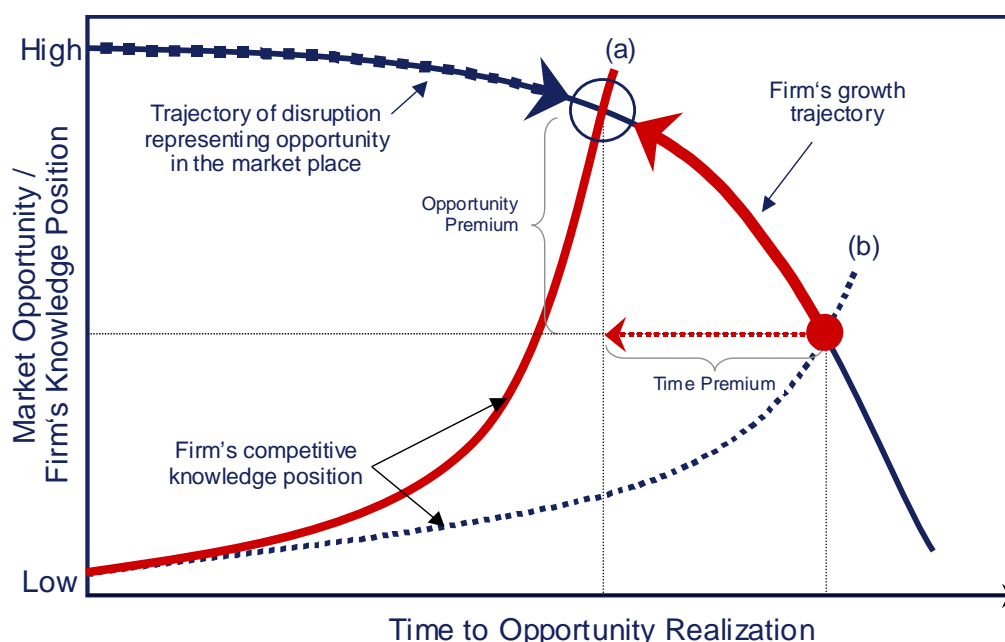


Figure 2. Market opportunity and the firm's knowledge position in disruptive markets²

Gilbert (2003) argues that there are several critical factors to successful navigation along the market opportunity trajectory. The first is recognizing that established players have more time than they often think to meet the requirements for early entry, provided they learn to play by the new rules established by the new market. Disruptions can take significant time – sometimes even years – before they seriously encroach on the existing market. A key challenge for the firm is to learn to look beyond its current customers. A second critical factor is succeeding to build an organization capable of delivering to the new market and its customers. Disruptive, new markets demand new ways of thinking about competing; about developing and exploiting the firm's resources for maximum competitive impact. Competing in disruptive markets, the authors argue in this paper, ultimately focuses on managing the firm's knowledge base and the enabling organization around it.

A New Playing Field – Clearing the Hurdles The disruptive innovation trajectory represents a dynamic opportunity for both incumbent and upstart. The rules of the game are established by a continually changing market environment. In many ways, succeeding in this arena resembles

participating in a hurdle race. Tripsas (2000) has described the trajectory in terms of a hurdle race consisting of three hurdles. Potential players, whether incumbent or upstart, are the contestants in the race. The first hurdle is the decision whether to enter the race at all; whether to invest in developing the new technology. The second hurdle is the organizational challenge of applying that investment toward building and nurturing the required resource base, that is, the required set of capabilities. When the firm has successfully built the required set of capabilities to compete, the third hurdle facing the firm is the actual commercialization of that technology.

Many firms, Tripsas argues, already fail to clear the first hurdle. Disruptive innovations are risky; markets are small if at all present and the new technology characteristically does not appeal to the existing customer base. The result is that many potential entrants get “cold feet” at the first hurdle.

