**Dell's Third Horizon:
The Innovation Imperative**

by

Heather Anne Simmons

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Abstract

To the disrupters go the spoils. Those who disrupt industries can change consumer behavior, alter economics, and transform lives. What caused the once-disruptive Dell's growth rate and stock price to decline in the mid-2000s, and how might Dell thrive again? What are the lessons for other companies? This study analyzes how innovative cultures are created, lost, and reborn in large companies through the lens of a long-term case study, namely my 13 years at Dell. The research fuses Innovation and Foresight frameworks, principally Curry & Hodgson's Three Horizons framework and Hill's Willing and Able framework, and shows that Dell lost its innovation edge when a cultural shift and the pressures of Wall Street crushed risk-taking. It posits that large companies should adopt an "intelligent gambler's" approach to innovation – namely investing in other companies in order to effectively leverage their significant capital to take intelligent risks in a fast-changing world.

For TT. So glad you stuck your head over the top of the cube.

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All Figures and photographs are by the author unless indicated otherwise.

Chapter 1

Introduction

Chapter One – Introduction

To the disrupters go the spoils. Those who disrupt their industries change consumer behavior, alter economics, and transform lives.   Companies can disrupt by creating revolutionary new technologies, as Corning Glassworks and Bell Labs did with the invention of fiber-optic cables in 1970 (Johnson 2014, 30), or via design, as Apple did with its various "i" products.   Or, a company can disrupt with a revolutionary business model, as Dell did in the 1980s with the idea of selling $2,000+ computers over the phone.

Nobody thought it would work. As Bill Sharpe, whose advertising agency, Sharpe Blackmore, held the Dell Canada account from 1996-2006, says, "I had a business partner in California, who said, we have a client, Dell. They sell computers over the phone, and ship it to you. I said, 'There's no way, who's gonna buy a computer over the phone? They're complicated.'"

In 1992, the year I joined the company, Dell had a 3.5% share of global personal computer ("PC") revenues, to IBM's dominant 12.4% (Harte 2014, 126). The internet was used by almost no one outside of nerdy academic circles, e-commerce was 5 years away, and eventual Amazon founder Jeff Bezos was still working at financial firm D.E. Shaw.

But work it did, and spectacularly. Until it didn't. And therein lies the tale.

Experience and Motivation

When I graduated from Harvard Business School, one of my professors, the late Louis "By" Barnes, asked why I didn't stay to get my PhD in Organizational Behavior ("OB"). OB??? No way! Not the soft stuff. I was $40,000 in debt and needed to make money. Besides, weren't people interchangeable, as long as the numbers were there? Thus demonstrating (and not for the first or last time) that 27-year olds do not, in fact, know everything. I worked at Dell from 1992-2005. Dell's success was driven by its innovative business model, but also by the "soft stuff" – culture and employee commitment. A $10,000 investment in Dell at its 1988 initial public offering ("IPO") would have yielded a fortune of ~$6 million at the stock's peak, Dell's valuation having risen by $100 billion in that time.
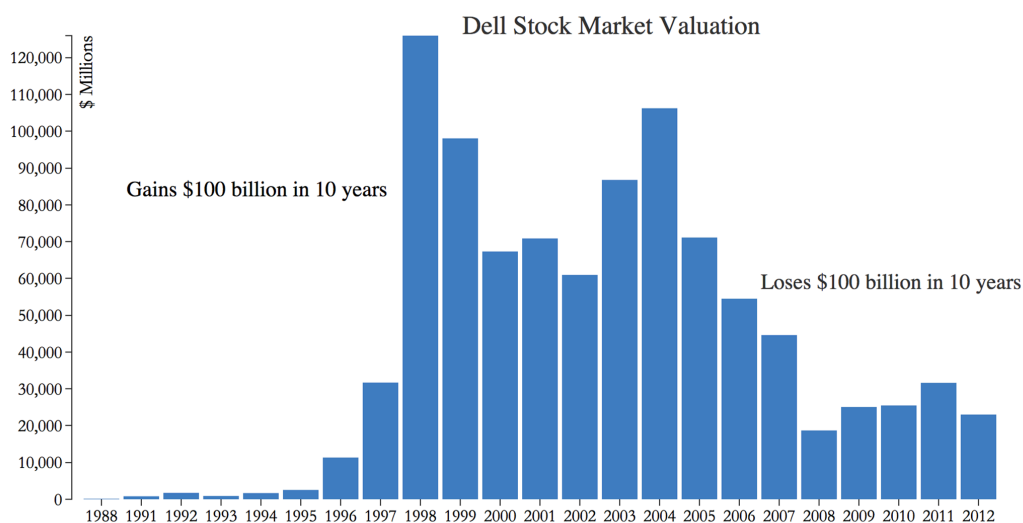
Figure 1 - Dell's stock market valuation, 1988-2012. Excludes debt. Note: Dell's fiscal year ends January 31. Therefore, the 1998 valuation of $125 billion represents shares outstanding multiplied by stock price as of January 31, 1999, and so on. Source: Annual reports, ("Dell closing costs," 2015).

In 1990, at the age of 24, Michael Dell was named the "Entrepreneur of the Year" by Inc magazine (Richman, 1990). In 2005, Dell topped Fortune's list of America's Most Admired Companies ("Dell tops Fortune magazine's list of most admired companies - Greensboro - Triad Business Journal," 2005).

However, by 2008, Dell had lost $100 billion in stock market value, Amazon was king of the direct distribution business, Apple had launched a slew of innovative consumer products including the iPhone, and Dell's low cost advantage was under attack by Asian competitors. In 2013, Michael Dell and Silver Lake Partners took the company private for $24.9 billion, the 11th largest leveraged buyout ("LBO" – typically a go-private transaction financed by significant debt) in the world's history (Hester 2013, par. 5).

