



The Keystone Advantage

What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability

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Chapter One – Rethinking Networks

“Strategy is becoming, to an increasing extent, the art of managing assets that one does not own.” Power firms such as Wal-Mart and Microsoft have achieved success by determining “how to create, manage, and evolve an incredibly powerful business ecosystem.” For Wal-Mart, advantage was gained by gathering “consumer information to coordinate the distributed assets of its vast network of suppliers. You can almost think of it as a single enormous operation, made up of thousands of companies.” Wal-Mart chose to share demand information collected in real time with its supplier network. Microsoft, on the other hand, “focused on designing programming tools and technologies that were used by thousands of organizations and millions of developers.” History reminds us that Microsoft’s first product was not an operating system, but a programming language – “effectively a tool that enabled developers to more easily create software that would run on a large number of machines.”

Both firms “acted as a crucial hub in a vast and diverse business ecosystem, offering platforms on which others could build.” A symbiotic relationship exists between the firms that built the networks and the firms that “made investments in leveraging these platforms and began to depend on them for their success.” The success of the ecosystem is built on “a number of critical factors.” First of all, performance of the network of business partners is linked. Secondly, the hub firm must work “hard to organize the behavior of these business partners, creating opportunity for growth and innovation.” Finally, hub firms are “only strong if this business community large, healthy, and growing.” The ecosystem “only wins if they continue to sustain the collective health of their vast networks of business partners.” The fate of the hub is “share with that of the other members of their business networks.” These hub firms, in fact, play “the role of keystone in their perspective ecosystems. Drawn from biology, the term describes a pattern of behavior that improves the performance of an ecosystem and, in doing so, improves individual performance.”

The pervasiveness of networks “is the result of an evolution in social, economic, political, and technological systems that has stretched over the last few centuries.” The authors highlight the Italian apparel network as an example of a network built around hubs that combine autonomy and coordination to develop the robust power to survive “hundreds of years of technology and market changes.” In the era of DuPont and Ford, “creating distributed business networks was too difficult and costly, and the advantages of vertical integration dominated in most environments.” In the era of networks, distributed networks serve as an alternative to the command and control of vertical integration. The advent of business networks has created a new challenge.

No longer can managers focus merely “on the internal operations of the firm.” Now managers must develop expertise in managing “the vast networks of firms” that comprise the ecosystem. “Prevailing management theories all too often advise the operating manager to create small, isolated units to fight problems and leverage opportunity. These theories have a difficult time dealing with a huge, unfocused, unbounded, amorphous, and constantly evolving network like the internet.” How does a manager “manage a network of business partners that is one thousand times the size of the firm?” “When the Internet took off and business networks became ubiquitous, our understanding of management and strategy simply did not keep up.” Managers and leaders, according to the Iansiti and Levine thesis, must “develop a solid understanding of

how networks and key firms within them support or inhibit innovation, how they can enhance or damage operational productivity and how they can provide healthy, sustainable environments for the creation of new firms and products.”

As a consequence of a broad research effort, the authors determined that “more than any other type of network, a biological ecosystem provides a powerful analogy for understanding a business network.” A business ecosystem is “characterized by a large number of loosely interconnected participants who depend on each other for their mutual effectiveness and survival.” When the ecosystem is healthy, all of the individual species are able to thrive. Ecosystems are often organized around “richly connected ‘hubs’ [that] can have profound effects on the health of the entire network.” These hubs “take the form of active keystone whose interests are aligned with those of the ecosystem as a whole and serve as critical regulators of ecosystem health.” As a critical point of clarification, the authors communicate that they “are not arguing that industries are ecosystems or even that it makes sense to organize them as if they were, but that biological ecosystems can serve as a source of vivid and useful terminology as well as provide specific and powerful insights into the different roles played by firms.” Additionally, the research indicated “that almost all healthy business ecosystems were characterized by some kind of keystone function.”

