

# Part One

## Exploring the Possibilities

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# Here Comes the Immersive Internet!

*“OMG, I AM SO BUSTED! . . . Mom found the bottle of vodka Tyler got us in the trunk of the car. . . . She is going to tell dad when he gets home. . . . NEED HELP! . . . 17 and my life is already over . . . All hands on deck. . . . Get everyone on FB right NOW. . . . Dad home in 45 minutes. . . . I CAN’T get grounded next weekend. . . . I am so PSYCHED about going to the dance with Mark.”*

Instantly, Jessica’s network comes to life. Those not on Facebook are notified via text message. Just to be sure no one is missed, Jessica sends out a tweet: *“Need help right now . . . . mom found vodka . . . .dad home in 45 mins . . . . meet on FB right NOW!”*

Within a minute Jessica’s friends are convened. *“When I got busted I worked on my mom to make sure dad didn’t ground me for too long,”* says Ashley. *“Yeah but Jessica’s mom is not as much of a*

*pushover as your mom,” says Matt. “When I got busted I owned up to making a mistake with my dad and that worked better.” “But wait, can’t we work Tyler into the picture here?” says Samantha. “After all, he is Jessica’s older brother.” “I know,” says Brittany, “let’s get Tyler to say he got the Vodka for someone else and left it in the car by mistake. . . . Is he online? . . . Let’s get him in here now.”*

And so it goes on: Each of Jessica’s friends bringing his or her respective experience and insights to solve her pressing issue. In twenty short minutes they converge on a story and a set of arguments to maximize the potential that Jessica gets to go on that all-important date with Mark!

Meanwhile, dad pulls into the driveway. Tired from a long day’s work and frustrated from the traffic jam on the way home, he asks himself, *“I wonder if there is any way I could slip out to the patio and read the paper in peace for a half-hour before dinner?”*

Little does he know what is waiting for him inside!

## The Invisibly Pervasive Web

On April 22, 1993, the Mosaic web browser was introduced to the world. And, for the past sixteen years, we have collectively surfed the digital domain of the web to a point where it has become so ubiquitous we take it for granted.<sup>1</sup> Just like the air we breathe to stay alive, we only notice the real impact the web has on our lives in its absence.

Skeptical? Pause to consider how many times you access the web each day. Or think about how many e-Vites, LinkedIn, or Facebook invitations you receive weekly. Add to that the number of text messages or tweets you write or receive on a monthly basis and the pervasiveness of how much the web is permeating your life becomes more clear.

The next time the web is “down” at your place of work, closely examine the behavior of your co-workers. Most likely, you will observe groups of people aimlessly wandering the halls behaving as if they have suffered some strange form of collective amnesia as to their roles in the organization and how they add value. Observe today’s college students working to complete a research project. If the web went down, these digital natives would have no clue how to navigate

the real stacks in an actual library. To them, research means searching on EBSCO<sup>2</sup> and downloading the PDF of the paper to their laptop in a wireless café.

Today, the web has permeated what we do socially, professionally, and educationally to such an extent that we have become oblivious to the profound changes it has brought to how we connect, communicate, coordinate, collaborate, and take collective action. Recognizing that browser software is younger than Jessica in the vignette above, it is daunting to consider just how rapidly the World Wide Web has transformed how we interact socially and collaborate professionally.

As the Internet continues to pervade society, the scarcity paradigm that undergirds most modern economic theory is being challenged. Unlike currency, information is non-appropriable, which essentially means that it can be shared without being given away. Today, information no longer moves in one direction, from the top of the enterprise to the bottom or from teacher to student. Instead, it has a social life all its own.<sup>3</sup> Information travels from place to place based on individuals' desire to interact with it, because they want to make more effective decisions or develop keener insights about a particular situation, or because someone is motivated to learn about a certain topic or how to complete a given task.

We are witnessing the acceleration of the co-evolution of society and technology. In a socio-technical system like the one we are in, information is the currency, individuals are the transport mechanism, interaction is the transfer mechanism, and insight is the value-added outcome. Given this context, we can begin to conceive of the web's own evolution as a pervasive and expanding ecosystem whose central purpose is to facilitate collective action, learning, and growth. In this evolutionary process, it is natural that the three-dimensional web will be a large part of society's increasingly digital future. The societal, professional, and educational consequences of this emerging learning ecosystem are beginning to take shape on a large scale.

Mark Zuckerberg, CEO of Facebook, suggests that communication should not be viewed as a way for people to get information. Instead, he proposes that information is a mechanism to foster better communication between people.<sup>4</sup> While the mission of Google is to organize the world's information, it appears that Zuckerberg is more focused on leveraging information to organize better interactions between people. It is this subtle yet significant

reframing of the relationship between information, communication, and people that allowed Jessica to leverage the Facebook platform to connect with her friends, communicate her pressing issue, collaborate with others at a distance to develop a solution, and take action to ensure that she still got to go on that date with Mark. Poor old dad never had a chance!