Competitor Stock Price Performance 1991-2012
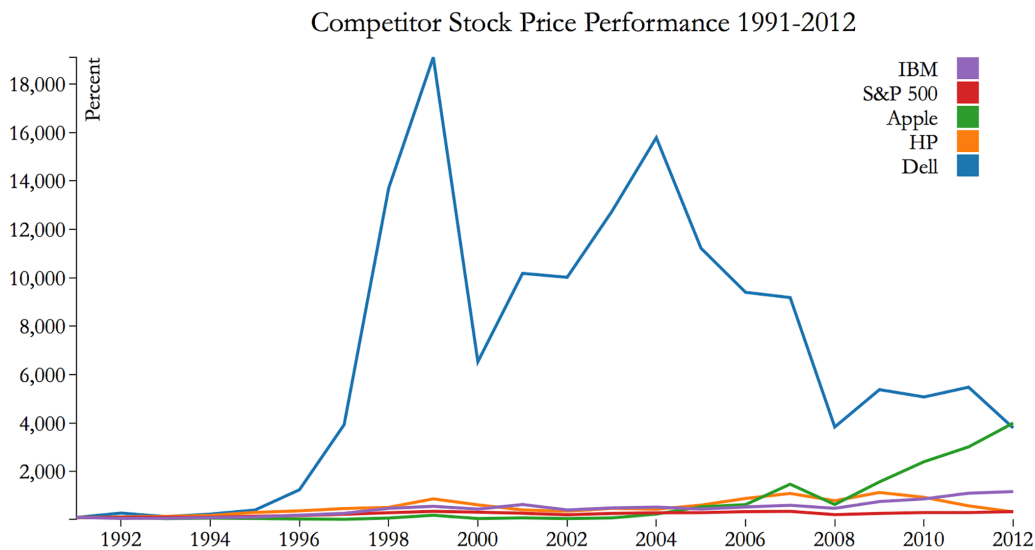
Figure 2 - Dell's stock price performance relative to competitors, 1991-2012. 1991 stock price used as base and set to 100% for all competitors. Source: ("Dell closing costs," 2015), **Google Finance, Yahoo Finance.**

Summary of the Research Question

The question is, "What caused Dell's growth rate and stock price to decline in the mid-2000s, and how might Dell thrive once again?" My research focuses on answering this question, using a literature review, a new innovation framework from the authors of *Collective Genius*, the Three Horizons method, field interviews with former Dell employees, and observations from my visit to Dell's customer conference, Dell World. This work indicates that Dell's reduced growth rate and stock price decline was driven by the pressures of Wall Street and the death of risk-taking. I believe that Dell can thrive once again by rebuilding its entrepreneurial culture, staying private, and adopting a venture capitalist's approach to innovation.

Scope of the Study

This study focuses on the period from 1989 to the present. Ten interviews were conducted with former Dell employees or partners. No interviews were conducted with current Dell employees to avoid the inadvertent disclosure of non-public information. For the same reason, all numerical data are from published sources.

Chapter 2

Background

Chapter Two – Background

This section provides a brief overview of Dell's financial performance, followed by a description of the direct business model, a critical driver of its success.

Financial Performance

By many measures, Dell is a very successful company. From inception in 1984 to the fall of 2013, it generated about $800 *billion* in cumulative revenues, according to its annual reports. Annual sales grew at a torrid clip for its first 20 years. As shown in Figure 3, from 1991 to 2005, annual revenues grew at a compound annual growth rate ("CAGR") of over 34%. By 2005-2012, however, the CAGR had slowed to .3%.

Dell Revenues 1991-2012
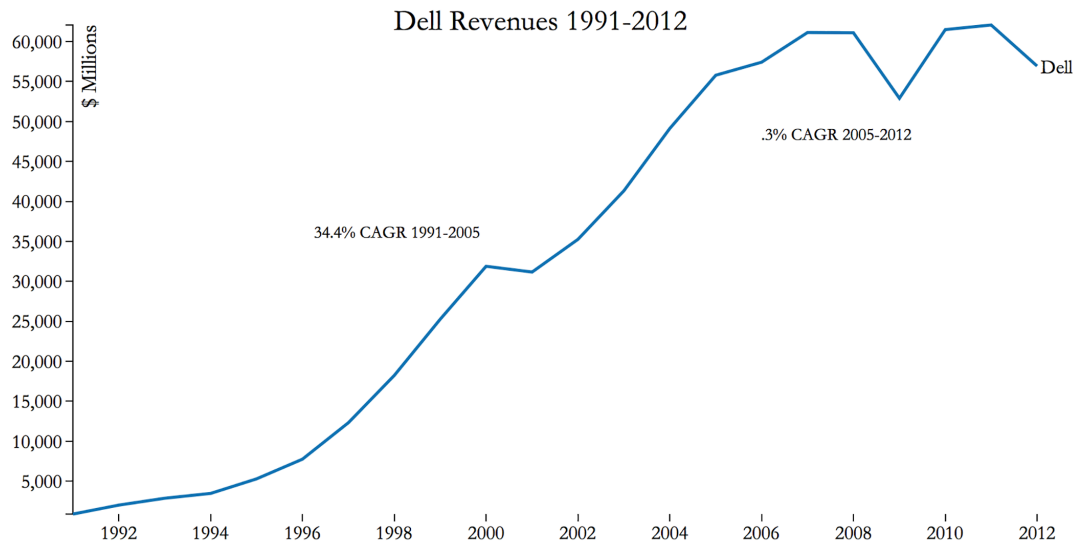
Figure 3 - Dell revenues, 1991-2012. Note: Dell's fiscal year ends January 31. Therefore, Dell's 2006 revenue of $57.4 billion, as shown above, represents revenue for the fiscal year ended January 31, 2007, and so on. Source: Annual reports.

Michael Dell started the company in his college dorm room in 1984. By 1998, Dell

was generating over $1 *billion* in profits every year. Figure 4 shows Dell's annual net income

from 1991-2012.

Dell Net Income 1991-2012
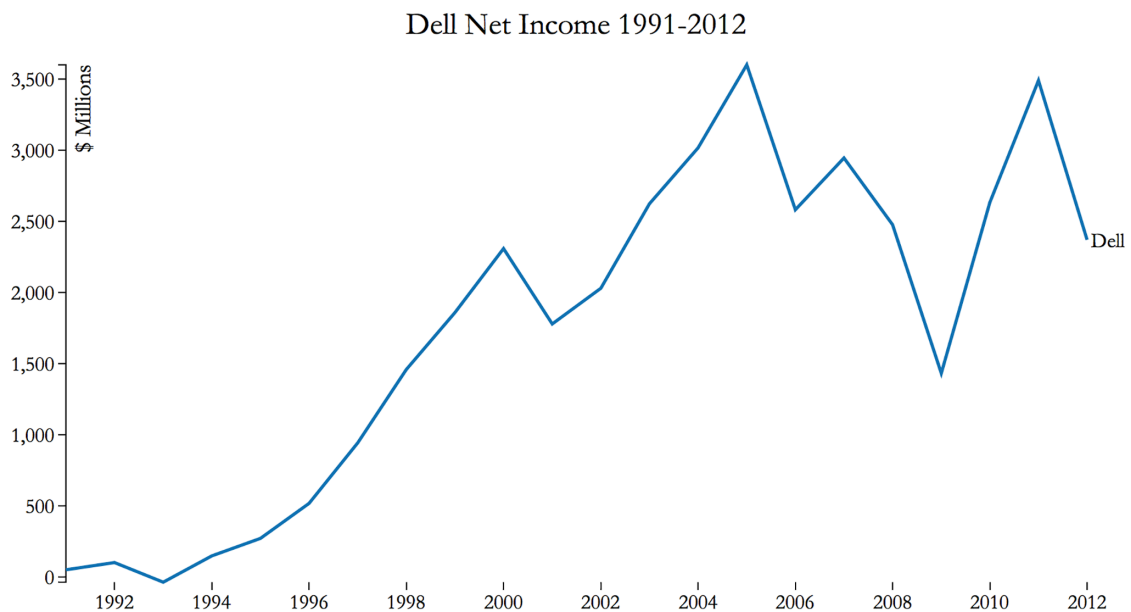
Figure 4 - Dell's net income, 1991-2012. Note: Dell's fiscal year ends January 31. Therefore, Dell's 2006 net income of $2.6 billion, as shown above, represents net income for the fiscal year ended January 31, 2007, and so on. Source: Annual reports.

