

The Internet and the Structural Renovation of Value Chains

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ABSTRACT

In the wake of the burst of the dot-com bubble, it has become popular to cast aside the notion of the Internet as an agent of meaningful change. While the Internet certainly did not deliver the massive and instantaneous “creative destruction” of businesses that its promoters promised, neither is it merely a hollow fad. Indeed, close examination reveals that the Internet is in fact profoundly renovating business’ most fundamental operations and value relationships. Analysis of value chains, which may be viewed as a sort of business “DNA”, reveals that classic value chains is being transformed by Internet-induced intermediation, disintermediation, and convergence. Accordingly, the linear relationships which have long comprised (classic) value chains are rapidly being replaced by non-linear “courts” or “webs” or “networks” made possible by the multifaceted nature of online relationships. Internet naysayers may be proven right after all: the Internet revolution never happened – yet.

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Introduction¹

The Internet is a classic Schumpeterian innovation. Joseph Schumpeter, the famous Austrian economic theorist, argued that profound changes in economic systems occur primarily through innovations in products and processes². In his words, the “fundamental impulse” of such systemic change “comes from the new consumer goods, the new methods of production or transportation, the new markets, and the new forms of industrial organization.” Whatever else the Internet may be, it is undoubtedly a *process innovation* enabled by new technology. Accordingly, it has the potential to change longstanding methods – and perhaps the very nature – of value creation and exchange.

Clearly, the Internet holds tremendous creative potential. But because it enables firms and industries to fundamentally change the way they carry out economic activities, however, it will, necessarily, destroy a certain number of well-established industrial structures and companies. The changes brought about by the Internet will occur through an organic process, over time, resulting in the creation of new processes and the subsequent replacement of established processes. We call this process of the gradual reorganization of economic activity *creative renovation*. Importantly, the concept of creative renovation is not meant to denote a wholesale abandonment of existing systems and methods, but rather the continuous, step-by-step evolution and subtle reshaping of such systems and methods.³

In particular, we contend that: to the extent that the Internet reduces (increases) uncertainty in the value creation process, equalizes (differentiates) information between sellers and buyers, allows (prevents) the replacement of specific assets with general purpose assets to create value, aligns (misaligns) the interests of buyers and sellers, and reduces (increases) monitoring costs, it leads to the *renovation* of established value chains. That is, because the Internet affects key drivers influencing the structure of value chains – namely, transaction costs, switching costs, and the methods (i.e. the technology) underlying fundamental business processes – we argue that it causes the *disintermediation*, *intermediation*, and *convergence* of

value chains. By so doing, it leads, in turn, to fundamental alterations in inter-firm relationships. We have characterized these complex new relationship systems as value “courts” or “webs”.

Causes of the Creative Renovation of Value Chains

The value chain, serving as a sort of blueprint for economic activity, is a useful tool for understanding how, fundamentally, a particular economic activity is organized. Traditionally, the value chain is understood as a “collection of activities that are performed to design, produce, market, deliver, and support” products and services⁴. These value-accumulating activities may be carried out within a single firm or among several firms, each competing and cooperating with others so that they might endow the final product or service with the value characteristics that end-customers seek. Figure 1, below, shows a common representation of value chains, both within a single firm and across different firms in an industry.

Insert Figure 1 here

The value chain has become a concept central to the understanding of competitive advantage among firms, as well as to the organization of industry structures. By focusing on the Internet’s effects on the value chain, we are able to examine the ways in which the Internet is changing the options that a firm (or a collection of firms) has for creating and sustaining competitive advantage over time. As Michael Porter argued, the way in which a value chain “performs individual activities (is) a reflection of its history, its strategy, its approach to implementing strategy, and the underlying economics of the activities themselves.”⁵ Thus, an analysis of both the opportunities and the threats that the Internet brings to individual value chains, (and, ultimately, to relationships among value chains), is central to the initiation of any understanding of how the competitive landscape may change over the course of time.

Value chains involve cooperative effort – between individuals, teams, and firms. People exchange resources, information, knowledge, financial capital, products, and services, sometimes within firms and sometimes across firm boundaries. Two economic theories, both based on efficiency arguments, make some specific predictions about the structure of value chains under different conditions.

Transaction cost theory and agency theory together predict that

- (1) the higher the level of uncertainty surrounding the business context
- (2) the greater the information asymmetry between resource exchangers,
- (3) the greater the specificity of investment required for the economic activity in question,
- (4) the more difficult it is to relate the marginal contribution of different resources to the final value, and
- (5) the greater the conflict of interest between resource exchangers,

the higher the likelihood of an integrated or consolidated value chain. That is, the more likely it will be that a greater proportion of the value adding-activities will be organized within a few firms.⁶

Alternatively,

- (1) the lower the uncertainty surrounding the business context,
- (2) the lower the information asymmetry between resource suppliers,
- (3) the greater the fungibility of investments required for the economic activity in question,
- (4) the greater the alignment of interests between resource exchangers, and
- (5) the easier it is to relate the marginal contribution of each resource to the final value,

the greater the likelihood of a fragmented value chain with different activities controlled by different firms. That is, the more likely it will be that value-adding activities will take place among a long sequence of firms, rather than within a single firm or a few firms.