The implications for strategy are drawn “from biology and complexity theory.” The authors “differentiate between a number of different strategic modes” – the keystone, dominator, and niche strategies. “Keystone strategies shape and coordinate the ecosystem.” This is contrasted with “dominator strategies, which attack the ecosystem, absorbing and integrating external assets into internal operation. Niche strategies can be pursued by the much larger number of firms that make up the bulk of the ecosystem. These firms emphasize differentiation by focusing on unique capabilities and leveraging key assets provided by others.” Traditional strategy frameworks that focus on internal competencies that overemphasize firm capabilities and fail to adequately appreciate “the relationship between the firm and its external ecosystem.” The authors argue that “firms will be distinguished by the way they manage the massive web of dependencies that is created between them and the rest of the world.”

The book follows a very straightforward structure. The first section (The Ecosystem Framework) introduces the ecosystem framework. The second section (Ecosystem Strategies) is a discussion of the strategy implications of the ecosystem framework. The final section (Foundations for Competition) “focuses on operating implications by discussing three foundations of competition in a networked world.”

Chapter Two – Shared Fate

We live in a “highly interconnected world.” As a government official warned shortly after the September 11th attacks, “Everything’s hooked to everything.” “We live embedded in a system, and, more than ever before, our fates depend upon its fate.” The authors reduce the scope of the book from global interconnectedness to an attempt to evaluate the influence of networks on business practice. A few questions are highlighted:

- “How can we as practitioners and managers act to take advantage of our interconnectedness?”
- Because firms build products that are dynamically connected to other products and this “shared fate” requires an “active and informed management, can we characterize the kinds of management stances that exhibit this kind of informed approach?”
- “How can we avoid making mistakes that will damage the networks of which we are a part?”
- “Are there specific actions we can take that enhance the health of our networks?”
- Can the approaches of ecosystem savvy firms be generalized and reproduced?

Biological systems offer a “better appreciation of what it means to be a part of a richly networked system.” Interdependence drives stability, productivity, and creativity in biological systems. The

fate of one species is bound to the “fate of the entire network of other species in the ecosystem.” “Each member of the ecosystem depends to some degree on the presence of every other for the simple reason that they are adapted to each other’s presence. Essential inputs to the survival and health of every member of an ecosystem are provided by the other members of the system. Whereas removal or displacement of these members results in the loss of important food sources, destruction of essential microhabitats, or loss of protection from a predator or competitor, their continued presence sustains the health of the system and helps to shape and maintain a system that provides benefits to the entire ecosystem.”

The computing sector is a “striking example” of this shared fate interconnectedness. Note the specialization that exists in this sector. Many firms produce offerings that “have no value on their own outside the context of the collective effort.” “The goal is no longer to lock out entire vertical stacks with proprietary advantage, but to be the best in a chosen area of specialization.” The interaction in the networked economy “is not along traditional industry boundaries.”

The apparel industry represents a “complex network of firms...ranging in size from single-person operations to multibillion-dollar textile firms such as Levi Strauss & Co.” The garment industry “is composed of four major segments: fiber producers, textile mills, apparel manufacturers and other textile users, and apparel and other soft goods retailers. This network has evolved around Li & Fung, “a hundred-year-old Hong Kong-based trading company.” This hub “customizes supply chain services to fit the needs of individual retailers such as the Gap or the Limited.” Li & Fung shifts resources to different members of the network in response to “changes in technology, consumer preferences, or government regulation.” To perform this balancing and reallocation function, Li & Fung must be careful not to extract too much value from its network.”

In the era of the 60’s, firms within the computing industry competed head-to-head for dominance as vertically integrated, independent technology stacks. Eventually, these stacks “began to disintegrate into the computer industry we know today. IBM set the pace by defining a “clear, modular interface between software and hardware, which guaranteed compatibility between models. This clear interface had an unintended but crucial effect – it set in motion a process to fragment the industry into a wide variety of diverse organizations, each providing different products and service components and focusing on different capabilities.” This gave birth to the combination of Microsoft DOS and the IBM personal computer which in turn provided a platform for a “vast number of software providers to design general-purpose applications that would run on a wide variety of hardware combinations.”