Those firms that do succeed to make it over the first hurdle face the challenge of building new technological and organizational capability. Established firms can quickly get bogged down by strong organizational routines and procedures that have ensured success in the past, but which may be largely irrelevant for capturing opportunity in the new market. The strength of the existing set of capabilities, in fact, more often than not, turns out to be a liability in developing products based on radically new technologies. This goes to explain why initial new products made by incumbents are often inferior to those developed by upstart entrants.

The technical inferiority of incumbents often trails along and translates into an inferior market position as companies approach the final, technology commercialization stage, though technological superiority does not necessarily guarantee success at the commercialization stage, since the outcome of technology commercialization is generally not decided in the laboratory alone. In order to succeed at commercialization, companies typically need to develop a broader perspective on competing in the newly emerging market. Market dynamics play an important role in determining the final outcome of the last hurdle. As numerous examples have shown, it is not even always the better technology that achieves success in the market. Network externalities, for example, played an important part in establishing Microsoft’s dominant position over Apple. Many would argue that Apple still has the better technology, but that it has lost out to Microsoft’s shrewder tactics in the market place.

A Dynamic Portfolio Perspective Ultimately, whether or not a firm succeeds at clearing all three hurdles comes down to how successful it is at building the new sets of knowledge demanded by the disruptive innovation. Capabilities define what the firm can and cannot do – at all stages of the race. The firm’s capabilities represent the firm’s repository of strategically relevant knowledge. Some of this knowledge manifests itself in the form of primary capabilities (for example, core technological capabilities that differentiate the firm from its competitors). Capabilities may also be of a secondary, enabling nature; for example, the firm’s ability to source, integrate and assimilate new external knowledge (Tovstiga and Birchall, 2000). Capabilities are dynamic in nature, they evolve over time.

The strategic capabilities portfolio framework developed by Birchall and Tovstiga (2001, 2002) provides a conceptual framework for thinking about the evolution of disruptive innovation in terms of capabilities. The framework shown in Figure 3 maps competitive impact (maturity of the technology or capability) against competitive position (the firm’s degree of control over that technology or capability). The banana-shaped area represents the bounds of a strategically balanced portfolio of technologies or capabilities.

When using the framework it is important to differentiate, however, between (1) the disruption itself, typically a technological breakthrough (which may in itself evolve into a capability) leading to a disruptive product and market opportunity, and (2) the firm’s portfolio of capabilities that supports and enables the firm to capture the opportunity created by the disruption. The two are distinct, though interdependent – perhaps one can think of them as flip sides of a coin. Returning to the analogy of the hurdle race, we can think of the evolution of the disruption as the entity that needs to clear all the hurdles on its way to commercialization. Helping it to achieve that objective are the organization’s capabilities. These, however, also evolve along with the disruptive innovation. Christensen and Overdorf (2000) use the term *capability migration* to describe this evolutionary development of

capabilities. Capability migration suggests that companies compete differently at different stages of a disruptive innovation's evolution and that the competing firm requires different capabilities at different stages along the disruption's trajectory.

Evolutionary Paths of Disruptive Technologies Christensen and Overdorf (2000) suggest the following three possible paths along which the disruptive innovation can evolve:

1. **In-house development** The disruption is developed within the corporate boundaries of the firm. The assumption is that the appropriate and new organizational space; structure and processes, and capabilities are created for nurturing the new technological disruption to commercialization. The advantage for the firm is that it maintains a high degree of control over the disruption. On the cost side, the firm carries the risk of failure, which at this stage is high. This path is indicated by the label "1" in Figure 3.
2. **Spinout to an independent organization** The disruption is taken out of the existing organization; a new organization is created and the required structures, processes, capabilities and culture are developed in this new environment. Often, this is the only survival route for disruptions originating in large established companies. Once mature and proven, the initially disruptive technology may be taken back into the established firm via so-called *spin-in*. Motorola has done pioneering work in this area. The path marked "2" shows this route. The dip in the curve suggests that, from the perspective of the existing firm, there is a compromise on competitive position when the disruption is handed over to the newly created firm. The parent firm regains control through spin-in, as indicated by the rising trajectory in Figure 3.
3. **Acquisition of a different organization** When the required structures, processes and capabilities for developing and nurturing the disruption cannot be found within the existing firm, a third possibility is to source and acquire these externally. Sourcing new knowledge externally requires special secondary capabilities on the part of the existing organization that enable integration and assimilation of the new knowledge. This option comprises the existing firm's competitive position, and it must focus on internalizing the new knowledge in order to capture control. The path of the disruption for this option therefore initially lies in a region of weak control from the perspective of the acquiring firm, as indicated by the trajectory labelled "3" in Figure 3.