Because it has the potential to greatly mitigate many of the longstanding trade-offs between “richness and reach”⁷, the Internet has the potential to fundamentally alter the underlying economics of the transaction and monitoring costs associated with governing and managing relationships that lead to value creation and exchange. That is – (once the particularities of its economics are more fully understood) – the Internet will allow very rich information to be provided to large numbers of people at costs significantly lower than have ever before been possible. Video, graphic, audio, search⁸, interactive⁹ and other capabilities of the

internet give an experience as rich as, and in some ways richer, than the personal visit of the vacuum-cleaner salesman of former times. As Evans and Wurster (2000) point out, this exponential increase in the scale of both reach and richness has the potential to significantly reduce the costs involved in carrying out numerous economic transactions¹⁰.

It is our contention that by altering the underlying structure of transaction, and agency, and selling¹¹ costs associated with the exchange of rich information, and by allowing for the dissemination of such information among a virtually unlimited number of people, the Internet has fundamentally affected two key drivers influencing both the structure of individual value chains and the nature of the relationships between chains. These two drivers are the lower costs of organizing business activities between firms, and the reduction of boundaries between firms.

Renovation of Existing (Linear) Value Chains

The renovation of existing value chains occurs primarily through three processes: Disintermediation, Intermediation, and Convergence.

Disintermediation

Disintermediation is the process of eliminating intermediate steps or collapsing the number of steps in the value chain. One primary driver of disintermediation is the savings in transaction costs enabled by the Internet. As Saffo (1998) argues, “information systems are powerful commercial tools because they lower transaction costs. Lower transaction costs enable new kinds of transactions, which lead to new market niches and, overall, make the market environment more complex. In short, information systems create openings for new intermediaries to discover and occupy.”¹² The occupying of space may push out some existing links in a value chain.

Consider, for instance, the value chain shown in Figure 2 for traditional publishing. The Internet may make possible significant disintermediation across the value chain, as a number of intermediate steps in the publishing process may be bypassed. For example, an author could, theoretically, take over the editing, typesetting, and selling functions, and distribute an electronic manuscript directly to the buyer. Internet-enabled disintermediation in the publishing value chain might also occur if an existing publisher chose to bypass regular distribution channels (i.e. retail booksellers), and distribute books electronically. Similarly, an investor could buy content, and

(provided the appropriate marketing resources) reach buyers directly. The point is that while various forms of direct marketing have obviously long existed, the Internet makes it possible to reach to vast audiences at low marginal cost, thus vastly expanding the prospects for such disintermediation.

Insert Figure 2 here

Another example of Internet-induced disintermediation is the approach of Dell Computers to the computer assembly and distribution business, as shown in Figure 3 below. By eliminating the distribution and retail functions in the computer assembly and distribution value chain, Dell sells directly to the customer, thereby capturing much of the released value. While Dell was profitable prior to the internet with a direct model, the Internet provided lower costs of finding customers, servicing them, and to provide much more current information cheaply, in support of their efforts to reduce inventory and to respond more nimbly to technology changes.

Insert Figure 3 here

Ford, as well as other auto companies, is also seeking to make direct-to-order sales of automobiles. Non-auto companies such as MSN CarPoint, too, are attempting to reorganize the value chain so that they might, like Dell, eliminate the losses associated with overproduction and warehoused inventory. Should such processes take effect, the sales function of dealerships would be disintermediated, with dealerships left fighting to preserve their position in the value chain.

Intermediation

The process of inserting new steps or links into the value chain may be called intermediation. Such intermediation may occur by means of the introduction of a new firm into the value chain (for example, Amazon.com in the book-selling industry), or through existing firms (for example, GE in its supplier networks offering opportunities for partners to exchange goods with each other and with GE). For example, Amazon's online business inserts a shipping step into the book-selling value chain. Amazon has made the gamble that Internet-enabled efficiencies will ultimately render its strategy more profitable than the traditional book-selling

strategy, which requires in-store sales staff, inventory, store upkeep, and market research about what inventory to carry in each store. Like its counterpart (disintermediation), intermediation also occurs to release value trapped in the form of inefficiencies embedded in existing value chains. These inefficiencies often take the form of monitoring or surveillance costs in moving from one link in the value chain to another. To illustrate, Amazon can easily and cheaply know the sequence of books the customer has considered and purchased in the retailing part of the business to inform marketing decisions. On the other side, Amazon customers can easily survey Amazon cost versus the cost of all other booksellers for a specific title. The significant improvements in richness and reach made possible by the Internet, and at significantly lowered incremental costs (imagine what it would cost for comparable inventory in every store or for equivalent offline market research that costs a fraction of a penny on the web), enables the release of trapped value, even though an additional step has been added.

Insert figure 4 here

The Internet has made it possible to create exchange markets, the very nature of which makes possible both the intermediation and disintermediation of value chains (see Figure 5 for three examples). For instance, GE acts as an intermediate in its own exchange, requiring suppliers to bid for its business. Clearly, this additional component in the value chain is more beneficial to GE than to its suppliers. Other examples shown in Figure 5 give instances in which an exchange market acts as an intermediate in the value chain.