Eventually, the industry “fragmented into a number of clusters of firms each supported by a different type of computing platform. Each [platform] was in essence a separate ecosystem of business partners, each including different component suppliers, system vendors, and software developers (ISV’s). Each organization had a close affiliation with the ‘mother’ platform, which in some cases became something akin to a religion for its devoted disciples. This naturally gave rise to fierce competitiveness between platforms,” (e.g., Mac versus PC). This trend accelerated with the development of “loosely coupled integration methodologies” and further advanced with “the emergence of standards for electronic data interchange (EDI), a broadly used infrastructure for connecting business processes such as procurement and order management in disparate enterprises.” “During the late 1990’s, however, the birth of XML (Extensible Markup Language) and its critical evolution from a data presentation standard to a machine-to-machine data interchange format began to finally resolve this crucial problem.” Broad adoption of standards such as EDI, HTML and XML resulted in the creation of “a truly interconnected ecosystem in which organizations are integrating both technology infrastructure and business processes.” These technology tools, effectively deployed within an industry, give birth to an ecosystem. “This brief history of business ecosystem evolution illustrates a series of clear, relentless trends” – industry fragmentation into interconnected industry segments sharing elements of cooperation and competition.

What is a business ecosystem? “Like biological ecosystems, business ecosystems are formed by large, loosely connected networks of entities. Firms interact with each other in complex ways,

and the health and performance of each firm is dependent on the health and performance of the whole.” This analogy works on a number of levels.

1. “Firms, business units, technologies, and products all exhibit networks of interdependencies and ecosystem-like dynamics.”
2. “The details of the interactions at one level are often crucial for shaping the interactions at others.”
3. Managers must make significant strategic decisions in determining the interactions within the ecosystem and the interactions with competing ecosystems. Therefore, emphasis is placed on operational decisions made by managers.

“To the extent that the comparison of business networks to ecosystems is a valid one, it suggests that some of the lessons from biological networks can fruitfully be applied to business networks.” According to the authors, ecosystems should demonstrate the following:

1. We should expect to see more robustness in the face of external shocks.
2. We should expect to see a capability for creation of novelty, linked with a specialization of network members.
3. We should expect a heterogeneous structure, with different firms adopting dramatically different roles that influence different aspects of the stability and productivity of the network.

The authors warn against the over application of the analogy. The assertion is not that the business network is an ecosystem, but that “ecosystems are simply a point of departure for a search for analogies and metaphors as well as theoretical foundations for an understanding of the challenges and opportunities we face in formulating strategies in a networked world.” How do business ecosystems differ from biological systems? Ecological ecosystems emphasize stability and durability whereas business ecosystems are under enormous pressure to innovate. Unlike ecological ecosystems, business ecosystems are in a fierce competition for members. Finally, the intelligent actors in a business ecosystem are “capable of some degree of forethought and planning.”

Business ecosystems challenge the traditional notion of industry boundaries. “Ecosystems may be defined by the sharing of tools and technological components or by buyer/supplier interactions. Ecosystems may span several traditional industries.” Therefore, “it is better to gauge the degree of interaction between firms and to depict ecosystems as communities of firms characterized by a given level and type of interaction (e.g., market relationships, technology-sharing and licensing agreements).”

Chapter Three – Collective Behaviors

Why did Yahoo! “hit the wall in December 2000?” Cisco, one month later, “wrote off close to two billion dollars in inventory.” What happened? “Yahoo! and Cisco failed because their vast business ecosystems slowly became increasingly unhealthy and finally collapsed.” These firms thrived as long as “their business partners could attract cash.” During periods of prosperity, Yahoo! and Cisco “optimized their immediate profit but hurt their long-term prospects by creating dependencies on unhealthy business communities.” When these correlated firms began to experience financial difficulties resulting in a “shock that reverberated through the entire network.” How can you measure the health of an ecosystem and what implications does this have for the firm’s strategy?

“In a networked environment, no firm’s actions can be viewed in isolation.” One must take into consideration the “dynamic interactions of the ecosystem as a whole.” To simplify the evaluation, it is helpful to subdivide the ecosystem “into a number of related business domains.” “For the ecosystem to function well, each domain that is critical in the delivery of a product or service should be healthy.” Dominator firms like Yahoo! and Cisco “struck aggressive deals with their dot-com partners in the boom years” weakening their partners financially and setting “the stage for the collapse to come.”

