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Mauboussin on STRATEGY

Legg Mason Capital Management

Michael J. Mauboussin

mmauboussin@lmfunds.com

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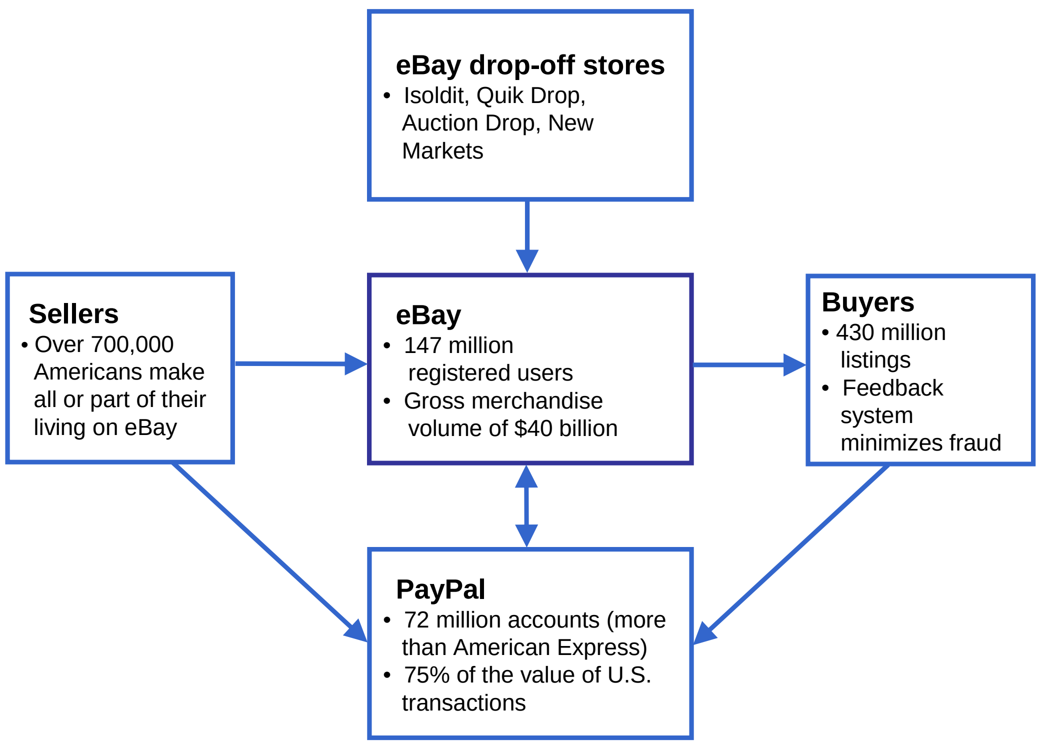
The Ecosystem Edge

The crucial battle is not between individual firms but between networks of firms. Innovation and operations have become a collective activity. Ecosystems will share a common fate, and 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.

Marco Iansiti and Roy Levien
The Keystone Advantage [1]



- **We believe that keystone companies—businesses at the center of a healthy economic ecosystem—are the most likely to deliver sustainable value creation.**
- **Keystone companies foster symbiotic relationships with other companies in the network, allowing for mutual financial success.**
- **In contrast, dominators try to extract as much from the network as possible.**
- **Keystone-based ecologies tend to be more robust and innovative than traditional businesses.**

Introduction

One early morning in 1997, disaster struck Toyota Motor Corporation; the factory of one of its vital suppliers, Aisin Seiki, burned to the ground. While Toyota had multiple sources for most components, Aisin was the exclusive supplier of hard-to-make P-valves, a critical brake component that went into every one of the 15,000 Toyotas rolling off the assembly line daily. Built on lean manufacturing techniques and just-in-time inventory, Toyota had just two days of P-valve inventory on hand. No valves, no production.

Then something remarkable happened. Guided by technical specifications from both Aisin and Toyota, over 60 suppliers within the Toyota system started producing the P-valves. Few of these suppliers had any experience in producing P-valves—one was a sewing machine maker—and none had the required specialized tools. But roughly one week later, Toyota's production runs were nearly back to pre-disaster levels, and after about two weeks production was back to normal.