To understand the convergence of communication, collaboration, and the inevitable trajectory of the web toward a 3D interface, it is important to understand the transformation of the web and track its maturation as a communication, learning, and collaboration medium. In less than two decades, the commercial web had experienced two full evolutionary waves and is now at the beginning of a powerful third wave that will bring the web into the third dimension.

## Welcome to the Webvolution

*"This could not be more perfect."* Jessica thought to herself as she slow danced to her favorite song with Mark. She looked toward Ashley and Brittany, and they both smiled and gave her a thumbs-up. *"I wish this song would never end."* Jessica thought to herself.

When it did, Mark asked if she wanted to go out to the patio for a chat. As they walked under the stars, she could see Matt, Ashley, and Brittany pointing, giggling, and high-fiving each other out of the corner of her eye. It was clear that they had pulled this off and she was so thankful. She was not sure that their grand plan would work, but she was so desperate to see Mark again that she had been willing to try anything. Now she was very glad she did.

Unfortunately, two nights before the dance, Tyler, Jessica's older brother, blew her cover after they got into a fight. So she and her friends were grounded by their parents and could not attend the dance. As luck would have it, Mark couldn't go to the dance either, as his family had to unexpectedly visit their grandmother, who had broken her hip.

During another Facebook jam session to deal with this turn of events, Matt suggested they set up a virtual dance in the 3D virtual space of Second Life so all the kids who were grounded could attend the event virtually. The friends worked together for a whole day getting the invite list out to all the grounded kids (and Mark), building

the virtual dance hall, and figuring out how to pipe the DJ's audio from the actual dance into their online 3D dance hall.

While all the folks were hanging out in “meatspace” at the school gymnasium, Mark and Jessica, while distant from each other physically, could not have felt more together as they chatted on the virtual patio via VoIP. *“I’d really like to see you again when I get home, Jessica. Would you like to go see a movie with me next weekend?”* Jessica smiled, and without trying to sound too eager, replied with a cool, *“Yeah, that might be fun.”* She then muted her audio and let out a huge yell *“Yahooooooo!”* while simultaneously jumping up and down on her bed and Twittering that she got a movie date with Mark!

Dad, still on a mission to read his newspaper in peace, came scurrying up the stairs and pounded on her door *“What are you doing in there? Don’t you know you are grounded? Keep it down will you. If you keep this up you will never get to go to a dance again.”*

Mark, Jessica and their friends are participating in the third wave of the World Wide Web. They are interacting, communicating, and collaborating within the web. This ability to interact within the web is a hallmark of the third wave of the webvolution. To date, the web has experienced three evolutionary waves:

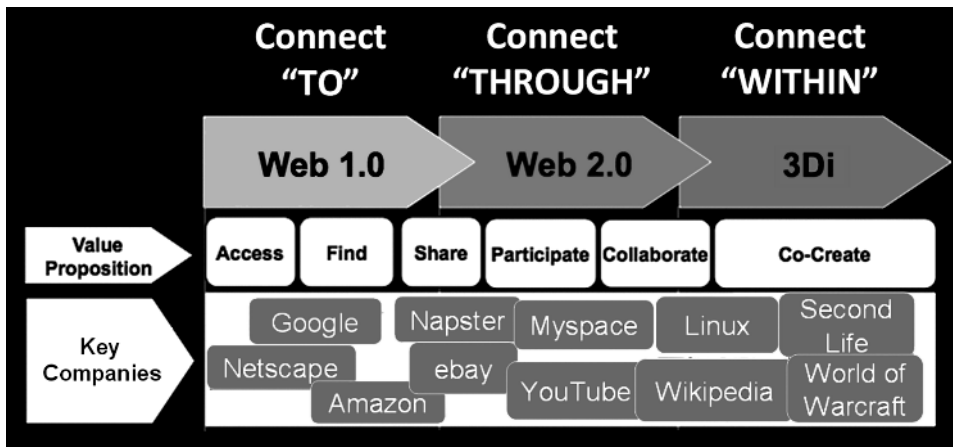
- Web 1.0 was focused on connecting “TO” the web;
- Web 2.0 is focused on connecting “THROUGH” the web; and
- Web 3.0, which is happening now, is focused on connecting “WITHIN” the web.

The next sections of this chapter explore each wave of the webvolution (see Figure 1.1) and illustrate how we have arrived at this evolutionary convergence of technology, communication, and collaboration.