What is business ecosystem health? The authors intend to identify the indicators that the system “as a whole is durable creating opportunities for each of its domains.” These indicators include productivity, robustness, and niche creation. **Productivity**, in biological ecosystems, is a measurement of how effectively the system converts raw materials into living organisms. From a business perspective, productivity is a measurement of how effectively technologies are being transformed into products and services. How effectively is the ecosystem “converting innovation into lowered costs and new products and functions?” Factor Productivity measures how effectively the system “converts factors of productivity into useful work.” This is often measured in terms of ROIC. A second productivity measure is “Change in Productivity over Time.” Is productivity increasing or decreasing? A third measure is “Delivery of Innovations.” Is the ecosystem effectively sharing innovation? Are innovations filtered through the system in a manner that improves offerings and lowers costs? In addition to productivity, ecosystem health is measured in terms of **Robustness**. Is the system able to “persist in the face of environmental change?” Five measures of robustness are noted by the authors – Firms Survival Rates, Persistence of Ecosystem Structure (structure unaffected by external shocks), Predictability (core technology sustains in the face of change), Limited Obsolescence (core technology remains useful), and Continuity of Use Experience and Use Cases (changes in the technology and its uses does not radically impact user experience). A final indicator of ecosystem health is Niche Creation. Does the system “exhibit variety and diversity” in support of many different firms, technologies and offerings? Is the system exhibiting diversity and variety that drives value that is to say are “the new categories of business meaningfully new [providing] new functionality, [enabling] new scenarios, or [exposing] new technology or ideas?” “Does the variety of firms and their products map to a variety of customer experiences and to convenience and effectiveness in achieving those experiences or building downstream products?”

Ecosystem savvy firms must quickly learn what Cisco and Yahoo! have now learned. Ecosystem health must be constantly monitored and hub firms must move “away from internal practices that might decrease the health of ecosystem communities. The critical effects that a hub firm can have on the collective health of networks of which it is a part cannot be ignored.”

Chapter Four – Operating Strategies

Both Enron and eBay found themselves at the center of “a massive business network of trading partners.” One hoarded wealth while the other shared wealth with ecosystem partners. “Why did the company that shared the wealth end up making so much more money?” These examples and others illustrate that “operating decisions based on creating, shaping, and leveraging a healthy ecosystem can make for strong, sustainable business performance.” The emphasis of this section is on the challenge for firms to “identify the strategies through which firms – whatever their role in the environment – can (and should) act to operate effectively within it.”

The different experiences of Enron and eBay can be explained, to some degree, by their contrasting operating strategies. A firm’s strategy is revealed by the pattern of operating decisions made by executives and managers. Firms are distinguished by their ability to create and sustain competitive advantage and these advantages can be ascribed to operating strategies that are founded on firm capabilities and competencies. Most strategy work has focused on internal capabilities. “The critical interaction between that firm and its network of business partners” has been largely untouched by management research and thinking. The emerging literature regarding strategy in a networked economy “highlights the general impact of modularity, product standards, and network externalities.” “Baldwin and Clark introduced the concept of an Industry Cluster made up of the many organizations that are linked to each other via modular interfaces in the design of a product, and set the stage for the significant operational implications of this phenomenon.” Shapiro and Varian point out that “the new information economy is driven by the economics of networks.” Gawer and Cusumano contribute the idea that platform technology providers like Microsoft, Intel and Cisco play the critical role of standard setting and innovation distribution. Many aspects of the natural and man-made “worlds can be viewed as

networks of individual agents.” Complex problems, unsolvable by individual agents, can be solved and new capabilities derived by “connecting even simple components in the right way.”