How did Toyota get back on its feet so quickly? Since technical information flowed freely and all companies within the Toyota Production System shared a problem-solving approach, the suppliers could come quickly to Toyota's aid—in some cases, sacrificing their own short-term economic interests. From the center of a closely-knit network, Toyota allowed other suppliers to absorb the stress Aisin's failure caused. [2] Toyota showed the power of a keystone company.

Value Creation and Strategy

Long-term investors seek attractively priced companies with prospects for *sustainable value creation*. Value creation means a company generates returns in excess of the cost of capital on its investments. Sustainable suggests a company can fend off competitive forces and find value-creating investment opportunities for a long time.

We believe the companies most likely to deliver sustainable value creation today stand at the center of a healthy ecosystem. Authors Marco Iansiti and Roy Levien call it the keystone advantage: just as a keystone species is integral to a flourishing ecosystem, a keystone company is essential to a vibrant economic ecosystem. [3] In strong economic ecosystems, other constituents (suppliers, customers, complementors) thrive after dealing with the keystone company. [4] Healthy ecosystems are also adaptive, and can sustain shocks better than unhealthy ecosystems.

When judging a company's ability to generate and sustain value creation, investors often focus on two generic corporate strategies: low cost producer or differentiation. Companies pursuing the first strategy seek to become the lowest cost producer in their industry, allowing them to profitably sell their goods or services at a below-industry-average price. Low cost producers also want to keep their products roughly at parity with those of their competitors.

When using a differentiation strategy, companies attempt to offer unique goods or services, making them attractive to buyers. These companies try to attain above-average prices while maintaining cost-structure parity. [5]

While clearly important, these categories form only part of the larger picture. Investors must step back and consider not only the strategy a company uses to go to market, but also how customer needs change and the interaction between various constituents. For this, the network, not the company, is the best unit of analysis. As economists Carl Shapiro and Hal Varian say, "the old industrial economy was driven by *economies of scale*; the new information economy is driven by *economics of networks*." [6]

Despite the usefulness of the ecosystem metaphor, we don't want to drift too far from economics. [7] Adam Brandenburger and Harborne Stuart offer a framework particularly well suited to the analysis of ecosystems. [8] Their equation is deceptively simple:

Total value created = willingness-to-pay of the buyer – opportunity cost of the supplier

The value any individual company creates equals the value the total ecosystem creates, less the value all other companies create. Note that a properly calculated cost includes the opportunity cost of capital.

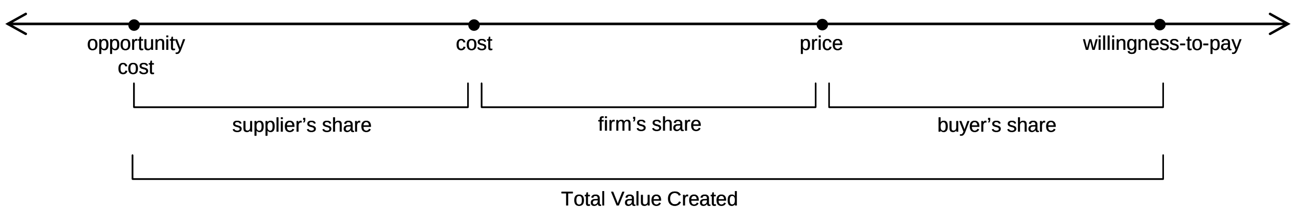
To understand the significance of keystone companies, you have to think through the equation's terms:

- *Willingness to pay*. Imagine someone hands you a new book you want. Clearly, that is good. Now imagine that person withdraws money from your bank account, starting with small sums. The amount of money that makes you indifferent between the book and the cash defines willingness to pay.

- *Opportunity cost.* Now assume a firm takes resources away from its supplier. Opportunity cost is the cash amount that makes the supplier perceive the new situation (cash) as equivalent to the old situation (resources).

Of course, if you buy something for less than your willingness to pay, you capture a consumer surplus. Likewise, a supplier that sells a good or service for more than its opportunity cost recognizes a surplus. An economic ecosystem's ability to spread added value and surplus to its various constituents is an important indicator of its health and sustainability. Exhibit 1 shows the value added chain.