## Web 1.0: Access and Find

With the arrival of the browser in 1993, Web 1.0 provided society with the opportunity to access more information than ever before. The early “read only” web provided basic text, graphics, and information to anyone who could access it via a browser. As couch potatoes turned into mouse potatoes,

**Figure 1.1.** The Three Webvolution Waves



firms in the financial services, banking, and travel industries seized the opportunity to provide their customers with web-based access to information that drove more transactions and generated additional revenues. Information technology (IT) infrastructure and telecommunications companies rode the Web 1.0 wave by building the technical platform that provided web-access to more and more customers. New Internet service provider (ISP) companies such as AOL and Prodigy emerged to provide support and service as an on-ramp to this new medium for a rapidly growing customer base.

As the amount of available content grew exponentially, the need to effectively and efficiently find information on the web became paramount. Initially, search engines with names like Lycos and WebCrawler became popular. Eventually, Yahoo garnered significant traction in meeting the need to quickly find information in the vast repositories of the web. It accomplished its goal by cataloging and organizing web content. By the end of 1994, Yahoo had received over one-million hits.<sup>5</sup>

In the fast-changing world of the web, Yahoo was eventually overthrown by Google. In a few short years, Google became the dominant player in addressing the "Find" value proposition based on Sergey Brin and Larry Page's patented PageRank search algorithm.<sup>6</sup> Thus began Google's ascendancy to the Internet powerhouse it is today. By identifying and addressing



an unmet need that emerged from the first wave of the webvolution—the need to “find” information on the web—Google secured its place in business history.

Amazon’s Jeff Bezos saw another way to leverage Web 1.0 for economic gain. In so doing, he successfully took on the largest brick-and-mortar bookstores in the world. His idea was that, while most large retail bookstores could offer as many as 200,000 titles, an online bookstore could ultimately offer many more.<sup>7</sup> The lower cost structure of not having to maintain brick-and-mortar retail outlets could be applied toward optimizing the supply chain. In many ways the now familiar concept of long-tail economics, popularized by Chris Anderson at Wired, was at the core of Bezos’ vision.<sup>8</sup> More importantly, since the virtual storefront aggregated access for consumers, Amazon’s popular book rating and referral system—often cited as a differentiator for Amazon over traditional retail outlets—allowed the company to offer targeted book referrals, driving additional revenues.

If we examine closely the underpinnings of what made both Google and Amazon’s value propositions compelling to nascent web users, or “netizens” as they came to be called, it becomes evident that they both leveraged the aggregated behavior of many users to differentiate their respective offerings. Google’s page rank system assigns a weight to a web page based on the number of pages that link to it. The more a page is linked to, the higher its relative importance. By aggregating this data as a mechanism for prioritizing search returns, Google provides customers with more effective search results. Similarly, by aggregating the buying patterns of customers, Amazon can make referrals to customers with similar buying patterns that are likely to result in more book purchases.

In both cases, it appears that Bezos, Brin, and Page had, knowingly or not, presaged the next webvolution wave: Web 2.0—The participatory “read-write” web.

## **Web 2.0: Share, Participate, Collaborate**

During the Web 2.0 wave, the focus shifted from connecting people “to” the web to enabling people to connect “through” the web to share, participate, and collaborate. As outlined in Figure 1.1, file sharing software like Napster serves as a bridge between Web 1.0 and Web 2.0.

In 1999, Shawn Fanning launched Napster, an online music file sharing service.<sup>9</sup> In so doing, he disrupted the existing value chain of the music industry at its core. Suddenly, instead of traveling to a record store to buy a physical piece of media (a CD or cassette), people instantly downloaded an MP3 music file from the web. The key point here is not that people could access music files on the web, but how those music files were made available in the first place. In essence, people took advantage of the all-but-unenforceable illegality of Fanning's peer-to-peer file-sharing technology to share music collections for free. Much has been written on how Napster created a technological discontinuity that fundamentally disrupted the music industry. The Web 2.0 "share" value proposition that was leveraged by people using the Napster platform is what ultimately created this disruption.

Moving from sharing music to sharing video is a logical next step. The music and movie industries have very similar business models and value chain dynamics. One obvious difference is that movies and video programming have a larger digital payload than music files. In the early days of the web there were many skeptics in the movie and broadcast media industry. One of the most notable among them was Stephen Weiswasser, then senior vice president of ABC, who confidently proclaimed, "You are not going to turn passive consumers into trollers on the Internet."<sup>10</sup>

Those of you who have teenagers know all too well that Weiswasser's proclamation was errant. Today's net generation is anything but passive. They want to interact and collaborate on an ongoing basis with their peer networks. They want to be engaged in the creative process rather than just be a consumer of it. They refuse to sit passively digesting broadcast media. Instead, like Jessica and her friends in the earlier vignette, they literally live on social networking sites such as Facebook and MySpace, where they share, create, participate, and collaborate on an ongoing basis.