In building an ecosystem strategy, three roles must be evaluated – keystones, dominators and niche players. Keystones play the significant role of enhancing network efficiency and stability. Keystones serve as the hub in a network of ecosystem interactions. Keystone predators enhance system productivity by “limiting the numbers of species that would otherwise disproportionately reduce productivity.” Keystones also enhance productivity in the system “from the bottom up by providing a foundation on which other species rely.” The examination of the keystone role “reveals that they in effect provide a platform on which much of the rest of the ecosystem is built.” In business, the keystone role is equally important. Keystone firms support the systems “productivity and diversity...in the face of change.” Keystone firms “hold in check other species that would otherwise dominate the system.” “Fundamentally, a keystone acts to improve the overall health of the ecosystem and, in doing so, benefits the sustained performance of the firm.” The dominator role is similar to the keystone role with two important differences. Dominators differ from keystones in terms of size. Keystones are often a small part of the ecosystem in contrast to the dominator. Unlike keystones, dominators “fail to encourage diversity.” Classic dominators emphasize vertical and horizontal integration. Hub landlords dodge the responsibility of network control focusing exclusively on extracting value from the system. Apple is an example of a classic dominator while Enron is an example of a hub landlord. In biological ecosystems, Niche Species “do not have broad-reaching impacts on other species, but collectively they constitute the bulk of the ecosystem both in terms of total mass as well as variety.” Most participants in business ecosystems should follow niche strategies. “A niche player acts to develop or enhance specialized capabilities that differentiate it from other firms in the network, leveraging resources from the network while occupying only a narrow part of the network itself.” Niche players avoid duplication of effort and facilitate efficient division of labor within the ecosystems. “Repeatedly in evolving natural communities, members have increased the tightness of their integration and the efficiency of their collaboration by losing the chemical apparatus or anatomic features required to perform functions that their partners perform for them.” Keystones play the important role of encouraging niche players to avoid duplication while leveraging unique contributions. The presence of capable niche players motivates “central players to pursue effective keystone strategies” holding in check the tendency for hubs to extract too much value from the system. Effective niche players create a competition, of sorts, among various keystone contributors.

The view developed by the authors dispels three common fallacies about the contribution of firms occupying a central role in an industry. The ecosystem model dispels the “all peers” fallacy. Fiercely competitive peers are assumed to create environments that are “more productive, stable, or innovative because that is the natural way.” However, it is clear that ecosystems are governed by keystones demonstrating some form of centralized control. Secondly, the model dispels the “dominator” fallacy which suggests that keystones are positioned at choke points in the network functionally restricting innovation and the “free flow of information and value.” However, keystones, in ecosystems, must facilitate a growing resilience and diversity within the system. Far from restricting innovation within the system, keystones encourage variety and diversity as a means of insuring the systems ability to survive wave after wave of external change.

Chapter Five – Keystones

The quintessential keystone is Microsoft. From its inception, Gates imagined a firm whose reach and influence would be best realized not as an applications company, “but as the platform that would enable applications to be written.” Keystones are richly connected hubs orchestrating the contributions of numerous niche players. “A keystone strategy is an operating strategy that improves the overall health of the ecosystem and, in so doing, benefits the sustained performance of the firm. The central feature of this strategy is its focus on managing external resources, shaping the structure of the external network, and maintaining and harnessing external health.” As a keystone, Microsoft’s “influence is not achieved by being physically large or by occupying significant parts of the networks of which it is a part.” Microsoft has 40,000 employees while over 5 million developers, not employed by Microsoft, program on their platform.

The firm's market capitalization is a fraction of the total market cap represented by ecosystem. What does Microsoft's keystone strategy look like? Microsoft's tools (e.g., Visual Basic Controls, ActiveX, .Net) have enabled the productivity of its ecosystem partners. Microsoft has contributed to the robustness of its ecosystem by insuring that its "application programming interfaces (API's) remained consistent across different generations of technology." The Microsoft OS is reliable, consistent and widely distributed. This benefits all of the ecosystem partners – the ISV's, OEM's, business users and individual technology users. With regard to niche creation, the keystone seeks to "harness the shocks to further enhance diversity" in the ecosystem. The .NET architecture is an example of tool designed to enhance diversity in the system. "The combination of language independence and the potential for a unified framework of functionality that is available on a wide range of devices means that a greatly expanded community of developers can now reach a huge audience of potential users."

What are the Core Components of a Keystone Strategy?

1. The keystone must create value within the system. "Unless a keystone finds a way to efficiently create value, it will fail to attract or retain members." keystones develop operating leverage by developing "a series of assets that can be easily scaled and shared by a broad network of business partners." The principles of operating leverage include the following.
 - a. Create high-value, sharable assets.
 - b. Leverage direct customer connections.
 - c. Create and manage physical and information hubs.
 - d. Support uniform information standards.
 - e. Create, package and share state-of-the-art tools and building blocks for innovation.
 - f. Establish and maintain performance standards.
 - g. Build or acquire financial assets for operating leverage.
 - h. Reduce uncertainty by centralizing and coordinating communication.
 - i. Reduce complexity by providing powerful platforms.
2. The keystone must "share the value within the ecosystem." Value sharing is the differentiator between a dominator and a keystone. "By sharing the value, it can continue to expand its own healthy ecosystem and thrive in a sustainable way."