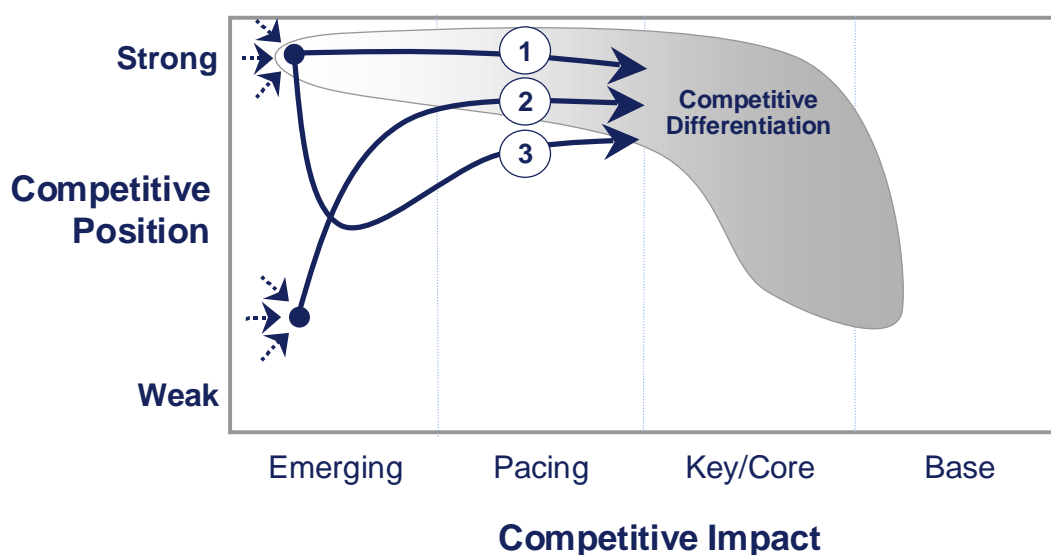


Figure 3. Conceptual framework; possible paths of evolving disruptive innovation.

Implications and Challenges for Management

Companies facing disruption in their traditional industries and markets face a dilemma. Traditionally, companies have been designed and run to perform well and to optimize their performance. Capturing

opportunity from disruption demands that companies evolve quickly, often radically, rather than focusing on operating optimally. Disruptions represent discontinuities that require successful players to “jump to the next curve”, representing the next wave of market opportunity, as shown in Figure 4. The region encircled by the dotted line represents trauma for some firms and opportunity for others. The region of discontinuity invariably unleashes fierce debate and conflict within existing firms.

Firms react in very different ways: At one end, we find those most traumatized by the discontinuity. Typically, these are industry incumbents that are saddled with legacy assets, and that have a propensity for “sticking to the knitting”. Past successes, a lack of appropriate in-house capability to appraise the emerging technology, and a proprietary mind-set get in the way of these firms (Day et al, 2000b). They characteristically foster an organizational “culture of optimization” that seeks to maintain quality, keep costs down, keep the product moving and generally “manage” crises in day-to-day operations. At the other end of the spectrum, we find those firms that are prepared to “make the leap”. These firms have a very different mindset from the former group. They nurture organizational cultures that are eager to pursue new quests. They also ask very different questions, such as: What is going to be the next big thing? How are we going to be part of it? How is that market going to work? How are we going to lock in the new market? (Arthur, 1999)