As shown in Figure 5, through 2005, Dell's unit growth rate consistently outpaced

the market, leading it to the #1 market share position worldwide. However, as discussed

further in Chapter 5 and shown in Figures 3, 4, and 5, by 2006 Dell's unit, revenue, and net

income growth slowed substantially. In 2007, HP surpassed Dell for the #1 worldwide unit

share position (Kitagawa 2009, par. 13).

Dell Unit Growth Rates Relative to Market
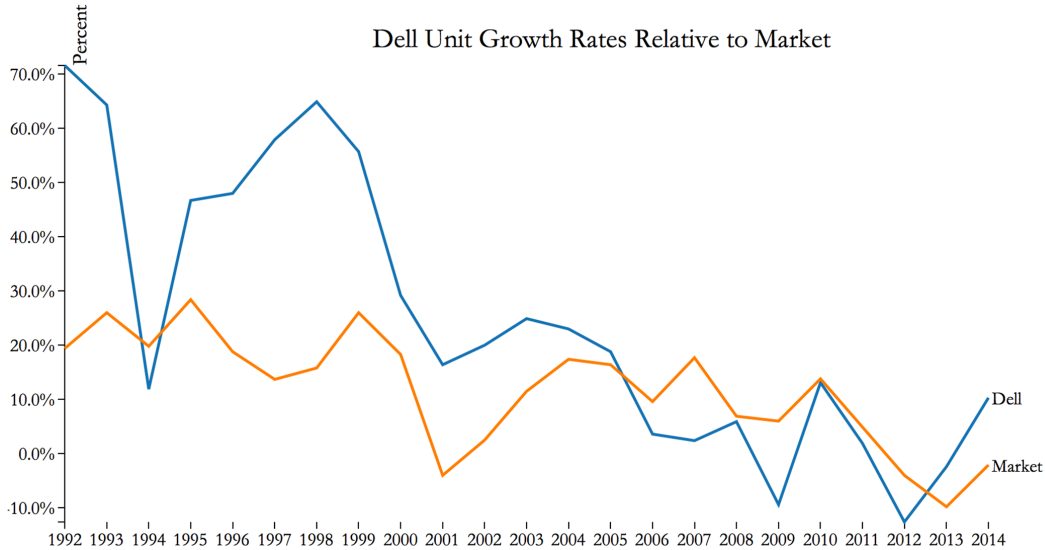
Figure 5 - Dell unit growth rates relative to market, 1992-2014. All figures are for the calendar year. Source: Gartner, IDC, author's analysis.

Dell's stock also performed exceptionally well until about 2005. Cumulatively, it appreciated over 13,000% from its initial public offering ("IPO") in 1988 to October 2013 ("Dell closing costs," 2015), yielding over *24 times* the return on the S&P 500 stock index ("S&P 500: INDEXSP:.INX historical prices - Google Finance," 2015). Dell's annual return on equity from 1990 through 2012 averaged 42%, according to its annual reports. Dell's stock price climbed from about 10 cents a share at IPO to over $50 a share by the end of 1999 ("Dell closing costs," 2015). It dropped in 2000 along with other technology stocks when the dot.com bubble burst, but had recovered to $41 a share by December 31, 2004 ("Dell closing costs," 2015). By 2012, however, it had declined to about $10 a share.

The Direct Business Model

Dell's direct business model was a crucial driver of its financial performance. In the classic indirect business model used by Compaq, IBM, and most others in the PC industry, a computer manufacturer sells through two layers of distribution, a distributor and a reseller (often referred to as "the channel"), in order to reach the end customer.

| Component Suppliers (Hard Drives, etc.) | → | PC Manufacturer | → | Distributor | → | Reseller | → | End Customer |
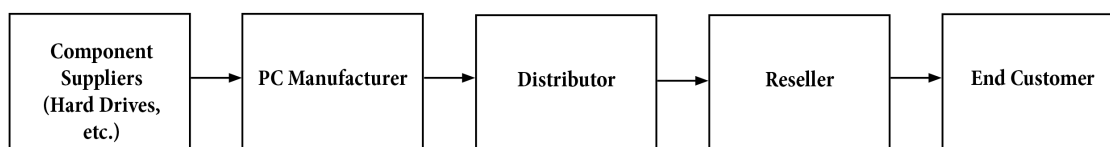
Figure 6 - Indirect business model.

By contrast, in the direct distribution or "build-to-order" model pioneered by Dell in 1984, the computer manufacturer does not build a product until a customer places an order. The manufacturer then ships it directly to the customer, bypassing the middleman.

| Component Suppliers (Hard drives, monitors, etc.) | → | PC Manufacturer | → | End Customer |
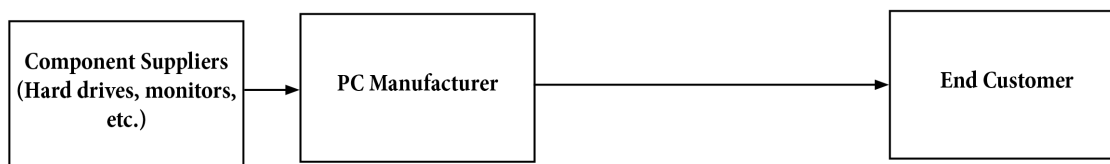
Figure 7 - Direct business model.