Insert Figure 5 here

Convergence in Value Chains

Another way the Internet is beginning to affect value chains is by causing the convergence of previously independent value chains. That is, in some cases the process of intermediation involves not just the insertion of a single link into a value chain, but the insertion of several links – or perhaps even another chain entirely. For example, the traditional value chain for music (formerly offered on CD's) has largely become integrated with the online value chain (see Figure 6). Notably, the online segment of this value chain is not simply another marketing

channel selling CD's; subscription services are offered for downloading tracks for play and/or saving. Unlike the book products sold by Amazon, the online music products are different from traditional CD's, and can be used in different ways. Online and "brick-and-mortar" outlets, however, still have a few things in common: creation of the composition, the production of the music master, and, in some cases, the same consumer.

Insert Figure 6 here

Convergence may also occur at the level of the full value-chain, when one value-chain completely replaces another one. That is, the product or service that an end-customer takes possession of now passes through a value-added chain in which every one of the links in the chain is different from the one that existed before. This can arise in the form of a *de novo* chain that has come into existence thanks to the Internet. For example, an online auction service, such as that provided by eBay generates a value chain where one did not before exist. Online travel agents, such as Expedia or Travelocity may completely replace a value chain for bricks-and-mortar ticket agencies; every component of value addition, from provision of search services, marketing, and distribution has been replaced.

Alternatively, participants in an existing chain, serving a particular product category, might move it into another product category; thus blurring distinctions between the chains and sometimes merging the chains. For instance, an online educational software distribution company might move into the provisioning of eLearning, thereby converging with an education value chain. Distinctions between provision of software, educational materials, and classroom learning are no longer strong and value chains intertwine and evolve into value networks. The very components of the value chain may evolve and clarity regarding who is adding and capturing value in each component may be lost.

Convergence may also occur at the level of the individual links in the value-chain. That is, some new links might replace some old ones in the value-chain. These new links might be *de novo* companies that arose to serve a different and unrelated value-chain, or they might be existing firms from previously unrelated value-chains. For example, an online intermediary in

the home mortgage business, Lending Tree, might make use of their customer base to attempt to replace brokers in the home insurance value chain (disintermediating the insurance chain).

By providing a platform from which firms' unique capabilities may be easily accessed, the Internet gives rise to an entirely new breed of synergistic relationships. Such relationships are enabled by the Internet's unprecedented capability to disseminate highly specific information, facilitate interactivity between customers or suppliers, and individualize customer experience.

By "specific information," we mean information that is a unique compilation of data regarding person, place, time, and occasion. The ready availability of such information enables convergence because such information, developed for its usefulness in one value chain, may easily be inserted so that it adds value in a different and hitherto unrelated value-chain (e.g. the music or Lending Tree examples). The Internet has the potential to facilitate this transfer of specific information between value-chains far more efficiently than has ever before been possible. Such transfer improves the relative cost and scope of the "new" value-chain in relation to the "old". An interesting example is that of AOL/Time Warner, which uses information from its cable subscribers to market magazines to them, to illustrate: subscribers to the Lifetime Channel would get a special offer for Lifetime Magazine.

The second Internet-enabled synergy, that of interactivity between supplier and customer, acts to rapidly create a bond between the two parties, potentially opening doors for other interactions. For instance, the software distribution company that moved into eLearning (mentioned above) has the opportunity to do so, in part, because of the intimate customer relationship required to transfer software. This example also illustrates how specific information (about the configuration of the customer's computers and the needs for skill development of its users) enables convergence.

Often, a supplier will use relationships in one value chain as a means to enter another. Consider, for instance, Amazon again. We earlier discussed Amazon's intermediation in the book-selling value chain. In the online world, a website that deals with a single product (or

service), such as books, is known as a “vertical.” With many consumers coming to the Amazon site looking for books, it becomes possible for Amazon to slide easily into other value chains such as toys or clothing. Amazon adds toys to their website and becomes a toy retailer. In this instance, however, they leave the distribution/delivery to a partner, Toys’R’Us. Amazon has thereby connected two vertical value chains, as illustrated in Figure 7.

Insert Figure 7 here

One could imagine a horizontal player (that is, one who provides an application that works across a number of products or services) using an analogous approach to extend its presence. For example, FreeMarkets offers reverse auctions for a number of products, including circuit boards, metals, and coal. The purchaser will invite bids for a specified batch of circuit boards, for example, from a number of suppliers. The suppliers submit their bids in an online auction. While FreeMarkets started in the wholesale end of the value chain, they could, potentially, use their online presence and relationships to intermediate in the auction of finished goods to buyers at the other end of the value chain (see Figure 8).

Insert Figure 8 here

We have so far discussed the phenomenon of changes to the structure of value chains themselves. But as the fundamental structures of the chains evolve, so, necessarily, does the nature of the relationships among these chains. We touched upon this subject in our discussion of Convergence. We now turn to a more complete discussion of Internet-induced change to relationships among value chains.