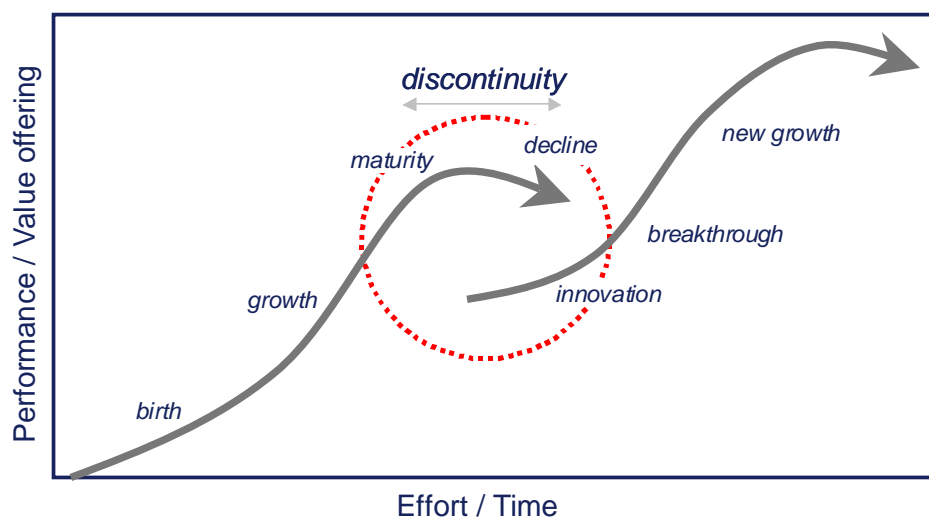


Figure 4. Discontinuity brought on by disruption and “jumping the curve”³

What differentiates those firms that succeed in making the leap to the next curve from those that don't? Mindset most certainly does, as the preceding discussion suggests. But even firms that bring the right mindset to the game are at risk. Tripsas (2000) suggests that too often even these firms are so focused on the difficult task of developing the radically new technological capability that they neglect to see the broader picture. They assume, for example, that once the technologically innovation has been developed, they can rely on existing strategies to bring it to market. They fail to realize that disruptive innovation invariably demands new business models and new resource requirements. Often, firms also neglect to develop new complementary resources and capabilities – and they fail to realize that they are up against a new set of competitors.

Foster and Kaplan (2001) argue that companies need to be *redesigned* to meet the challenges of disruption. Companies need to learn to compete differently. In order to accommodate disruption, firms must move away from rigid organizational designs which were conceived for repetitive transactions, routinized operations and optimization. In order to accommodate disruptive innovation, firms need to become *flexible*. Flexibility, argues Bahrami (1996) inherently enables firms to continually respond to unanticipated changes in the market; to adjust to the unexpected consequences of predictable change; and to precipitate intentional change when called for by unexpected events in the competitive environment. Flexibility is a multi-dimensional trait that demands agility and versatility. It is also

associated with change, innovation and novelty and is coupled with robustness, resilience and capabilities that evolve over time. One of the key building blocks of the flexible organization according to Bahrami is a capability-based view of the organization, which (1) recognizes the core capability of the technology-based firm, ultimately, to be the knowledge of its people, and (2) views the firm more in terms of a montage of individual capabilities, informal networks and relationships than in terms of predetermined roles, positions and formal hierarchical relationships.

Disruption need not be a source of dilemma for managers and their firms. Indeed, disruption always has been, and will continue to be, a tremendous opportunity for those firms that learn to play by the new rules. Capturing opportunity from disruption poses a challenge to managers to rethink the competitive position and strategic stance of their firms. Just as important, however, disruption challenges the mindset of managers. Kelly (1998) aptly reminds us that capturing opportunity from disruption has to do with designing the organization and its capabilities for “imperfectly seizing the unknown” rather than “perfecting the known”.