The direct distribution model results in a value proposition for the customer of lower costs, faster time to market, and better customer service (no finger pointing). As calculated by technology analyst Steven Fortuna in 1997, the direct model provided Dell with a 14

point cost advantage over industry players with indirect models. He estimated that Dell

saved 5% by avoiding the channel mark-ups, 4% due to higher inventory turns, 2.5% due to

avoiding price protection, and 2.5% due to other items (Fortuna 1997, 6). Dell would then

pass these lower costs to customers via lower prices. Fewer inventories also meant that Dell

was typically two months faster to market with new products. Lower prices and newer

products gave Dell an advantage during major product transitions such as Pentium.
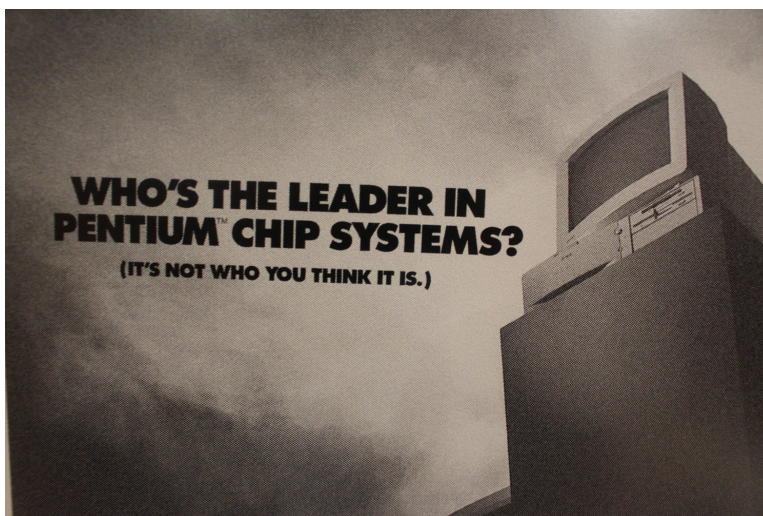
Figure 8 - Dell ad from 1995 touting Pentium leadership. Source: Photo of ad from author's collection.

The direct business model also gave Dell one other critical advantage – higher cash

flow due to an efficient cash conversion cycle (Fisher 1998, par. 12-14), sometimes referred

to as *negative working capital*. The cash conversion cycle is calculated as days sales in

receivables, plus days sales in inventory, less days sales in payables. A *negative* cash

conversion cycle, which Dell had, means that a company is getting paid for sales faster than

it is paying its suppliers (a good thing). Dell had less cash tied up in inventory than its

indirect competitors, due to its model. In addition, Dell's customers, primarily businesses

and governments, often paid Dell faster than it paid its own suppliers, meaning that less cash

was tied up in accounts receivable. Cash was therefore coming in much faster than it was

going out.   This advantage persists – Dell's most recent publicly available annual cash

conversion cycle figure was a *negative* 36 days (Dell 2013b, 51), compared to a positive 6

days for IBM (IBM 2013, 70-72) and a positive 21 days for Hewlett-Packard ("HP")

(Hewlett-Packard 2012, 67) for the closest equivalent period. These advantages led Dell to

superior sales and net income performance throughout the 1990s, as depicted in Figures 9,

10, and 11 below.
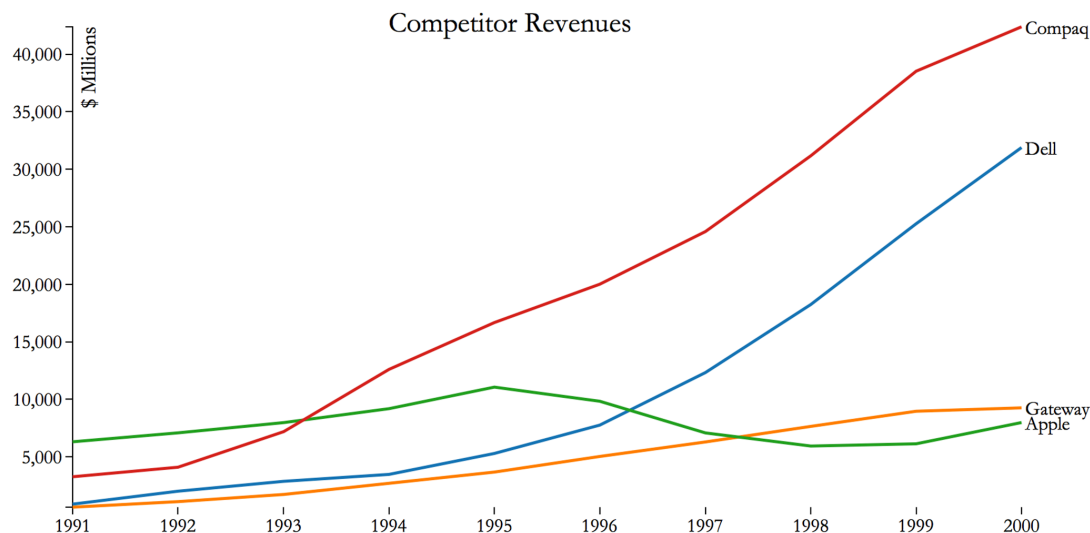
Figure 9 - Revenue by major PC competitor, 1991-2000. Note: Dell's fiscal year ends January 31. Therefore, Dell's 1998 revenue figure of $18.2 billion, as shown above, represents revenue for the fiscal year ended January 31, 1999, and so on. Source: Annual reports.
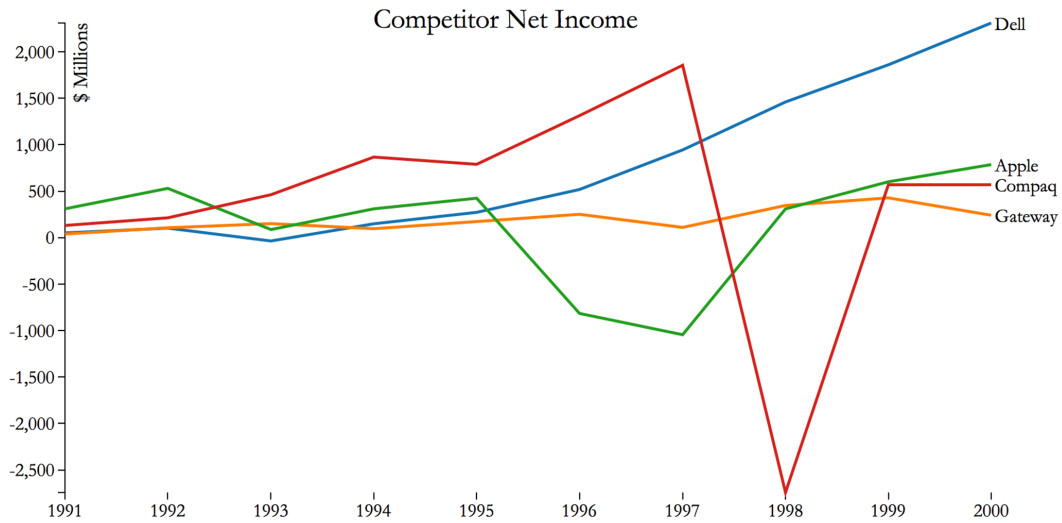
Figure 10 - Net income by major PC competitor, 1991-2000. Note: Dell's fiscal year ends January 31. Therefore, 1998 net income of $1.46 billion, as shown above, represents net income for the fiscal year ended January 31, 1999, and so on. Source: Annual reports.
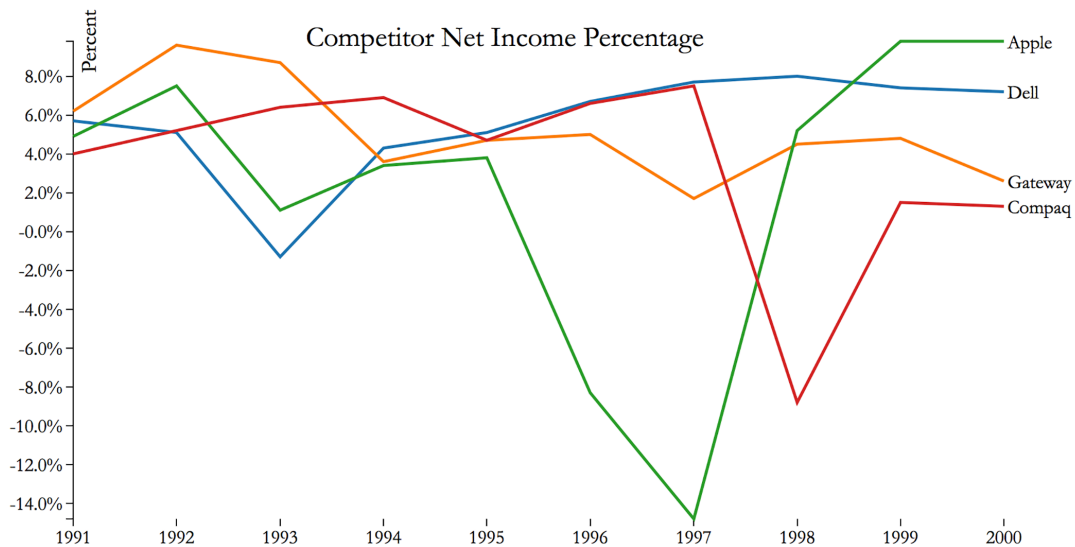
Figure 11 - Percentage net income by major PC competitor, 1991-2000. Note: Dell's fiscal year ends January 31. Therefore, 1998 net income percentage of 8%, as shown above, represents the net income percentage for the fiscal year ended January 31, 1999, and so on. Source: Annual reports.