New Relational Value Structures

In traditional value chains, value is added in a linear, sequential process. We contend that because of the synergistic accessibilities allowed by the Internet, and the intermediation, disintermediation, and convergence to which such synergies lead, many industries will come to demonstrate value structures of far greater complexity than has been economically feasible in the

past. With the advent of the Internet, a player may find an easy way to operate in more than one chain or to gain power by connecting or intertwining links in different chains. Instantly, combinations of simple parallel value chains have become networks. Suppose, then, that we extend our thinking from a linear and sequential series of links, as in a chain, to more complex systems of value creation where chains cross and interconnect. Two such images are value “courts” and value “webs.”

The value-chain concept is ideally suited to the manufacturing context, for which it was, in fact, originally developed. The chain of value made sense in, for instance, the automobile industry: raw materials were turned into components (e.g. carburetors) that were assembled into systems (e.g. engines, transmissions), that were assembled into cars, that were shipped to dealers. In other words, value was added in a series of linear-sequential steps. However, the concept appears less suited to analyzing the value creation process of a number of service industries, in which the final “product” is itself far more nuanced and complex. For example, Stabell and Fjeldstad (1998) argue that the concept does not describe satisfactorily the value creation process in the insurance, banking, health care, professional services and education industries. They propose instead that in the service industries, the value creation logic be described as Value-Shops and Value-Networks.¹³

In the electronic world, unlike a manufacturing experience where each customer receives a car at the end, the product or service may be customized for each individual. The customer is not passively receiving the same good, a newspaper for example, but rather is playing an active role in shaping what they receive. Customers buy a newspaper pay one value-capturing source to obtain recipes, daily news, weather, local announcements, quotations from the financial markets, travel information, look at car advertisements, and so on. The only choice was to buy the entire newspaper or not.

In the online world, all of these pieces are unbundled. One can go to a food site to find new recipes, subscribe to news service that will provide news alerts, use weather.com to get a forecast, find local announcements at a site maintained by your community, register with a service for stock and bond quotations, visit Expedia for travel information, search for car ads at

MSN CarPoint (or a number of other car sites), and so on. Value is produced by a much more complicated structure than a sequential chain. And importantly, the value is not captured by a single publisher.

It is like taking a meal at a food court, rather than a restaurant—getting soup from one counter, a sandwich from another, a beverage from yet another, and ice cream separately. Understanding the share of value belonging to a particular player in the value court is much more complicated. There is a massively higher variety of value packages in the food court than in a restaurant. The value court will impair competitors that may have been competitive in aggregate, but not in any piece of the business. A pizza place in a food court that draws customers with tasty pizza, at near zero margin, in order to sell high margin beer, may find that customers buy their beer elsewhere. Online, the newspaper which formerly sold subscriptions via a quality news organization, at a loss, making it up with a tidy profit on classified advertising, may see that ad placements go to the web. Thus it becomes imperative online to be competitive in specialized links of value that occur on many paths in the value network. And the conundrum is that while in the food court one must pay at every station, online value is generally not captured at the level of individual links; instead it is captured, if at all, at the aggregation of many value paths, or sometimes at the switches in the network.

This presents both a challenge to participants and an opportunity. For example, a company that can provide the higher margin piece of everyone's virtual meal gains a significant value advantage, providing they are able to capture that value. Success means 1) understanding the paths through your value link 2) knowing what value is added, 3) determining the right price for each path (they may be very different) 4) capturing the value on each path and 5) aggregating a lot of paths to get scale, the lifeblood of the internet. It may not be surprising that companies are still struggling with doing all of these things. And that the sure winner is the consumer, who will have greater choice, control, and benefit from the difficulties of capturing value online.

Such a rich, complex value structure is already very clearly illustrated by the health care system in the United States. There are at least three fundamental value shops: for the insurance/payment activity, the patient personal care, and for medical treatment (Stabell and

Fjelstad define the value shop and give this as an example). Each value shop (see Figure 9), involves numerous complex interactions between many players. For example, the medical treatment value shop involves physicians, pharmacists, hospitals, clinics, and laboratories, among others.

Insert Figure 9 here

Healthon/WebMD is attempting take advantage of Internet-enabled synergies – namely, the availability to quickly transfer highly specific information – to vastly broaden its customer base by mediating between all of these value shops. Scale economies are the justification for such intermediation—once the upfront cost of getting everyone online, the marginal cost per transaction falls to near zero, lower than the faxes/phone calls/letters. Successful intermediation in this complex structure, is layered, as shown in Figure 10, in order to bring the value paths of many parties (doctors, patients, clinics, insurers, pharmacies, laboratories, etc.) through the Healthon/WebMD intermediating links.

Insert Figure 10 here

The tremendous challenge Healthon/WebMD faces is that each of these parties may be threatened by the online network. Every transaction is local on the internet, making it difficult for providers to differentiate any longer on location. Labs, pharmacies will be forced to compete on price. While doctors and hospitals may still differentiate on quality, they would not welcome an intermediary wedging in between themselves and the patient, and the consequent power that they may give up in the new unknown and amorphous structure. Where formerly the physician controlled the value chain from a position next to the patient, Healthon/WebMD may (we'll see how it plays out) control many of the switches that route patient care along different value paths. If so, significant power and value capture may be theirs.