References

1. Arthur, W.B. (1999). “New Economics for a Knowledge Economy: The Law of Increasing Returns” in *The Knowledge Advantage* (Ed.: R. Ruggles and D. Holtshouse), Capstone, Oxford
2. Bahrami, H. (1996). “The Emerging Flexible Organization: Perspectives from Silicon Valley” in *Knowledge Management and Organizational Design* (Ed.: P.S. Myers), Butterworth-Heinemann, Boston, 55-75
3. Birchall, D.W., and G. Tovstiga (2001): “The Strategic Potential of a Firm's Knowledge Portfolio”, in *Financial Times Handbook of Management, 2nd Edition* (Ed. Crainer/Dearlove), Financial Times / Prentice Hall, London
4. Christensen, C.M. (1997). *The Innovator's Dilemma*, Harvard Business School Press, Boston, MA
5. Bower, J.L., and Christensen, C.M., (1995). “Disruptive Technologies: Catching the Wave”, *Harvard Business Review*, January – February Issue, 43-53
6. Christensen, C.M., and M. Overdorf (2000). “Meeting the Challenge of Disruptive Change”, *Harvard Business Review*, March – April 2000, 67-76
7. Christensen, C.M., M. Raynor and M. Verlinden (2001) “Skate to Where the Money Will Be”, *Harvard Business Review*, November Issue
8. Day, G.S., and P.J.H.Schoemaker (2000a). “A Different Game”, in *Wharton on Managing Emerging Technologies* (Ed.: G.S. Day and P.J.H.Schoemaker), John Wiley & Sons, New York
9. Day, G.S., and P.J.H.Schoemaker (2000b). “Avoiding the Pitfalls of Emerging Technologies”, in *Wharton on Managing Emerging Technologies* (Ed.: G.S. Day and P.J.H.Schoemaker), John Wiley & Sons, New York
10. D’Aveni, R.A. (1999). “Strategic Supremacy through Disruption and Dominance”, *Sloan Management Review*, Spring 1999 Issue, 127 – 135.
11. Evans, P., and T.S. Wurster (2000). *Blown to Bits*, Harvard Business School Press, Boston
12. Foster, R., and S. Kaplan (2001). *Creative Destruction*, Currency/Doubleday, New York
13. Gilber, C. (2003). “The Disruption Opportunity”, *Sloan Management Review*, Summer 2003, 27-32
14. Kelly, K. (1998). *New Rules for the New Economy*, Viking/Penguin, New York
15. Shapiro, C., and H.R. Varian (1999). *Information Rules*, Harvard Business School Press, Boston
16. Tovstiga, G., and D.W. Birchall (2000). “Maximizing the Strategic Impact of a Firm's Portfolio of Competencies: Strategic Knowledge Sourcing”, *Conference Proceedings: Knowledge Management: Concepts and Controversies*, University of Warwick, Coventry, UK (February 10-11, 2000)
17. Tovstiga, G., and D.W. Birchall (2002): “Strategic Knowledge Sourcing, Integration and Assimilation: A Capabilities Portfolio Perspective”, Chapter in *Organizational Intelligence: The Cutting Edge of Intellectual Capital and Knowledge Management* (Ed. N. Bontis), Butterworth-Heinemann, Boston
18. Tripsas, M. (2000). “Commercializing Emerging Technologies Through Complementary Assets”, in *Wharton on Managing Emerging Technologies* (Ed.: G.S. Day and P.J.H. Schoemaker), John Wiley & Sons, Inc. New York, p. 184

End Notes

¹ See also the report issued by The Corporate Strategy Board entitled “Disruptive Technologies”, August 1998 for a compact summary of the notion “disruptive technologies”.

² The notion of intersecting curves representing market opportunity and the firms' knowledge position has been adopted from the work of William L. Miller and Langdon Morris (*Fourth Generation R&D*, John Wiley & Sons, 1999, p. xv) who use the notion to address the complex problem of timing for innovation.

³ See also Imparato, N., and O. Harari (1994). *Jumping the Curve*, Jossey-Bass Publishers, San Francisco for a more indepth discussion on the strategic implications for organizations in conjunction with “jumping the curve”.