In September of 2008, Nielsen reported that MySpace had fifty-nine million users and Facebook had thirty-nine million.<sup>11</sup> Less than one year later MySpace has ballooned to 300 million users and Facebook is not far behind with 276 million.<sup>12</sup> To put this in context, if MySpace and Facebook were viewed as virtual countries where netizens reside, MySpace would be the fifth largest country in the world and Facebook would be the sixth.<sup>13</sup>

One of the things that these netizens do in their virtual social habitat is share media. Pictures and videos are instantly uploaded from the cell-phone to the online photo site of Flickr and into the video site, YouTube. These media then begin a social life all their own as they are tagged and commented on by others as they traverse the Web 2.0 landscape at the speed of light.

YouTube, founded in 2005, is a video sharing website that allows users to upload, view, and share video clips.<sup>14</sup> Each day about nine thousand hours of video content is uploaded to YouTube. To put this in context, aggregating all the programming from the three primary networks (ABC, NBC, CBS) for the past sixty years would result in a total of 1.5 million hours of video programming. Those 1.5 million hours are equivalent to less than six months worth of video content submitted to YouTube.<sup>15</sup>

YouTube is a platform that has provided a user-generated alternative to the enterprise studio and broadcast approaches for media access and distribution. In short, with the arrival of Web 2.0 technologies that enable netizens to share, participate, and collaborate, we are witnessing a redefinition of how the media and entertainment industry develops and distributes content. This shift brings with it the need for a redefinition in the industry's enterprise structure and business model to address the threat of the user-generated content.

For those of you who may have an old collection of physical media (vinyl albums, eight-track tapes, or Betamax movies) that are taking up space in your basement or attic, there is still hope! In 1995, eBay founder, Pierre Omidyar's vision was to provide a web-based platform that allowed people to buy and sell goods via an online auction site. Ten short years later, eBay was conducting approximately ten billion web services transactions a year,<sup>16</sup> and more than 700,000 Americans reported that eBay was their primary or secondary source of income.<sup>17</sup> Through eBay, netizens now have the ability to participate in a digital world-wide yard sale, turning their trash into someone else's treasure. Instead of working for eBay, eBay works for them.

As we move into the next wave of the webvolution, we observe a continuing trend in the creation of economic platforms that cultivate new forms of innovative co-creation leading to different forms of wealth creation for those netizens who choose to participate.

If Napster was the bridge from Web 1.0 to Web 2.0, Wikipedia is the bridge from Web 2.0 to the Immersive Internet. In founding Wikipedia in 2002, Jimmy Wales' vision was that every single person on the planet should be given free access to the sum of all human knowledge.<sup>18</sup> Leveraging the ability that Web 2.0 tools brought to allow people to connect “through” the web, Wikipedia derives its value from enabling collaborative action through “crowdsourcing.”<sup>19</sup> Crowdsourcing is defined as “the act of taking a task traditionally performed by an employee or contractor and outsourcing it to an undefined, generally large group of people, in the form of an open call.”<sup>20</sup>

In the case of Wikipedia, the task that was outsourced to netizens at large was the creation of the world's largest encyclopedia. In the past seven years Wikipedia has grown to twelve million articles written collaboratively by volunteers around the world.<sup>21</sup> This same crowdsourcing phenomenon has been successfully leveraged in the development of open source software such as the Linux operating system. Both Wikipedia and Linux activate the “collaboration” and “co-creation” value propositions of the web—in one case for the development of the world's largest digital encyclopedia and in the other for the creation of an operating system that is gaining significant traction against offerings from traditional IT enterprises such as Microsoft. Thus the application of virtual co-creation is firmly established as a pattern at the edge of Web 2.0 as the third wave approaches.

## The Immersive Internet: Collaborate and Co-Create

Today, the web is in the midst of a migration from the traditional two-dimensional web browser interface to a three-dimensional one. Just as the introduction of the Mosaic browser changed society and business, the impending transformation of the Internet from a static, one-way conduit of information into a three-dimensional virtual environment in which people—as avatars—live, work, and play will have an equally significant transformational impact.

The 3D Internet that was once the dominion of hard-core gamers is rapidly becoming mainstream. To explore how the Immersive Internet is beginning to pervade society and impact the economy, we begin by exploring *World of Warcraft*, one of the world's most popular massively multiplayer online role playing games (MMORPG).