For over 20 years Dell's model provided it with lower costs and faster time to market.

Then competitors delivered more innovative products (such as tablets and smartphones) and

services (such as security and cloud services), better design, and software. As we will see in the

literature review, innovation is Dell's best chance for "surthrival," a word coined by Dell's former

president, Joel Kocher. Surthrival means to not just survive, but to *thrive.*

Chapter 3

Literature Review

Chapter Three – Literature Review

Defining Disruptive Innovation

Innovation is vital to a strong economy. Economists estimate that over half the

growth in the global economy results from disruptive innovation (Hausman and Johnston

2014, 2721). But what do we mean by *innovation*? As Harvard Business School ("HBS")

professor Linda Hill and her co-authors say in their book, *Collective Genius*:

> Innovation is the creation of something both novel and useful…It can be a new
> product, a new service, *a new business model* (emphasis added), a new way of
> organizing, or a new film made in a new way. (L. Hill et al. 2014, 11)

I add that an innovation is something that is launched or introduced into the

marketplace or culture.   Inventions not introduced to the market are science experiments.

HBS professor Clayton Christensen, a leading innovation scholar, defined the

additional term *disruptive innovation,* later renamed *empowering innovation*, in his 1997 book

The Innovator's Dilemma:

> Disruptive technologies bring to a market a very different value proposition than had
> been available previously. Generally, disruptive technologies underperform
> established products…But they have other features that a few fringe (and generally
> new) customers value…disruptive technologies are typically cheaper, simpler, smaller,
> and frequently, more convenient to use. (Christensen 1997, xv)

For example, small "Smart Cars" are disruptive to the automotive industry. Small

transistors were a disruptive technology relative to huge vacuum tubes. Drone delivery of

packages is disruptive to Canada Post (lots of things could be disruptive to Canada Post, which seems to have a delivery schedule generated by a random algorithm, but I digress).

Christensen also identified a different type of innovation, *sustaining innovation,* which typically improves the performance of existing established products in mainstream markets (Nisen 2012, 2). In addition, he defined *efficiency innovation*, which involves reducing costs through simplified delivery or processes (Nisen 2012, 2).

I do not think Dr. Christensen's definition of disruptive technologies is completely adequate today. It implies an inferior but "good enough" product creeping up into the bottom of a market, at a cheaper price than the existing offering. Today, technology often allows us to create superior products that leapfrog existing market offerings (i.e., the impact of Pixar and its CGI magic on the movie industry). Therefore, I prefer the definition of disruptive technologies posited by McKinsey, one of the world's foremost management consulting companies. McKinsey views a disruptive technology as one with a broad scope of impact (billions of people), significant economic value (trillions of dollars of revenue), and disruptive economic power (i.e., the potential to create winners and losers) (Manyika et al. 2013, 2-3). McKinsey includes next generation genomics, the internet of things, and advanced energy storage as disruptive technologies. These technologies do not underperform existing technologies.

As noted by Dr. Hill and her co-authors, disruption does not have to come from a technology or product alone. Disruptive innovation can also occur in the form of a new service, or a new business model.

Exponential Acceleration

Why is innovation more important than ever today? In extended periods of rapid change, innovation is critical, and sustained innovation is "perhaps the only enduring competitive advantage" (Hill et al. 2014, 9). The current digital wave of innovation spawned by the internet is far more rapid than that brought on by the Industrial Revolution of the late 1700s, which brought us the steam engine and began the acceleration of innovation. It is also faster than the wave of innovation brought on by the internal combustion engine in the late 1800s. As an example, while it took electricity 45 years to reach 90% of US residents, it took cell phones just 20 years to reach that penetration ("Increasing Ubiquity" 2009, par. 13).

What is it about digital technologies in particular that causes this acceleration? MIT professors Erik Brynjolfsson and Andrew McAfee, in their book *The Second Machine Age*, posit that the accelerated pace of the digital revolution is driven by three factors: exponential improvement (Moore's Law), digitized information, and recombinant innovation.