Wal-Mart is an example of a firm that both creates and shares value within the system. Value is created via Wal-Mart's "centralized supply chain infrastructure" that improves efficiency and lowers prices for customers. Wal-Mart leverages technology to build effective business processes, collect useful business intelligence, and to share both with its vendor partners.

"The idea that a firm might do more than just leverage switching costs for maximum profit is absent in much of the work based on network economics." The keystone concept is missing from "prevailing policy and legal frameworks" resulting in an environment that is "actively hostile to firms that follow them." Firms pursue a keystone strategy because the positive effects on network health insure "the keystone's own health and sustainable performance."

Chapter Six – Landlords and Dominators

Dominators are value thieves. Enron, once held in high regard, is now known to be a firm that attempted to "extract almost unlimited value from the networks it dominated." A hub landlord follows an "unsustainable strategy of value extraction that eventually choked off the health ecosystem on which it depended." In contrast, a keystone leaves "room for a wide variety of other participants to grow and thrive." The author's summarize Enron's crowning failure in this way – "what little value Enron might have brought to its networks by improving their efficiency, it quickly capture for itself by creating a variety of novel tools for enriching itself at the expense of those networks."

A "faux keystone" occupies a central position in a "web of business interactions" while ignoring "the health of the networks it served." "A hub landlord strategy is an operating strategy that extracts as much value as possible from an ecosystem or ecosystem domain without integrating

forward to control it.” Dominators integrate vertically or horizontally “to manage and control an ecosystem [controlling] both value capture and value creation in an ecosystem domain.” Landlords cripple the system’s ability to “develop the necessary variety of functions...innovative activity is often focused on improving the landlord’s ability to extract value.” Dominators drive innovation. Therefore, the health of the system is directly correlated with the dominator’s R&D productivity.

With regard to niche creation, both landlords and dominators stifle niche creation. Landlords do not “take responsibility for vertically integrating and creating their own internal niches” operating in “industries that perform few functions.” Dominators, on the other hand, do vertically integrate to occupy ecosystem niches themselves. Variety may threaten stability in the system. Therefore, the limits imposed by a dominator may serve to strengthen the ecosystem.

Robustness is an important priority for keystones accepting responsibility for growing the value opportunity in the ecosystem. Landlords simply extract value and do not, as a rule, give appropriate consideration to driving robust value creation for the entire system. Dominators focus on “the construction of a stable system for which they take responsibility. In mature industries, a firm’s interests may be best served by a mixed strategy. When the cycle of innovation slows down, “highly integrated firms that perfect well-established products may be more effective than a more open ecosystem structure.” Microsoft’s domination of the office productivity software space is an example of a mixed-strategy approach.

Chapter Seven – Niche Players

The 24,000 people living in or around Prato, Italy perform highly specialized niche functions within the broader garment industry. A vibrant ecosystem will always be characterized by a vibrant network of niche players. Niche players make up the bulk of their ecosystems often occupying the fringes of the system where much of the innovation for the system is being developed. “A niche strategy is an operating strategy that [highlights the specialized] capabilities.” The niche player leverages its specialization as its means of differentiation within the ecosystem domain. These ecosystem participants “focus their own activities narrowly...while using existing solutions for everything else.” The products of a niche player do not stand alone, but “as important, specialized complementary components in an interconnected ecosystem of elements in which conventional product boundaries may not always be distinct or clear to the end customer.”

Niche players create value by “selecting a specialization that is truly different and whose differences are sustainable over time.” These firms must select areas that have staying power and that can be defended “against a keystone or dominator trying to expand.” “The key is finding a large enough market that requires specialized capabilities.” Not “bound by the constraints of vertical integration,” niche players combine “their specialized assets with complimentary products and platforms provided by other niche players and keystones.” Diversification is achieved as niche players connect to multiple hubs. Focused and specialized firms must “continually innovate by integrating technology available from the ecosystem to sharpen the niche offering that it is crafting.” Switching costs between ecosystem hubs is measured in terms of coupling strength. Tight coupling increases switching costs and the power of the hub over the niche firms. Loose coupling enables the niche firm to embrace a strategy of mobility and flexibility and increases the niche firm’s leverage with the hub.