First released in 1994 by Blizzard Entertainment, *World of Warcraft* (WoW) has grown steadily to more than 11.5 million subscribers.<sup>22</sup> As with most MMORPGs, players form teams known as guilds that work together to move through a series of challenges that have increasing levels of difficulty. As game players work together to move through the levels in the game, they gain skills and acquire currency that is tied to their digital personas, or avatars. Players who choose to quit the game have the ability to cash out their currency and even sell their avatars online. This cashing out process is not insignificant. The highest *World of Warcraft* avatar account trade to date was valued at \$9,000.<sup>23</sup>

*World of Warcraft* is essentially a game-based economic platform where avatars work through gameplay activities within a virtual economy to develop reputational capital that can then be exchanged for real currency. MMORPG platforms like *World of Warcraft* and *EverQuest* have spawned a new “gold farming” industry in China. In 2007, gold farmers employed more than 100,000 workers. These workers play games in twelve-hour shifts. For each hundred coins gathered, the worker earns approximately \$1.25. Their boss sells this virtual loot to an online broker for approximately \$3. The online broker ultimately sells the virtual currency coins to an American or European customer for as much as \$20 in real currency.<sup>24</sup>

In similar fashion, Second Life (SL), a virtual world developed by Linden Lab, allows its residents to interact with each other through avatars. Second Life residents can socialize, explore, participate in group activities, create items, and trade virtual property and services with one another. Second Life has its own currency, the Linden Dollar, that can be used to buy and sell virtual items within the virtual world. Linden Dollars can be exchanged for real dollars at currency exchanges such as IGE.<sup>25</sup> Anshe Chung is probably the most famous Second Life entrepreneur. She was featured on the cover of *BusinessWeek* in May of 2006, and she is widely reported to be the first real-life Second Life millionaire.<sup>26</sup>

It turns out Anshe is not alone in the business of selling virtual assets. In 2007, people spent over \$1.5 billion on virtual items.<sup>27</sup> Many people find it difficult to believe people would spend real money to buy an avatar or a virtual piece of real estate that is essentially nothing more than a digital bucket

of bits and bytes. However, if you conceive of the trade, not as a transaction for an object, but as a payment for a service, it may be less difficult to comprehend. In essence, people buying *World of Warcraft* avatars or a fully decked-out Second Life island complete with waterfalls and dolphins are not paying for the digital product but for the services rendered to create it.

The Immersive Internet opens up a world of opportunity for innovative collaboration and co-creation where avatars inhabiting 3D versions of Facebook and MySpace can participate in a marketplace for virtual goods and services on an ongoing basis or even attend a dance together.

Wharton professor Dan Hunter, an expert on law and virtual worlds, suggests that this generalized access to a range of virtual services could have significant impact on future employment patterns, “I confidently predict that my kids (currently six and four years old) will end up working within one or more of these worlds.”<sup>28</sup> He is not alone in this predication. Edward Castronova, author of the seminal work *Synthetic Worlds*, writes about the emergence of economic marketplaces that exist only in virtual worlds and the day when virtual gold pieces are traded for real goods like diamonds.<sup>29</sup>

As the webvolution migrates from Web 1.0 through Web 2.0 to the Immersive Internet, each wave builds on the previous one, leading us to a point at which virtual economies have essentially become real. The arrival of the Immersive Internet as a pervasive and persistent environment within which avatars interact will no doubt usher in new forms of innovative co-creation, business and learning opportunities that create new vehicles of wealth generation and development that cannot even be imagined today.

## Social Production Comes of Age

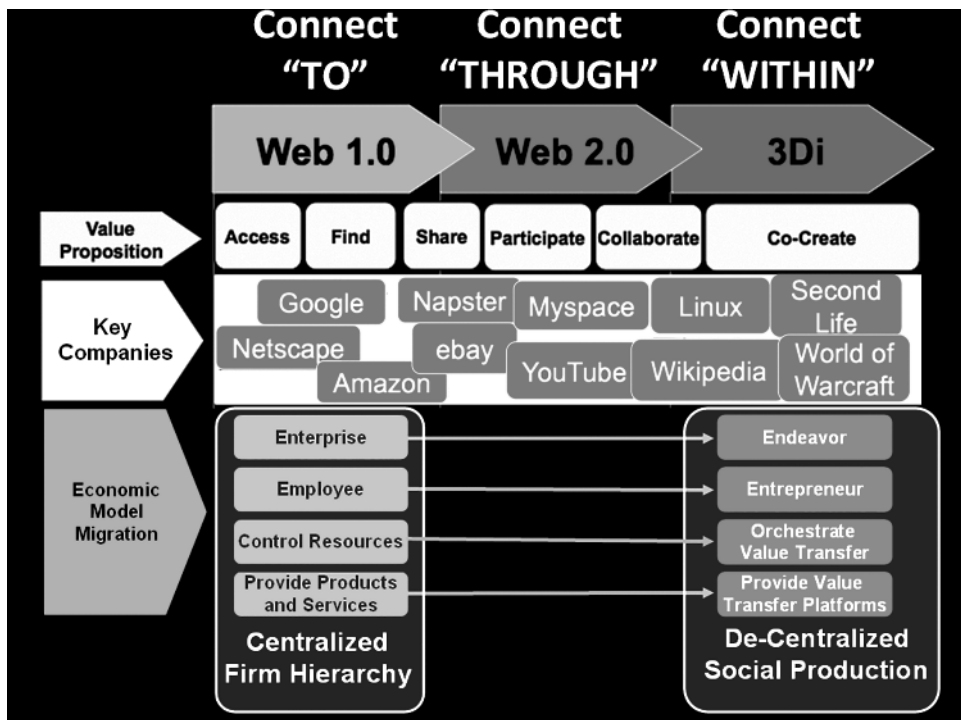
The second and third webvolution waves have ushered in a number of new value exchange platforms that will be critical to the future of organizations, work, and learning. Platforms like Wikipedia enable the coordination and orchestration of capabilities around specific endeavors, as opposed to the command and control of resources by a central authority. In contrast to most real-world enterprises, whose revenue is often correlated with the size of their employee base, companies like Amazon, Google, eBay, MySpace, and Linden Lab hire a relatively small number of employees to manage their value