Newly empowered by the Internet, the formerly linear value chains of several industries are already beginning to display more complex and multidimensional value structures. The financial services industries, for instance, are rapidly moving toward the value web structure. For example, the mortgage banking industry formerly relied on a sequential value chain, as shown in

Figure 11. Mortgage funds were raised in financial markets through the sale of mortgage-backed securities (on the left of the chart), and ultimately ended up in the hands of borrowers (on the right).

Insert Figure 11 here

With the arrival of the Internet, however, companies such as Lending Tree and eLoan are acting to disintermediate the value chain, connecting the borrower directly to the lender, and, in the case of eLoan, performing functions of the lender. Each party in the chain has also attempted to disintermediate the others: Government Sponsored Entities (e.g., Fannie Mae and Freddie Mac) have established an affiliate bank through which to directly reach brokers and borrowers; lenders have created websites to find borrowers directly; and so on. In time, other entities have found ways to insert themselves as new intermediates, performing loan originations only, buying loan applications from on-line application takers and finding the least expensive lender.

The mortgage banking industry is evolving toward a complex value web of activities, including those shown in Figure 12. Virtually any of these activities can now be done online (or, if the customer chooses, offline, or any combination of the two). The entities carrying out each activity are varied – from a bricks-and-mortar bank, to a financial institution, to a private-label supplier to a financial institution, to an independent contractor. These, in turn, can be put together in any combination according to the wishes of the borrower. The sequencing of the activities is also flexible, with many possible paths through the activities. This becomes a complicated value web offering a bewildering number of possible ways in which value may be accumulated. Such a situation challenges companies to evaluate the ways in which they add value within the new structure, and at the same time, offers them the opportunity to create new paths of value—shortcuts or low-cost expressways—that were not possible before.

Insert Figure 12 here

There are other instances of value chains which are starting to display more complex value courts/webs/ networks owing to internet-induced synergies, customization, and scale requirements. There are several supply chain examples, illustrated by Covisint in autos, Exostar

in aerospace, Transora in consumer products. An example in the area of intellectual property of content, beyond publishing already mentioned is Yet2.com which offers licensing of patents and other rights related to technology.

In the sections above we have discussed a variety of ways in which renovation can occur. In the Internet's initial phase, it was expected that such renovations would occur with rapid and profound effect because of the reductions in transaction and agency marginal costs that it makes possible. It has indeed had a profound effect on industries in which companies such as Dell, Healtheon/MD and Lending Tree operate. But while renovation in many other industries (including the publishing and content industries, as well as the auto industry) has delivered value to consumers, the companies themselves have had little success in capturing value. What might explain the Internet's inconsistent effect on value structures in different industries? What determines when the renovation of a value chain will lead to value capture for the incumbents? We now turn our attention to these questions.

Impact on Incumbents: Competitive Positioning & Capabilities

In the case of value webs, power goes to companies with commanding positions in the web. Such power may be gained by occupying a position central to many paths that ultimately create value. However, simply being present on many paths does not automatically grant power to a company. Rather, it takes the ability to move and direct traffic. In a sense, it is about being a switch on the network. Some portals act in this way. Suppose a customer arrives at a portal having just purchased a sport coat. The portal can point the customer to a site that sells ties, potentially adding value and capturing some of it. This type of portal, exemplified by Yahoo!, which actively and dynamically show users the next path, has the potential to add and capture more value than a website that simply lists alternative links. This may appear to be no different than an offline clothing shop which will see you socks just after you buy shoes. However a crucial difference is that offline the customer is in one store that enjoys the entire transaction, whereas online the sport coat may be in an entirely different place with different ownership from the tie store, and neither are owned by the portal. Relationships within the value structure take on much more importance.

By themselves, reductions in transaction and agency costs may not lead to renovations of value chains nor alter the division of value among companies in an industry. Firms *competitively position* themselves by investing in assets and capabilities that create powerful switching costs for their customers and suppliers. Unlike transaction cost theory and agency theory, competitive positioning theory considers the total cost (production and transaction) of a given value chain structure.¹⁴ Thus, firms may be willing to incur higher transaction costs if a particular structure allows them to manufacture, distribute, or service in a unique or differentiated way. Similarly, customers may be willing to put up with higher transaction costs if they derive a distinctive value that they desire.

Critical to the competitive positioning view is the ability to speedily deliver unique value to customers by exploiting synergies in cooperative arrangements. Thus, firms may consider outsourcing, partnering, or jointly venturing, even if these modes involve elaborate and costly monitoring procedures. Similarly, if the firms can enjoy first-mover advantage leading to absolute cost advantage or differentiation advantage with future pricing power, they may be willing to sacrifice short term transaction cost disadvantages.¹⁵ Thus, the resultant value structure is one that jointly maximizes the sustainable competitive advantage of the participating firms.