Chapter Eight – Architecture, Platforms and Standards

There are three foundations, identified by the authors, for “competition in a networked setting.”

1. Architecture – how do companies draw boundaries between technologies, products and organizations?
2. Integration – how do companies collaborate across boundaries, sharing capabilities and technology components?

3. Market Management – how do companies complete transactions across boundaries, operating within complex market dynamics that govern business networks?

Keystone strategies require “the efficient sharing of value with a dispersed ecosystem of organizations.” To do so, a platform is made available to members of the ecosystem. The platform is a “set of solutions” accessible “through a set of access points or interfaces.” In technology ecosystems, Application Programming Interfaces serve this platform function. “The platform is the package through which keystones share value with their ecosystems.” Platforms can be divided into two categories – the implementation and the interface. “Platform implementations are [unseen,] proprietary approaches to solving problems and to bridging the gap between the underlying technologies on which an ecosystem is based and the set of solutions to problems that can be achieved using those technologies.” Platform interfaces serve as the visible access points “that ecosystem members use as the starting point for their own work.” Coupling strength is determined by the “nature of the interface between components.” Dell has mastered the management of both tightly and loosely coupled components. Core components of their system are tightly coupled and have “remained consistent over the last ten years evolving through the incremental addition of new functionality.”

Platforms must be widely used as “the foundation of a vast and varied ecosystem of products and activities.” Platforms, such as Wal-Mart’s Retail Link system, “unlock the potential of the underlying technology on which an ecosystem is organized or solve fundamental shared problems faced by members of the ecosystem.” Keystones must answer the question of “the extent to which they should retain control over the different levels of their platforms.” Keystones who “open up” their platform to niche players risk losing control of the system. To protect their position, keystones must continually create value for the system. This is a more sustainable strategy than “relying on switching costs that are bound to evaporate.” Niche players must “stake out domains that lie as far as possible from the platform or that are highly specialized in terms of the market they serve or the technical expertise they require.”

Standards are crucial elements of ecosystem architecture. “A standard is an interface that facilitates interoperability” and is useful to the degree “that it empowers participants in a network to interact with each other and to sustain those interactions over time.” Interfaces can be categorized in terms of access, which is to say that interfaces structure and shape interactions between a platform and all others in the ecosystem. Standards are interoperability interfaces facilitating “direct interactions among ecosystem members.” A general and flexible standard has tremendous potential to enhance the role of the keystone. Therefore, “standards should be as broadly applicable as possible and solve ubiquitous problems.” Standards represent the keystone’s “approach to solving a large class of problems.” Keystones must achieve competitive advantage, “not [by] bundling proprietary instances of general solutions but building effective tools for implementing them, packaging and structuring access to them, and identifying and defining meaningful standards that allow them to do this.” In summary, “platforms and standards serve as the connecting fabric of an ecosystem. They draw the boundaries and define the relationships among its members. They serve as a framework for them to share value and are fundamental to the functioning of the network.”

Chapter Nine – Integration, Innovation and Adaptation

The capability to integrate has become an essential competency for innovative firms. “Integration capability is an organization’s capacity to combine the impact of different competencies, both internal and external to the firm.” Platforms enable the development of new products and services while integration “provides the glue with which to add new concepts and technologies.” Honey Bee colonies illustrate the concept of integration. “Critical integration is exchanged in tightly confined spaces using a language that is simple and entirely hardwired.” In a networked environment, “once-distinct components are obscured by their current tight integration.” In the technology industry, “products are the combination of a vast variety of technologies, components, or processes. Innovations...are the integration of a multitude of different inventions with existing product and process components.”

Integration processes are an essential element of ecosystem health. “The best integration processes were led by a focused team of managers embodying a diverse range of experience, which [the authors] have [previously referred to as] the integration group. Their role is to assemble the required knowledge base, understand how new possibilities will affect the existing operation, design the architecture of the future operation, and drive implementation.” The keystone should “acquire and retain the people required to make [integration] decisions.” A continuum of options exists for established firms to organize itself for the purpose of “integrating new capabilities into its established businesses.” Integration is ultimately a leadership discipline in which firms accomplish the following.