exchange platforms and attract a large number of members or citizens who leverage the platform in unique ways to create and capture market value.

As communication costs have decreased and the quality of web-based interactivity has increased, communities of co-creators no longer need to rely on a formal organization to become organized. Rather than employing an enterprise infrastructure to plan ahead of time, they leverage the pervasive and immersive affordances of the web to coordinate their activities in real time. In so doing, these savvy netizens are creating a new economic transactional framework that Yochai Benkler calls “social production” (see Figure 1.2).<sup>30</sup>

Social production is the means by which a software operating system or a digital encyclopedia can be created without the need for a large centralized hierarchy. In essence, the web platform itself allows members to participate in a given endeavor as much or as little as they choose. In the past such forms of social production were limited and bounded in nature. Computer

**Figure 1.2.** The Webvolution Encourages Social Production



hobbyists in a given city might have gathered monthly to discuss the potential of a new operating system. They might even work together to develop some code. However, now that this kind of work activity can be aggregated and coordinated via the World Wide Web, it is starting to produce significant economic impact. Today, these platforms allow for the orchestration of capable and independent entrepreneurs around a given endeavor, where they can create and capture value from others who participate on that platform.

Virtual worlds like Second Life tap into the talent and creativity of their residents in a unique way. Joe Miller from Linden Lab provides a useful illustration of how much value his company derives from the social production of its residents. Since Second Life provides these residents with the tools to create their own virtual assets, Linden Lab is essentially incenting members to participate in the ongoing development of the Second Life environment. In 2007, Second Life logged about 350,000 hours of use per day. Approximately 25 percent of this time is spent by residents creating new content within the platform. That amounts to 87,500 hour per day of development time spent. Put differently, Second Life residents donate about \$1.6 billion worth of free work per year building out the Second Life grid. This equates to a 16,000-person content development team that is not employed by Linden Lab.<sup>31</sup> That is social production in action.

Today, social production is being leveraged much less by the traditional enterprise than it is by the entrepreneurial start-up. These pioneering entrepreneurs are creating and leveraging social production-based platforms for their own benefit as well as for those who participate in their use. These platforms are built on economic models that incent participation without requiring employment. eBay works for eBayers, not the other way around. The deeper we go into the webvolution, the more we will witness the development of economic platforms that allow individuals to operate independently of enterprises to generate value propositions that result in income.

## **The Immersive Internet Singularity**

In an increasingly digitally interconnected world, technology and enterprise structure are co-evolving at an accelerated rate. If you track the architecture



of organizations over the past five decades, moving from centralized bureaucratic hierarchies with rigid boundaries to flatter topological structures with more permeable boundaries, it becomes increasingly evident that there is a syncopation with the IT architectures that underpin these enterprises: From the monolithic centralized mainframes, to the client-server model, to the peer-to-peer decentralized web that constitute today's enterprise IT infrastructures.