Moore's Law states that "The complexity for minimum component costs has increased at a rate of roughly a factor of two per year…" (Moore 1965, 114). In other words, the amount of hardware computing power you can get for a dollar doubles every year. In terms we can all understand, if you put a dollar in the bank and applied Moore's Law to it, you'd have $16 million to retire on in 25 years. Whoa, everybody just woke right up.
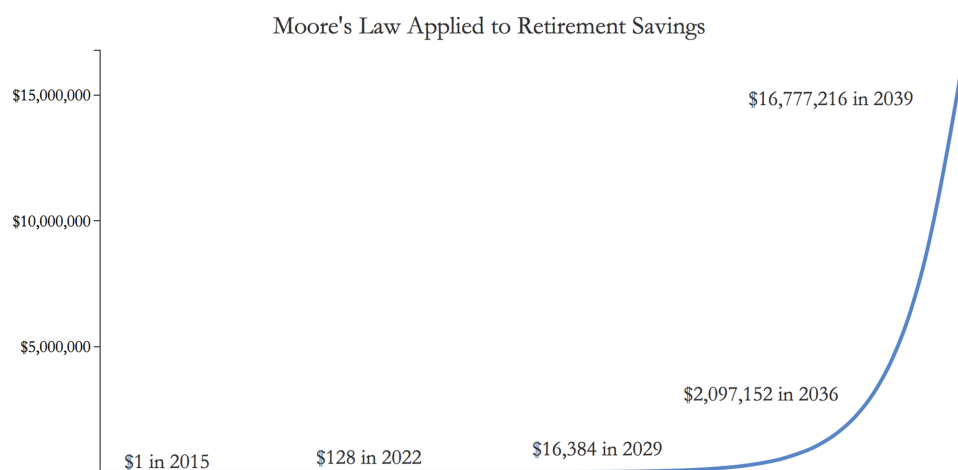
Figure 12 - Moore's Law applied to retirement savings.

Moore's Law means that today's Sony Playstation 3 has processing speed as fast as the world's fastest supercomputer in 1996 (Brynjolfsson and Mcafee 2014, 49-50).   Today's iPhone is also faster than a $10 million supercomputer of the 1970s (Ungar 2008, par. 5).

The second factor, digitized data, has two important properties: it is non-rival, and costs to reproduce and distribute it are negligible. Non-rival means that something is not used up when it gets used (Brynjolfsson and Mcafee 2014, 62), such as when I listen to a song on an iPod.

The final factor is "recombinant innovation," which simply means that most innovations in the digital age are new combinations of existing innovations, packaged together to solve a new problem. Steven Johnson takes the long view on this same "recombinant innovation" concept in his 2014 book, *How We Got to Now: Six Innovations That Made the Modern World.* As one example, he starts his story of glassmaking innovation back in 1204, when Constantinople fell. A group of Turkish glassmakers fled to Venice, where the townspeople banished them to the island of Murano. During the 15th century, one of these glassmakers, Angelo Barovier, created clear glass by combining seaweed ash with molten glass. Gutenberg produced the printing press in the 1440s, causing literacy rates to rise dramatically, and many people realized they were farsighted. That created demand for spectacles, for which, fortunately, there existed clear glass. Fast forward almost 300 years to 1887, when an eccentric professor named Charles Vernon Boys wanted to create a very fine strand of glass to measure the effects of delicate force on objects. So, he did what any of us would do, and attached molten glass to a crossbow, and then fired a shot across his lab, creating a very thin, long strand of clear glass. Almost 100 years later, Corning advanced both Boys' thin strands of glass and Barovier's transparency process to create fiber optics. The backbone of the global Internet is built out of fiber optic cables (Johnson 2014, 14-31).

So, if you like your internet connection robust, thank Gutenberg, the bureaucrats of Venice, and an eccentric professor with a crossbow. Innovations build on prior innovation,

sometimes a hundred years old. We all stand on the shoulders of giants. Please remember

this the next time you think you invented social networks, or the Internet, or crowdsourcing.

Frameworks for Innovation Success

Innovation is more important than ever due to the exponential acceleration of the

digital era. How can we ensure our organizations are set up to innovate? Is there a

framework we can use to think about that?

For anyone who dislikes academic frameworks, I sympathize. Frameworks generally

consist of a variety of geometric shapes usually accompanied by arrows pointing out some

interesting bits. They are often far too complicated to be remembered or useful in the heat

of a real-world business decision. Too much time is spent trying to make sure one has filled

out every box, slot, circle or doo-hickey, resulting in…stuff we already know. Time that

could be better spent making something happen. I come by my aversion to frameworks

honestly, having spent two years as an associate at McKinsey, the aforementioned consulting

company. As author Duff McDonald wrote of McKinsey in his book *The Firm,* "By the end

of the 1980s, the firm required that new recruits learn more than a dozen core analytical

frameworks, ranging from 'the raider's perspective' to return-on-equity trees, business

systems, industry cost curves, value-delivery systems, economic value to the shareholder, and

the strategic game board…The real ball-busters…were heavy on the numbers, from cost of

capital to returns on all manner of investments" (McDonald 2013, 143-144). He got that

right, except it was over 50 frameworks – we had a whole *book* of frameworks. On the other

hand, frameworks are useful for ensuring that one solves a problem or tells a story in a logical

and complete fashion. Some of them also help identify key decision-making factors. I have

found that the most useful frameworks in a business context are simple, easy to remember,

and flexible.

So here I am at Ontario College of Art and Design University ("OCAD U") writing

a thesis on innovation and looking for a framework I can stand. I searched the literature for

recent innovation frameworks, so that I could contrast them with those of more established

scholars such as Christensen. Most recently, my former HBS professor Linda Hill and her

co-authors have created a new framework for building an innovative culture. It appealed to

me for its simplicity, and because the elements of the framework were illustrated with real

world stories. According to these authors, in order to build an innovative organization,

leaders must create an environment in which employees are both *willing* and *able* to innovate

(Hill et al. 2014, 69-70). To create an organization that is *willing* to innovate, a company

needs a purpose, shared values, and rules of engagement.   To build an organization *able* to

innovate requires three capabilities: creative abrasion (creating a multitude of options

through debate and discussion), creative agility (experimenting quickly and changing

directions as required), and creative resolution (the ability to make integrative decisions that

build on the options rather than "either or" decisions that simply pick one) (Hill et al. 2014,

169). Below is my drawing of this framework:

WILLING TO INNOVATE   **ABLE TO INNOVATE**
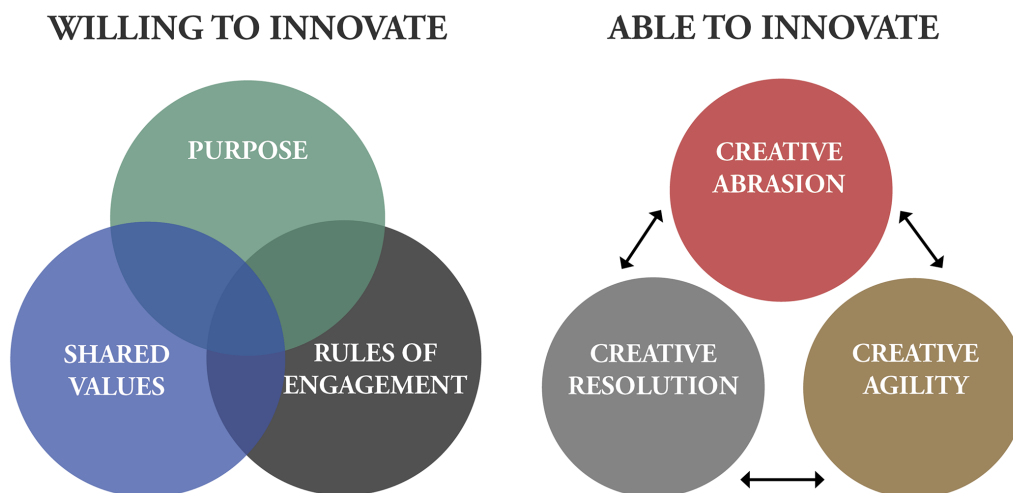
Figure 13 - Author's drawing of Hill et al's Willing and Able framework. (Hill et al., 2014, 192)