Consider the competitive positioning of players in the online mortgage banking business. Lending Tree chose to act much like an electronic exchange by disintermediating between borrowers and lenders. They take a single loan application, transmit it to lenders, and return four offers to the borrower. In contrast, E-Loan took on the role of online originator of loans. E-Loan should be able to capture more of the value in the chain than Lending Tree, since it both makes loans and finds borrowers. However, this business plan puts E-Loan into direct competition with already-established lenders. Lending Tree, on the other hand gave a “bear hug” to banks and lenders, by providing them with a private-label “Lend-X” platform, thereby helping them to fire up their own mortgage-granting websites. Lending Tree’s approach is much more scaleable—if they wish to grow, they merely add more computing power. E-Loan, on the other hand, must add people and processing capacity. In addition, Lending Tree invested heavily in building its brand, its alliances, and its distribution capabilities. In addition, the company developed

organizational capabilities with their filtering/routing technology and marketing services that differentiated them from potential bricks-and-mortar, mail, or phone competitors. The result has been that E-Loan, which was initially the larger of the two has been overtaken by Lending Tree in market share and profitability.

The Internet has affected the very bases of competitive advantage within incumbent value chains, namely, concentration (or size), differentiation and switching costs. The rise of electronic procurement, the ease of information gathering, the reduction in the difficulty of purchasing, marketing, and distribution, the proliferation in the options available to customers, and the reductions in geographic restrictions all combine to affect concentration. In some cases, concentration may actually increase in value structures which did not previously enjoy such benefits, especially where network economics play a role. eBay and the online auctions business is a classic example of the emergence of concentration in a business that could not have existed before the Internet. In other cases, concentration may actually decrease because of the opportunities given for companies to specialize and gain scale on a slice of the value structure.^{16,17}

The Internet has, in many cases, made it more difficult for companies to differentiate their products or services. For one thing, information moves so quickly that the “shelf life” of a given source or method of differentiation is vastly reduced. Additionally, technology has forced standardization of the provisioning of information, ordering, purchasing, delivering, and in other aspects, in a direct move away from differentiation. Customers are also now afforded levels of transparency of information over their suppliers, both with price and non-price attributes, giving them power to negotiate more effectively, thus eroding the power of differentiation. Also, the number of suppliers available to a specific buyer has increased, and switching costs have decreased with the convenience of electronic information. Finally, the Internet has clouded the competitive landscape in many existing value structures: partners become competitors, competitors become complementary partners, and buyers prefer standardization. The various consortia eMarketplaces, or exchanges, are examples of cooperation among competitors (e.g. Exostar in aerospace, Covisint in autos). Transora, formed by a consortium of (49 initially) leading consumer products companies (24 of the 25 largest), including Coca-Cola, Proctor & Gamble, and Unilever, to facilitate e-commerce among suppliers, manufacturers and retail trade

partners, collecting \$238 million in less than six weeks starting March 2000¹⁸. For very many reasons, the bases of differentiation and competition are changing – and it is not yet clear what the new methods of effective differentiation will be, nor which firms and value structures will benefit and which will lose out.

Differentiation in complex online value structures requires more, not less, brand presence. In the online news value court, very few providers have been able to capture value. Those who have, notably the Wall Street Journal, the New York Times, and Business Week, have relied on superior content, and a very strong existing brand. One of the keys for each of these companies has been to successfully integrate the online services to the offline business. And the brand building necessary for online success may need to be done in the offline world. Some have charged for the online subscription (e.g. Wall Street Journal), and others use the online services to support sales of the print edition or position themselves to receive significant licensing fees from online use of their content (Business Week). Leveraging differentiated content by using it in a multitude of ways that receive revenue and build brand is key.

The Internet has also affected the bases of switching costs, i.e., the economic, psychological and social costs of changing loyalty from one product or brand to another. The Internet-enabled reductions in the time required to search, analyze, order, purchase, track, and take delivery of numerous products, and the commensurate reductions in the time and costs of contracting, negotiating, and monitoring such transactions, has directly affected the economic costs of switching from one brand or product to another. Similarly, the potential erosion of differentiation, the standardization of enablers of economic transaction, the explosion of available information, and the profusion of options available to customers, has eroded the psychological switching costs that once protected brands and products. The psychological connection that people may have had with brands and products has come under greater stress. Finally, the rapid exchange of information that takes place on the Internet makes the duration of fads, fashions and loyalties much more fleeting. Thus, brands and products that relied on social switching costs (for example, Nike's reliance on peer pressure) are also severely tested in the digital age. Over time, new forms and methods of establishing switching costs will replace old

strategies, as existing companies and new ones jockey for position in the competitive market place.

When firms possess durable methods by which they are able to protect their core competitive advantages,¹⁹ they typically enjoy greater success in their roles as intermediaters or disintermediaters. In such situations, we may find that incumbents have difficulty preventing or overcoming the entry of new firms into the value structures. Alternatively, when the protective mechanisms of the intermediaters or disintermediaters are weak, the power swings in favor of incumbents over the new entrants. The already-powerful incumbents, to their advantage, may easily imitate the knowledge and processes that the new entrants bring to the value structures, thus preserving the status quo. Although incumbents may change their activities and processes, their survival or competitive advantages are not appropriated.²⁰ The ability of firms to alter the value structure is therefore a function of their core capabilities.