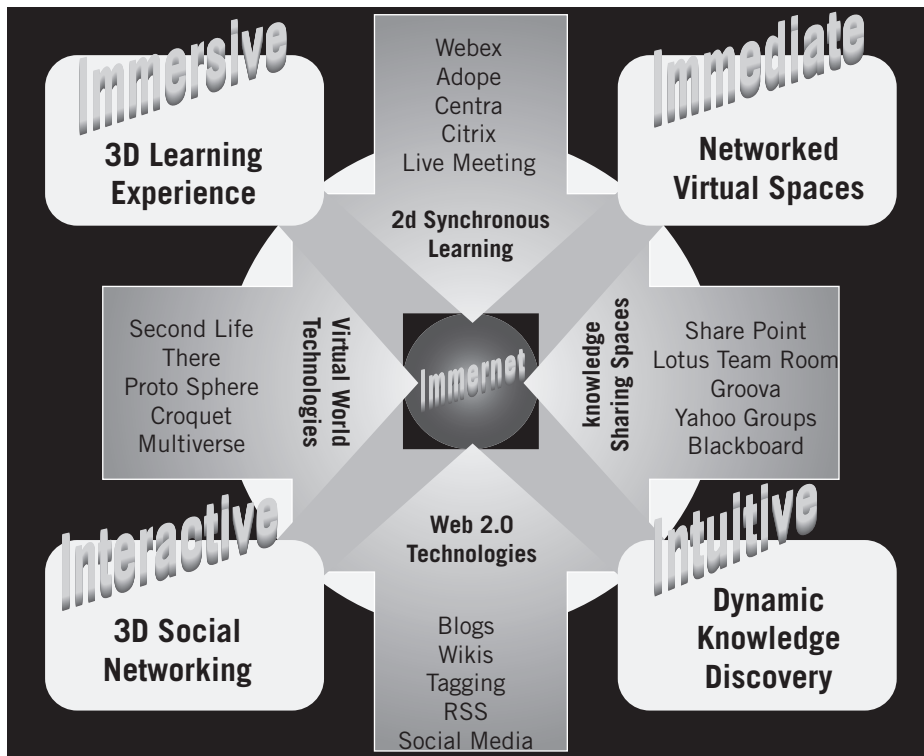
Furthermore, technology works through indirection and iteration. This essentially means that it builds on its past success and failures and learns from them to get faster at what it does over and over and over again. This iterative and accelerative cycle is what enables technology to expand and diffuse through society and industry at exponential rates. Moore's law, often articulated as the observation that computers double in speed every eighteen months, is but one example of technology's exponential growth through indirection. In fact, the phenomenon of computer speed doubling has been maintained from the time of vacuum tubes and will no doubt continue once we move from silicon-based transistors to molecular computing.

At present, four discrete software arenas are converging toward a point of technological singularity that will enable the next-generation Immersive Internet infrastructure (see Figure 1.3) or create an "immernet"—the delivery of the immersive characteristics of 3D environments over the Internet.

As we move toward this singularity, the "immernet" will enable the diffusion of social production oriented platforms, providing unimaginable opportunities for inhabitants of those virtual worlds to create new mechanisms of commerce and structures for enabling them. This will also require new ways of learning and interacting among the netizens.

## **Convergence Point 1: Immediate Networked Virtual Spaces**

Here, 2D synchronous learning platforms such as WebEx and Live Meeting will integrate with knowledge sharing repositories such as SharePoint and Ning, resulting in networked virtual spaces. These spaces will integrate synchronous sharing with asynchronous storage, yielding a one-stop-shop for storage and sharing of content.

**Figure 1.3.** The Immernet Singularity

## Convergence Point 2: Intuitive Dynamic Knowledge Discovery

Here, Web 2.0 technologies integrate with knowledge sharing spaces. The impact of blogs, wikis, and social media as engines of user-generated content is well established. However, the primary transformation lever in the Web 2.0 constellation of tools is the one least discussed: social tagging. Most content created and stored in the Web 2.0 domain is tagged with keywords by both creators and users. User-generated tags activate the flows of human connectivity between stocks of content housed in blogs, wikis, and social media sites. More tagging means more knowledge accidents of both the people-to-people and people-to-information kind. The mash-up between real-time tagging and networked virtual spaces allows for immediacy of access to key information and interaction with key people around a given task or activity. In this emerging

virtually afforded, contextually relevant, matchmaking world, knowledge discovery and real-time interaction with experts on the topic become the norm on a platform that allows the network itself to become more intuitive.

### **Convergence Point 3: Integrated 3D Social Networking**

With the infusion of three-dimensional (3D) technology platforms, it is only a matter of time before 3D social networking takes off. When this happens, MySpace truly will become MySPACE. This social movement into the 3D domain will prompt corporate information officers (CIOs) to develop enterprise-grade 3D social networking applications for their corporate citizens, just as they did in the past with applications such as instant messaging. Today enterprise vendors such as Forterra (Olive) and Proton Media (ProtoSphere) are integrating Web 2.0 tools into their 3D interfaces.

### **Convergence Point 4: Immersive 3D Learning Experiences**

In similar fashion to 3D social networking, synchronous 2D learning and collaboration platforms will enter the third dimension. While current learning and collaboration platforms do allow for virtual interactivity, they do not afford the immersive experience that drives sustained engagement. As a result most web conferences or lectures are sub-optimized in their ability to transfer knowledge in a compelling way. By adding immersion to the equation, organizations can allow for higher quality learning interactions between employees who work at a distance.

The Immersive Internet will become a worldwide virtual platform that allows people to immediately exercise their skills and abilities around endeavors that matter most to them. This next-generation Internet will function like an eBay for trading work activity instead of second-hand products. No one will work for the immernet. Instead the immernet will work for them. Providing its netizens with the opportunity to find both work and people to work with. The Immersive Internet becomes the ultimate netWORK.