This framework is simple and pragmatic enough that I might actually be able to use

it. We'll discuss each element in turn and provide a real-world example to show it in action.

Purpose

Let's review the elements of the "Willing" side of the framework first. A great

example of "purpose" comes from Tim Brown's 2008 article, "Design Thinking." According

to Brown, the *purpose* of India's Aravind Eye Care System (one of the world's largest

providers of eye care) is to eradicate blindness in India, including among the rural poor (T.

Brown, 2008, 90). That is surely a vision that inspires its employees, who provide care to

more than 2 million patients a year, 60% of whom cannot afford to pay.

Shared Values and Rules of Engagement

Hill and her co-authors use Pixar as an example of a company that emphasized "shared values" and "rules of engagement" to create some of the most innovative movie experiences ever. Pixar utilized daily reviews that encouraged individual contributions from all members of the film's team. Pixar had open and non-hierarchical communication (a *shared value*) – anyone could give the director comments about the production (Hill et al. 2014, 28). There was, however, some structure (*rules of engagement*). People were encouraged to innovate, experiment, and fail – but the film's release deadline had to be met, and financial data such as shots per week were tracked religiously. In addition, while all team members were encouraged to make suggestions and participate in debates, the director retained full creative control, making the final decisions (Catmull 2008, 93). However, beyond these guardrails and end goals, structure was used sparingly.

Creative Abrasion

Moving on to the "Able" side of Hill's framework, the need for *creative abrasion*, or rich, diverse ideas competing through discourse and debate (Hill et al. 2014, 121), is well established both by other scholars and by real world examples. Min Basadur, for example, emphasizes the need to create intellectual diversity by ensuring teams have a mix of generators, conceptualizers, optimizers, and implementers (Basadur, Gelade, and Basadur 2014, 82-83).   (You may not have heard of this work unless you enjoy perusing scholarly

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databases for gripping titles such as

Creative Problem-Solving Process Styles,

Cognitive Work Demands, and

Organizational Adaptability).

     Basadur et al posited that

organizations that understand this

Creative Problem Solving Profile

("CPSP") framework would place

greater value on diversity of thought in

their organizations, which allows the

IMPLEMENTING:
- Creating options and
actions that get results
- Gaining acceptance for
implementing change

GENERATING:
- Creating options in the
form of new problems
to be solved or new
opportunities to be
capitalized on

OPTIMIZING:
- Creating options and
a plan for implementing
an idea in practice

CONCEPTUALIZING:
- Creating options in the
form of ideas for solving
problems or addressing
opportunities

Figure 14 – Author's drawing of Basadur's CPSP framework. (Basadur et al., 2014, 82)

"creative abrasion" Hill refers to in her framework. Other scholars noting the importance of

constructive conflict between diverse individuals include Bruce Tuckman, who produced the

Forming, Storming, Norming, and Performing framework (Tuckman and Jensen 1977, 43)

to describe effective team dynamics.

     Beyond academic frameworks, there are many stories from digital history that

demonstrate the importance of intellectual and personality diversity in fostering creative

abrasion. For example, in his book *The Innovators*, Walter Isaacson (2014, 268-281) writes

about Stewart Brand, an oddball event producer who took LSD and helped create the hippie

counterculture in California in the late 60s. He produced the 1966 Trips Festival, hosted by

Ken Kesey, founder of a hippie commune who was out on bail after a drug bust. It was a combination of drugs, music (Big Brother and the Holding Company, the Grateful Dead) and technology (strobe lights, sci-fi movies, gadgets, and pinball). That got the attention of Douglas Engelbart, a smart, monotone engineer who "sometimes gave the impression he had not been born on this planet" (Isaacson 2014, 275). Engelbart ran the Augmentation Research Center (studying augmented intelligence) just down the street from one of Brand's ventures. They teamed up in 1968 for a demo of Engelbart's "oNLine System", a precursor to the personal computer ("PC") with its mouse, graphics display, document sharing, and email capabilities. The "Mother of all Demos" featured Engelbart's computer display projected on a large screen at a computer conference. Brand worked the cameras and selected images for display on Engelbart's computer from 30 miles away, connected via leased microwave lines. They collaborated remotely to create and edit a document, embed audio and video, and create hypertext links. The demo was a success and kickstarted the development of the PC. Ken Kesey was even impressed, noting that the personal computer was "the next thing after acid." (Isaacson 2014, 281)

Creative abrasion among team members with diverse skill sets and personalities is necessary for innovation. It helps to have a few brainy nerds with questionable personalities. It helps to have an oddball or two. Drugs may or may not be necessary or condoned by the human resources department.

Creative Agility

Creative agility is the ability to experiment and use the data from those experiments to pivot (shift directions) when needed. Tim Brown, CEO of award-winning global design firm IDEO, promotes this concept using the term "ideation," (T. Brown 2008, 88-89) meaning that designers and makers should rapidly prototype new ideas and get those prototypes out into the hands of real users. Data and observations of potential customers actually using the prototypes can often produce "pivots," or changes in direction as use in the "field" is often different than use in the "lab." Scholar Peter Senge, author of *The Fifth Discipline: The Art and Practice of the Learning Organization,* supports the gathering of data from real-world experiments. According to Senge, the discipline of "mental models" is to discern (or not) the actual data that supports (or not) the generalizations we have about the real world (Senge 1990, 175). If our mental models aren't based on real data, we will produce products or services that don't meet real customer needs.

Examples of real-world pivots abound. Groupon, the site that issues coupons if a certain number of your friends sign up to buy the same product or service, started life as an activism site (i.e., schedule a rally of 100 people in the town hall). Vital Alert Communication, a small underground communications company I ran, started life making voice-to-voice communications gear for mines, subways, and tunnels. After numerous tests in subways and tunnels, we determined that text-based communication and binary

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communications (yes/no, on/off) were much more reliable underground, and began

developing products that emphasized data communication over voice.