Exhibit 1: Sources of Value Added



Source: LMCM analysis.

Traditional strategy analysis, including Porter's five forces (buyer power, supplier power, substitution threat, new entry threat, and rivalry), tends to dwell on suppliers, buyers, and competitors. [9] An ecological approach emphasizes another constituent, which Brandenburger and co-author Barry Nalebuff call a complementor. [10] A complementor provides a product that makes the product of another company more valuable. The classic example is the relationship between microprocessors (Intel) and software (Microsoft). Better microprocessors make software more valuable, and better software makes microprocessors more valuable.

Why does a keystone advantage approach to strategy make sense?

- *It builds and extends work on networks*. While networks are certainly not new, they are forming more frequently and faster than ever before. An ecosystem approach can help investors understand the network's robustness and prospects for economic value creation. [11]

- *It builds and extends work on customer economics*. Three factors drive customer net present value: acquisition cost, cash flows, and longevity. A healthy ecosystem can lead to improvements across all of these drivers, as switching costs rise as the ecosystem develops. [12]

- *It addresses head-on concerns about sustainable competitive advantage, especially in some areas of technology*. Investors often worry about the endurance of a company's technological advantage, without giving full consideration to the ecosystem's significance.

Value Sharing versus Value Extraction

Iansiti and Levien distinguish between keystone companies and what they call dominators. In their words, a keystone "acts to improve the overall health of the ecosystem and, in doing so, benefits the sustained performance of the firm. It does this by creating and sharing value with its network by leveraging its central hub position in that network while generally occupying only a small part of that network." [13] The keystone company fosters a symbiotic relationship with the other companies in the network, allowing for mutual financial success.

In contrast, dominators try to extract as much value from the network as possible. The authors define two types of dominators, a classic dominator and a hub landlord. A classic dominator "acts to integrate vertically or horizontally to directly control and own a large proportion of a network," capturing most of the value created by the network and "leaving little opportunity for the emergence of a meaningful ecosystem." The classic dominator creates and captures the value. They offer Apple as an example.

The second dominator type, the hub landlord, "eschews control of the network and instead pursues control of value extraction alone." [14] Hub landlords try to extract the value the network creates. According to Iansiti and Levien, Enron acted as a hub landlord.

Two other facets of healthy business ecologies are worth noting. First, by encouraging diversity and spreading resources, a keystone-based ecology tends to be more robust. Specifically, these ecosystems rapidly adapt to change and can successfully continue even if some nodes are eliminated. This robustness is a crucial component to the keystone's sustainable competitive advantage and the main message from the Toyota story.

Second, healthy ecosystems can benefit from the wisdom of crowds. [15] Since the keystone company provides standards and resources for the network nodes but doesn't try to control them, business opportunities can percolate from the nodes. An impressive recent example is eBay Motors. Ebay management hadn't considered autos as a likely category, but they noticed gross merchandise sales of $750 million in 1998. In the spring of 2000 the company launched eBay Motors, a business on track to generate $13 billion in gross merchandise sales in 2005. Says Bill Cobb, eBay's president of North America, about the eBay community, "Managing is the wrong word; we enable, we listen, we respond." [16]

The Keystone Strategy

Iansiti and Levien simplify the keystone strategy into two core parts: value creation and value sharing.

Value creation. One way to distinguish a keystone company is to determine whether or not it's developing a viable platform for the ecosystem. [17] We define platform as a set of tools, provided either at a low cost or for free, that allows other ecosystem members to solve problems. A successful platform requires a high degree of modularity. A module is a self-contained building block that works with other building blocks to make a whole system. For example, the microprocessor, operating system, and hard drive are all modules in a personal computer (PC).

Historically, vertically integrated companies emerge at an industry's start because no module standard exists. Think of IBM's PC business in the early days: it designed the box and made the chips, the software, and drives. Necessity, not choice, dictated this process, as the modules were not yet established.