Immersive Internet technology makes rich personal exchanges possible without the need for formal structures. The nonlinear dynamics of this new information ecosystem are challenging the traditional structures of enterprise. In fact, a recent study from IBM's Global Innovation Outlook

suggests, “The future might consist of a billion one-person enterprises—people who act as free agents moving freely and frequently from project to project as their skills, focus, and passion shift.”<sup>32</sup> eBay allowed people to sell their personal items in a world-wide yard sale; the Immersive Internet will allow people to sell their personal skills and abilities in much the same way.

As the webvolution continues to pervade society and industry, we move from “business-as-usual” to “business unusual.” Corporations, academic institutions, and government agencies that wish to remain vital and viable in this increasingly interconnected and complex economic landscape will need to determine how to integrate the power of social production into the very fabric of their enterprises.

## **Business Unusual**

An apple falling on Newton’s head leads to the creation of the laws of physics, which leads to the invention of the internal combustion engine, that is followed by the growth of the automobile industry, culminating in Alfred Sloan’s creation of the modern-day bureaucracy and Henry Ford’s assembly line.

History has taught us that market economies are typically characterized by extended periods of stability that are occasionally punctuated by short periods of high instability that forever alter the status-quo. In similar fashion, throughout history, the diffusion of innovation has typically followed a predictable path: A scientific discovery informs the creation of a new technology, which ushers in a new set of business opportunities that end up reshaping the structure of industries and organizations.<sup>33</sup>

In the past, disruptive technologies such as the printing press and the steam engine were catalysts in creating step-changes in the social and economic landscapes of their respective eras. Today, the transformational effects of the Internet on business are readily apparent. We now live in a service-driven, knowledge-based economy in which product and service lifecycles are shrinking and the work environment is increasing in complexity and velocity. Today’s increasingly digital economy places a premium on innovation, customization, new business models, and new ways of organizing work to maximize efficiency.

Broadly speaking, innovation is the process of converting corporate knowledge into value. Alfred Sloan and Henry Ford capitalized on new opportunities and redefined the factory structure and infrastructure for the emergent automotive industry. Successful Immersive Internet enterprises will be those that consistently create new knowledge, share it widely throughout the organization, and rapidly embody it in new differentiated market offerings or more effective workflow approaches. Immersive Internet pioneers are leading the charge in redefining how commerce can be capitalized upon in new and different ways based on social production. Learning and development organizations need to catch up and help their organizations adapt to the new social production methods of doing business.

In this economy fraught with uncertainty, organizations that can't change as fast as the environment within which they operate are destined to regress to mediocrity. Think of the business environment as a pressure chamber and imagine an organization as a balloon within that chamber. If the molecules within the balloon are not moving as fast as the molecules in the chamber, the balloon will shrink. The relentless pace and acceleration of web technology is ratcheting up the pressure in the business environment, requiring that enterprises take on the qualities of adaptive organisms rather than rigid hierarchies. The same is true of academic institutions that must prepare future workers to be productive within these new paradigms.

Today, insights drive innovation, and innovation drives profitable growth. These insights are generated from serendipitous knowledge accidents—the magic moment wherein expertise collides with opportunity and whole new industries are born. At the heart of the capacity to innovate is the ability to learn. An organization simply cannot innovate without learning something new. As has always been the case, a bright future for any enterprise depends on having access to bright people. As a result, the ability to instantly coalesce capability around an increasingly unpredictable set of market opportunities is the pre-eminent challenge of the 21st century organization.

In many ways the organizations that have enjoyed success in a pre-webvolution era face the largest challenge of all. These businesses and academics are built on a rigid core—both structural and infrastructural—that is optimized around a hierarchical command-and-control-based economic model.

As web-based social production pervades and the Immersive Internet takes hold, these organizations will be challenged to rethink their business and academic models from the ground up, requiring significant and sweeping transformation throughout the organization.

For change to occur it is a precondition that learning take place. An old dog becomes an older dog unless it learns a new trick. In the case of centralized hierarchies, the old dog must unlearn all that brought it success in the pre-webvolution era and quickly learn how to leverage the Immersive Internet to reconfigure its resources and capabilities to achieve sustainable competitive advantage in a world gone web.

In the webvolution brains have surpassed brawn as the engine of enterprise. The perennial challenge of the learning function within the enterprise is to ensure that human capital investment yields a workforce capable of innovating faster than the competition and work processes that allow the organization to adapt to changes with minimal disruption. This suggests that the learning function should become increasingly strategic to the enterprise.

The remainder of this book explores how the enterprise learning function must reinvent itself to enable the organization it serves to transform, survive, and thrive in the Immersive Internet era.