In the long run, however, the issue is not whether new models are protected. Rather, the question is how feasible it will be for firms to erect mechanisms capable of protecting their core capabilities in the digital world. The explosion in the number of connections between people, the number of channels available for collecting and disseminating rich information, the variety of options available to users, and the quickening pace of innovation seem to indicate that knowledge will be difficult to protect for extended periods of time. The value of proprietary knowledge itself may be short-lived due to continuous innovation.

Specific knowledge and private information has always “been the glue that held value chains together.”²¹ And the internet has brought common standards in connectivity and communication protocols, customization, choice, and the virtually cost-free (at the margin to consumers) and open exchange of information of all kinds to suppliers, channels, and customers. Proprietary systems and dedicated assets do not provide the kind of protection from competitive erosion that they did even a few years ago. Thus, value chains will remain under the constant threat of deconstruction and renovation.

Conclusions

In summary, four principal forces will drive the process of deconstruction in value chains over the long run. These are Internet-induced (1) changes in the structure of transaction costs, (2) changes in the structure of agency costs, (3) erosion of the traditional base of competitive position, and (4) erosion in the base of appropriability conditions. The process of renovation takes three different basic forms. These are (1) disintermediation, (2) intermediation, and (3) convergence. The result is value “courts”, value webs, and value networks. Schumpeter very astutely pointed out that the process of creative destruction or deconstruction may not play out immediately or even violently. Indeed, the process of change often occurs over many years. The initial reaction to the Internet was one of fear and euphoria. We expected change to be immediate, pervasive and far-reaching. When these expectations were not fulfilled, the pendulum swung to the other extreme; it is now commonplace to dismiss the Internet’s capabilities as a force of profound change. History shows us that change will occur, not in any linear sequence of exciting events, but as a slow cumulative process of small changes. In the case of the Internet, the full potential of its capabilities will be unwittingly directed by the actions of millions of users. But to appreciate, understand, and prepare ourselves for these changes, it is imperative that we understand the drivers and processes of renovation.

Notes

¹ We thank Rafi Mohammed for his contributions during the development phases of this paper and Mary Summers for her editorial assistance with the paper.

² See Schumpeter, J.A., 1947, Chapter, VII, “The Process of Creative Destruction”. In *Capitalism, Socialism and Democracy*, Harper and Row, New York, NY.

³ One distinctive character of the Internet is that this innovation is available to and accessible by all. That is, it has some of the characteristics of a *public good*. Unlike many technological innovations owned by private parties who have greater control over their introduction and dissemination, and thereby profiting from their use, it is the decisions and actions of millions of organizations and individuals around the world that guides the specific uses and evolution of the Internet. It is this character that gives the Internet the immense power of creative construction. Firms have to find ways to create valuable private goods, services, and information, and offer them for sale and exchange within a public domain that is evolving and changing rapidly and over which individual firms have very little control. This tying together of private goods and a rapidly changing public domain in a way that allows firms that create and offer these private goods to make profits is a central problem in the Internet age. Most of the data seem to indicate that the end consumers have disproportionately gained value relative to the producers and distributors of products and services, who seem to have no control over profitability. However, the rivalrous and cooperative behaviors that characterize markets dictate that the existing structures and institutions of value creation and exchange will constantly change as firms and individuals continuously jockey to find and occupy favorable positions relative to each other in search of profits.

⁴ See Michael Porter, 1985, *Competitive Advantage*, Free Press, New York, NY, for an introduction an explanation of the value chain concept.

⁵ Michael Porter, 1985, page 36.

⁶ For a detailed analysis of the theoretical model, see Kogut, B., 1988, Joint Ventures: Theoretical and Empirical Perspectives, *Strategic Management Journal*, 9 (4): 319-332, and Hennart, J. F., 1988, The Transaction Costs Theory of Joint Ventures: An Empirical Study of Japanese Subsidiaries in the United States, *Management Science*, 37(4): 483-497.

⁷ For some insightful arguments in this regard, see Evans and Wurster (1997; 2000). *Blown to Bits*, Harvard Business School Press.

⁸ The Internet allows consumers to learn more about a product or find availability by simply typing in the product name into a search engine. Before the Internet, consumers had to discover what publications discuss the product and then find the publication.

⁹ One of the primary contributions of the Internet is the ability for both firms and consumers to gain information from each other. The web enables firms with the ability to offer both richly detailed generic and personalized information to customers at a relatively low cost. In addition, by interacting with the web site (we discuss interaction later in this article) customers can get answers to their specific questions via the Internet as well as view in real time personalized information such as order status, stock quotes, and airline schedules. The richness in the type of information that can be offered over the Internet has significant effects on the value chain.