Today, however, more modules exist. Examples include Internet protocols, software, and communications. These building blocks allow young companies to build valuable ecosystems by dividing the work among various groups. This allows companies to take advantage of modularity's value from the very beginning, a crucial step in fostering innovation. [18]

Consider that eBay, Google, and Amazon.com all have active programs that provide application programming interfaces (APIs) for developers. An API is a set of routines, protocols, and tools for building software applications. These APIs simplify interconnection, help address business needs, and—perhaps most significantly—unleash developer creativity. According to a Google software engineer, "There are a lot of things

Google hasn't thought of that people could do with their ad campaigns. One of the goals is to enable advertisers and third parties to create tools for their own purposes." [19]

Platforms also establish and maintain rules or standards that allow ecosystem participants to operate with trust. The feedback systems on Amazon.com and eBay illustrate this point. But keystone companies don't overreach. As eBay's CEO Meg Whitman says, "We make a small number of rules and get the heck out of the way, because the entrepreneurial talents of our users will solve a lot of problems." [20]

A firmly established platform provides a huge competitive advantage, because the switching cost of the ecosystem's nodes rises sharply as the platform becomes established. Given a reasonable level of value sharing, ecosystem members have little incentive to leave. Investors who attempt to evaluate keystone companies based on a facet of their business—say, Google's search capabilities or Amazon.com's prices—miss the much larger point: you can only understand competitive advantage at the ecosystem level.

Value sharing. Keystone companies don't try to extract value from the ecosystem. Rather, they try to capture a portion of the value they help the whole ecosystem create. Using the Brandenburger and Stuart framework, we can analyze value sharing from a few different perspectives.

Sellers (including, but not limited to, suppliers) want to attain a price above their opportunity cost. Keystones can help in two ways. First, by creating a liquid market keystones help sellers find the buyers likely to place the highest value on their goods or services. Auctions represent a clear-cut example of this point.

Second, keystones often facilitate an information-for-price tradeoff. For instance, most suppliers acknowledge that Wal-Mart drives a tough bargain on price. But in return, Wal-Mart provides the supplier with an extraordinary amount of useful information—information the supplier can use to reduce its opportunity cost through better inventory management or facility utilization. By trading information for a lower price, keystone companies allow for value sharing in what looks superficially like an inequitable arrangement. This tradeoff has been important for Dell as well.

Similarly, buyers seek to make purchases below their willingness to pay. For most product markets, innovation leads to a maturation point where price bumps into willingness to pay. [21] Willingness to pay, however, can rise when a keystone company enjoys network effects.

A network effect exists when the value of a good or service increases as more people use that good or service. Communication businesses are a good example. Telecommunications startup Skype allows subscribers to make free phone calls, through their PC, to other Skype subscribers. As the number of Skype members grows, the value of the service to current and prospective users increases.

So as long as network effects exist—and until the network gets saturated—willingness to pay rises. Provided prices don't increase, the difference between willingness to pay and price is consumer surplus. So network-centric keystone businesses can create value for buyers by growing value faster than price.

Finally, just as liquidity creates value for sellers (by identifying willing buyers) it creates value for buyers (by identifying willing sellers). Liquid networks help reduce search costs for buyers and sellers.

We now turn to a brief analysis of three keystone companies: eBay, Google, and Amazon.com. These companies are all young (eBay and Amazon.com, the seniors, have just celebrated their tenth birthdays), global (35-45% of sales are international), and focus on building long-term value.

EBay, Inc.

With about 150 million registered users, over 60 million active users, and in excess of 430 million listings around the world, eBay neatly fits the keystone definition.

Despite significant success in its short corporate history—including a $55 billion market capitalization—eBay remains a remarkably small part of the ecosystem it supports. Estimates suggest that over 700,000 Americans make all or part of their living trading on eBay (making it the second largest private “employer” in the U.S. behind only Wal-Mart), and analysts anticipate the gross merchandise value through eBay’s site to exceed $40 billion in 2005. In contrast, eBay had 8,100 employees at year-end 2004 and analysts expect 2005 revenues to approach $4.5 billion.

Value creation. The online market eBay created—leveraging network effects—is the first obvious way it adds value to its ecosystem. Since its early days eBay’s network benefited from positive feedback; now the company has dominant market shares in most countries in which it competes.