1. Leverage deep knowledge of the technology, market and customer domains
2. Overlap conceptualization and implementation without sacrificing architecture
3. Merge experiment and experience

Niche players must avoid becoming trapped in an ecosystem characterized by weak or endangered platforms. “Organizations executing networked innovation strategies should therefore closely monitor the health of the platforms they leverage and work hard to reduce dependencies. Whenever possible, they should entertain using multiple platforms, or at least design their offerings so that the cost and time of switching platforms is minimized.” “Innovation is not about fundamental discovery, but about the art of leveraging the ecosystem to integrate established capabilities with new opportunities.”

Chapter Ten – Market Design, Operation, and Competition

Ecosystem participants must design and manage complex marketplaces as a “third foundation for competition in a networked setting.” Traditional marketplaces merely connect buyers and sellers. Networked ecosystems have created the dynamic of “n-sided” markets, “which are markets that connect two or more disparate groups of customers to sellers. “Organizations that manage multisided markets master unique challenges involved in attracting and retaining the simultaneous participation of multiple different communities. These kinds of complex marketplaces are not simple to launch and scale. Their effectiveness is the result of continued investments and deep-rooted operational capabilities.” Managers of these networked markets must drive out inefficiencies to insure that the value curve rises at a rate greater than the rise of the cost curve. In these markets, “price should be set so that the right communities are attracted to the market in the appropriate combination and balance.” Pricing strategies must be flexible enough to reflect, in real time, the “systemwide opportunity of the resources used.” In addition to effective pricing strategies, firms must possess “real capabilities to manage market operation and make sure transactions actually close.” This involves the design of both internal and external processes. A market’s deployment of technology is crucial to its success. “An effective market will invest significant time and money to ensure that its standards and interfaces are well communicated to its community of market participants, effectively coordinating the efforts of buyers and sellers.”

Markets are managed through the deployment of a set of distinct tactics.

1. Achieve liquidity first with liquidity being the condition in which a market is able to process buyer-seller transactions efficiently, in an acceptable amount of time.
2. Price to maintain the balance of customer and seller communities and to reflect systemwide value and costs.
3. Design a flexible market.
4. Practice experimental market adoption.
5. Leverage the ecosystem to maximize scalability and adaptability.
6. Minimize taking part in trading activities performed in the markets the firm manages.
7. Create and manage trust.
8. Define a clear market governance structure.

Chapter Eleven – Business Ecology: Managing Disruption, Evolution, and Sustainability

At the dawn of the 21st Century, the business environment has become too complex for a silo approach to R&D. “Innovation and operations have become networked phenomena.” The

internet and the power of networked innovation has created an opportunity to revitalize aging firms and open the world of innovation to a much broader range of players.” Enduring businesses must adapt to survive. Incumbents must “identify and leverage the range of assets and capabilities that are likely to survive.” In addition to this, the incumbent must build and sustain a network around the platform. More than marshalling internal resources and responding to threats and opportunities, firms must steward the overall health of the ecosystem while “responding to and influencing [the] ecosystems’ evolution.” Opportunities emerge from an ecosystem that is productive and robust. In influencing they ecosystem, firms must insure that “new technologies or business models [are] made available through the ecosystem with a minimum of upheaval and cost.” Threats should be viewed as opportunities for the evolution of the platform.

“We are bound together by the nature of the relationships among products, technologies, markets, and innovation. Leveraging these relationships is critical to enhance firm productivity, to protect organizations from disruption, and to enhance their ability to innovate, evolve, and adapt. This means that no firm, product, or technology can be an island: No firm can afford to act alone, and no products can be designed in isolation. We are talking about interconnected communities of people and organizations that truly share collective success and failure. This demands a new look at notions of competition. Two different species in the same ecosystem may compete for food, but both will thrive if their ecosystem is healthy. The [ecosystem] analogy should carry us beyond traditional notions of competition to a more progressive understanding of interfirm dynamics.” In addition to a new paradigm of competition, government must evolve a more progressive understanding of anti-trust law. The threat of a keystone demonstrating monopolistic behavior must be balanced “with the value that can be created by an effective keystone strategy.”