Customers benefit from the information that they can receive from the Internet. This richness in information, for example, can eliminate the need for employees to provide information (in retail outlets as well as call centers). In addition, customers can receive information that was previously only available using proprietary networks. Information firms such as Lexis Nexis or real time stock quote providers no longer need a proprietary network to offer the information services. Similarly, travel agents or real estate agents no longer have a virtual monopoly over important consumer information. To get the detailed information offered by American Airlines’ SABRE reservation system, consumers used to have to interact with a travel agent. Likewise, to get detailed information on real estate listings offered on the Multiple Listings Service (MLS), prospective homebuyers used to have to deal with a real estate agent. Now, SABRE and MLS information are easily available over the Internet.

¹⁰ The Internet lowers transaction costs by drastically increasing the market size— thus enabling businesses that could not survive in the physical world (due to small user base and the costs that it would take to serve this small base) to flourish in the digital world. eBay is an example of such a business. Previously, it would be very difficult for a seller of an obscure product like an autographed Eagles guitar to easily sell the product at a fair market value. The

seller could offer the guitar in a garage sale and hope that someone who was interested in that merchandise shows up. By limiting the customer base to browsers who visit the garage sale, the seller is faced with a thin market – and an unfavorable selling price. By placing the autographed guitar for sale on eBay, the seller has access to a large market of collectors searching for specialized products. This will make the sales process more efficient and enable the seller to realize a higher price.

¹¹ The Internet also lowers the transaction costs associated with consummating an order. By offering e-commerce sales, firms can automate the order process. In many cases, the labor and overhead (i.e., sales people at retail stores or call centers) can be significantly reduced by allowing customers to order directly over the web. Similarly, customers reduce transaction costs by traveling to retail outlets and interact with sales people. Customers also have the ability to make purchases 24/7. By having shipping and credit card information on file, transaction costs are lowered since customers can easily make purchases with one click.

¹² See Paul Saffo (1998), Disintermediation: Longer, not shorter, value chains are coming, www.saffo.com/disintermediation.html.

¹³ See Stabell, C.B., and Fjeldstad, O.D., 1998, Configuring value for competitive advantage: On chains, shops and networks, *Strategic Management Journal*, Vol. 19(5), 413-438. .

¹⁴ For example, see Kogut, 1988.

¹⁵ For example, see McGee, et. al., 1995, Cooperative Strategy and New Venture Performance: The Role of Business Strategy and Management Experience, *Strategic Management Journal*, 16: 565-580.

¹⁶ See Porter (2001; page 66), Strategy and the Internet, *Harvard Business Review*, for some persuasive argument.

¹⁷ For firms, the interaction component of the Internet has offered new ways to conduct business. For example, firms are rethinking how they should use retail outlets and sales force. Many retail outlets have been negatively affected, in terms of sales, by the Internet. Many customers do not feel the need to visit retail stores and interact with sales representatives when they can easily order over the Internet. This also has created new challenges for sales force. Interactivity has also opened up the marketplace for dynamic pricing web sites. Interactivity has enabled a company like eBay to create a trading community with partners around the world. Similarly, information related companies like Lexis-Nexis do not need to build proprietary systems that offer users the capability of two-way interaction to access specific information.

¹⁸ Transora: The Transora Story; http://www.transora.com/repository/en/about/company_history.jhtml; February 10, 2003.

¹⁹ Lippman A.A., and Rumelt, R.P., 1982, Uncertain imitability: An analysis of interfirm differences in efficiency under competition, *Bell Journal of Economics*, 13, pp. 418-438, refer to this as strong isolating mechanisms, which prevent erosion of competitive advantage due to imitation or other forms of competitive behavior.

²⁰ The appropriability regime concept falls within the domain of the “resource based” view of the firm (Penrose, E., 1959 *The Theory of the Growth of the Firm*, John Wiley: NY.; Wernerfelt, B., 1984, A Resource-based View of the Firm, *Strategic Management Journal*, 5: 171-180.). Under this view, a central purpose of the firm is to match rare and inimitable company resources and capabilities with market opportunities to create advantages vis-à-vis competitors, which in turn will allow the firm above normal returns. To the extent the resources and capabilities of the firm increase in value when combined with the resources and capabilities of other resource suppliers, there is a strong incentive to exploit such synergies by outsourcing to or partnering with other firms. On the other hand, to the extent the value of the current capabilities and knowledge are eroded or destroyed by collaborating with other resource suppliers, through the leakage of such capabilities across the firm boundaries, the incentive to integrate all activities within a firm is enhanced. Thus, when competitive insulation is weak, more hierarchical modes are likely, and when competitive insulation is strong, more fragmented modes are likely. Competitive insulation comes primarily from the rarity, inimitability and isolating mechanisms surrounding the accumulated resources, capabilities and knowledge of the firm or entrepreneur (Barney, J., 1991, Firm Resources and Sustained Competitive Advantage, *Journal of Management* 17, (1): 99-120.; Rumelt, R.P., 1984, Toward a Strategic Theory of the Firm. In R. Lamb (ed.), *Competitive Strategic Management*, Prentice-Hall, EngelWood Cliffs: NJ.: 556-570, and 1987, Theory, Strategy and Entrepreneurship, in D.J. Teece (ed.), *The Competitive Challenge*, Ballinger, NY: 137-158; and Teece, 1987).

²¹ See Carl Stern, BCG Publications, 1998.