Ebay took some steps early in its history to encourage positive feedback. First off, the company reduced barriers to trial by making the site easy to use. It also provided the tools necessary for so-called power users. For example, the company’s 7,000-plus strong developer program has been very successful, allowing sellers to scale their businesses effectively.

A second, and crucial, source of value creation comes from eBay’s feedback system. At the outset, eBay recognized the eBay network would rely on trust. The feedback system allows buyers and sellers to rate one another, and offers eBay an effective way to weed out dishonest users.

PayPal, the on-line payments company eBay acquired in 2002, provides another major part of eBay’s value creation. At 72 million, PayPal now has more accounts than American Express, and about 75% of all transactions on the U.S. site runs through PayPal. This business helps stem fraud in the ecosystem and enhances buyer and seller trust.

Value sharing. The network effects from eBay’s ecosystem create an opportunity for a significant source of value sharing: consumer and seller surplus. By removing search costs and limiting transaction costs for sellers and buyers, the eBay network naturally reduces opportunity cost and enhances willingness to pay. Yet the real value comes from the platform’s ability to match buyers and sellers in an unprecedented way.

While historically trade occurred locally with limited information, eBay enables national (and in some cases international) exchange with much greater transparency. As a result, sellers find better buyers (hence capturing surplus) and buyers find better sellers (also capturing a surplus). And eBay’s fees, as the broker, are 7-11% of the gross merchandise value. The higher take includes transactions on PayPal.

The eBay ecosystem has also spawned complementary businesses, including a group of so-called eBay drop-off stores—companies that auction products on behalf of sellers. The list of drop-off store chains, including isoldit, Quik Drop, Auction Drop, New Markets, and Snappy Auctions, continues to expand. These complementary businesses are growing rapidly: isoldit claims to be the number one seller on eBay, with 100 stores and another 500-plus under contract. [22] All this comes with eBay’s blessing. Ebay executive Jeff Jordan says, "We encourage this kind of growth—anything that makes eBay more vibrant, easier to use or more fun is a good thing." [23]

Summary. EBay may be the best example of a keystone company today. A very large and motivated ecosystem surrounds the company, and eBay has been careful to recognize its role as a facilitator.

Google, Inc.

Google, a leader in web-based search, says its mission is "to organize the world's information and make it universally accessible and useful." Google's business provides on-line advertising that appears more relevant for users, and cost-effective for advertisers, than many traditional advertising mediums.

Google's sales, which Wall Street analysts forecast to be in excess of $5.7 billion in 2005 (a large portion of which they share, as we discuss below), make up only a fraction of global advertising spending. The company remains a leader in search market share, and has over 150,000 advertisers.

Value creation. If you ask investors who they think Google's customers are they often answer, "the people who use Google to search." Search users, as consumers, are important but they don't pay Google anything. The advertisers are the primary source of Google's revenues.

The first important value creation source for Google is the positive feedback between the quality and quantity of search and the site's value to advertisers. More users of Google search leads to more value for advertisers. The advertising revenue allows Google to improve search (as well as other capabilities), which attracts more users, and so on. This positive feedback has been central to Google's success, and the advertising revenues offer the company ample resources to extend its scope.

Google's AdWords program makes it easy for advertisers to bid on keywords, manage their accounts, and pull reports as they desire. The company provides automated tools that help advertisers create their own ads, and the total sign-up cost to become an AdWords advertiser is roughly $5.

Google also has a team dedicated to weeding out individuals trying to cheat the Google system by manipulating their relevance ranking through a process called click fraud. (Click fraud is a technique to increase the advertising cost for competitors.)

Value sharing. Remarkably, notwithstanding its multi-billion dollar revenue base, Google for the most part does not set prices for its services. The company auctions off keywords, letting the advertisers themselves determine the price of a particular keyword.

As we saw with eBay, an auction format provides consumer surplus if an advertiser can purchase a keyword for less than its willingness to pay. Further, evidence suggests that the return on investment for Internet advertising remains substantially in excess of traditional advertising mediums.[24]

Google's AdSense program provides direct evidence of significant value sharing. In this program, Google Network members allow Google to set up advertising on their websites. Google allows the network member to keep approximately 80 percent of the advertising revenues the member site generates. In 2004, Google paid over $1.2 billion to Google Network members. Google records gross AdSense revenue and treats AdSense payouts as traffic acquisition costs. These costs were 39 percent of revenue in 2004.

Summary. Google focuses on creating value first and monetizing for the benefit of shareholders later. The still-strong positive feedback loop between users and advertisers provides a substantial source of advantage, and that the company doesn't set prices for its core business suggests the opportunity for consumer surplus. Finally, the billions in AdSense payouts create significant switching costs for current and prospective competitors.

Amazon.com

Amazon.com is the leading Internet retailer, with 2005 sales expected to top $8 billion according to Wall Street analysts. Amazon.com compares favorably to traditional retailers along a number of important dimensions, including selection, product information, and often price.

Amazon.com uses a business model similar to another keystone company, Dell. In order to generate high returns on invested capital, both companies combine relatively low operating profit margins with very high capital turnover. Specifically, both companies have negative cash conversion cycles, allowing working capital to be a source of capital as long as the business grows.

Value creation. Besides running its core business, Amazon.com develops platforms for outside parties, including partners (e.g., Target, Office Depot, Wine.com), third-party merchants, and Amazon Associates. The company also has programs to help publishing houses and record labels, as well as services for anyone who wants to integrate their web site with Amazon.com. Amazon.com's developer program, launched in the summer of 2002, has an estimated 50,000 enrollment.

These platforms help Amazon.com realize the second part of its vision "to build a place where people can come to find and discover anything they might want to buy online." Third party deals now account for over one-quarter of the company's sales. [25]

Amazon.com also creates value through its user-generated reviews (which in turn are rated for their usefulness). In many cases, Amazon.com provides much more substantial product information and feedback than what a consumer can get at a regular store.

Value sharing. Consistent with the first part of its vision, "to be the earth's most customer centric company," Amazon.com is dedicated to lowering product prices over time—a classic low-cost producer strategy. This creates the potential for consumer surplus.

When asked about "the biggest misconception about Amazon.com", CEO Jeff Bezos said, "one of the things people don't understand is we can build more shareholder value by lowering product prices than we can by trying to raise margins. It's a more patient approach, but we think it leads to a stronger, healthier company. It also serves customers much, much better." [26]

Amazon Associates, who direct users to Amazon.com's site in return for a share of all product sales that result, now has over 900,000 members. A majority of Amazon.com's $150 million-plus marketing spending goes directly to Associates.

Summary. While focused primarily on reducing prices, Amazon.com also offers substantial tools that allow outside parties to integrate with the company. The size of its Associates membership creates substantial switching costs.

Conclusion

Over the past twenty or thirty years, plunging computing and communication costs have changed the way businesses and industries develop. Historically, companies were largely vertically integrated at an industry's nascent stages, and dis-integration occurred over time as the industry agreed on standards and modules.

Today, technology and modularity enable economic ecosystems to emerge faster than ever. But not all ecosystems are the same: some are much healthier and robust than others. At their center robust ecosystems often have a keystone company, which helps coordinate the ecosystem while assuring the various nodes create value.

Remarkably, investors analyzing keystone companies often fail to recognize the significance of the ecosystem. By helping create and share value, keystone companies build a vibrant network that can innovate, adapt, and absorb substantial shocks. These features are at the core of sustainable competitive advantage.

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Endnotes

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[2] Duncan J. Watts, *Six Degrees: The Science of A Connected Age* (New York: W.W. Norton & Company, 2003), 256-258.
[3] Iansiti and Levien.
[4] Importantly, removing a keystone species does substantial damage to the ecology. The sea otter, for example, is a keystone in the kelp forest ecosystem. Kelp forests offer food and shelter for many species of fish and shellfish. Otters reduce damaging wave action and eat sea urchins. Remove the otters, and the urchins feed on the kelp, hence undermining the fish and shellfish living there. For more information, see http://www.bagheera.com/inthewild/spot_spkey.htm.
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