Creative Resolution

Hill and her co-authors describe *creative resolution* as integrating ideas to create a

solution that is better than the alternatives on the table. Roger Martin, former Dean of the

Rotman School of Business at the University of Toronto, is often quoted on this topic. He

describes the "opposable mind," which he defines as the ability to hold two conflicting ideas

in a constructive tension that allows the synthesis of new and superior ideas. The solution

contains elements of the opposing ideas but is superior to each (Martin 2009, 6).

The creation of ARPAnet, the predecessor to the internet, provides a real-world

example of the power of creative resolution and opposable minds. (ARPA is the Defense

Department's Advanced Research Projects Agency). As described by Walter Isaacson in his

book, *The Innovators* (2014, 235-237), Larry Roberts and Bob Taylor invited their fellow

ARPA researchers to a meeting in 1967, where Roberts described two possibilities for

creating a shared network of research computers (at the time, computers were only available

at large government and research institutions, and these computers were not connected to

one another). One was a hub and spoke system, with a centralized "big node" that routed

information, and one was simply a web of equally powerful, decentralized nodes connected

to each other.   Responding to Roberts' preferred decentralized network scenario, the other

researchers objected that their large computers were already at capacity and could not afford

the additional "load" of routing information to the right place. Wes Clark, a Lincoln

Laboratory researcher, developed an idea superior to either of the alternatives - use of a

router. A router routes data between nodes on a network, based on a standard, pre-

established protocol. It did the work of moving data between the large research computers,

which were then able to both retain their full capacity AND be connected to other

computers in a decentralized network. This was clearly superior to either of the two

alternative choices presented to the researchers.

Innovation Failures

The previous paragraphs described groups that were successful in creating the

willingness and ability to innovate. What happens if an organization does not foster this

willingness and ability to innovate? Patrick Lencioni describes it well in his book, *The Five*

Dysfunctions of a Team. He states that the five dysfunctions include a lack of trust, fear of

conflict, lack of commitment, avoidance of accountability, and inattention to results

(Lencioni 2014, par. 3). A fear of conflict prevents *creative abrasion*, and lack of trust and

commitment prevent *creative resolution*. Avoidance of accountability and inattention to

results lead to a hesitance to pivot (*creative agility*) when results indicate a need to do so.

According to Lencioni, the upshot of the five dysfunctions is a team dominated by status and

ego, pursuing ambiguous goals to low standards (and thus results), in an environment of artificial harmony. In short, a team treading water to maintain an unsatisfactory status quo.

The literature is also full of high profile examples of companies that failed to innovate. Jim Collins, in his book, *How the Mighty Fail* (2009, 28-29) cites Motorola, which in 1995 introduced the StarTac phone, the smallest such phone to date, with a cool clamshell design. The only trouble was, it was analog, and carriers were beginning to demand digital.   But Motorola, the market leader, thought that its millions of analog customers couldn't be wrong. They tried to dictate to carriers how much of their sales had to be Motorola. Carriers resisted this arrogance, and Motorola's share fell from nearly 50% to just 17% by 1999 (Collins 2009, 29). Clay Christensen, in his book *The Innovator's Solution* (2003, 35-39), describes how integrated steel giants such as Bethlehem Steel were disrupted by steel mini-mills. The mini-mills required considerably less capital investment (they simply melted existing scrap metal in electric arc furnaces). Mini-mill steel was lower quality and also 20% lower cost, so mini-mills initially targeted the construction rebar (i.e., steel bars that reinforce concrete) market, where fit and finish were less important. The steel giants did not react, as this market was their lowest margin business. Bethlehem Steel closed its last structural beam plant in 1995, conceding to the minimills (Christensen 1997, 91).

The literature also has stories of once innovative large brands that lost their innovation edge, and came back. Crest, for example, was the market leader in toothpaste

until the late 1990s, when it dropped to the #2 slot behind Colgate. It stormed back in the

mid-2000s with innovations in teeth whitening and oral health (B. Brown and Anthony

2011, par. 20). There is also, of course, Apple, which emerged from near bankruptcy to

unleash a torrent of innovative "i-products" when Steve Jobs returned to the company after a

12-year absence in 1997.

From Economics to Ecosystem – Role of the Leader

Apple is an example of an organization in which the leader had a disproportionate

impact on the ability of an organization to innovate. What *is* the role of the leader in

creating an organization that is willing and able to innovate? During the conference on

Leadership and Innovation held in Toronto in November 2014, I asked Dr. Hill, the co-

author of *Collective Genius*, what had been the biggest change in thinking about innovation

in the last 10 years. She said, "It is the shift from economics to ecosystem. 20-30 years ago,

most of the people studying innovation were economists – like Christensen. They were

interested in the economic impact of innovation. Today, it is much more about how to

create the ecosystem and the culture that supports innovation." Leaders seeking to establish

a culture in which employees are willing to innovate tend to "lead from behind," as Hill puts

it. Vineet Nayar, CEO of HCL Industries (an Indian high tech company which successfully

transitioned from hardware to services) from 2008-2013, says:

> Leaders must avoid the urge to answer every question or provide a solution to every problem. Instead you must start asking questions, seeing others as the source of [innovation] …The greatest impact is that it unleashes the power of the many and loosens the stranglehold of the few, thus increasing the speed and quality of innovation and decision making...every day. (Hill et al. 2014, 65)

Stephen Covey, author of *Principle-Centered Leadership*, described this concept as "self-directed work teams" (Covey 1996, par. 3). Employees on these teams are empowered and expected to solve problems, someway, somehow, and thus are both engaged and innovative.

Christensen notes that changes in leadership can result in markedly different innovation results, simply based on different problem-solving approaches employed by those leaders. For example, he states that from 1981-1999, Sony did not launch one new disruptive business (Christensen 2003, 79-80). In the early 1980s, founder Akio Morita withdrew from day-to-day management of the company to become more active in politics. In his place, the company brought in MBAs with sophisticated analytical tools. These analytical MBAs were able to identify some incremental opportunities in existing markets (i.e., sustaining innovations), but lacked the disruptive insights from observation and rapid prototyping that Morita had championed (Christensen 2003, 79-80).

Leaders matter. The role of the leader in a time of exponential acceleration of innovation is to create an environment in which all team members are willing and able to innovate. And that requires the leader to have an opposable mind, something that is not yet

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a staple of MBA training. Rather than simply choosing between option A or option B based

on an analysis of the current data, leaders of innovation must seek superior alternatives that

combine elements of both options. They also cannot simply assume existing constraints

(such as battery life, for example) will hold for long in the exponential acceleration of the

digital age.

Curry & Hodgson's Three Horizons Framework

There's another framework we need, in addition to "Willing and Able", in order to

apply the Dell case to innovation studies. And yes, I've shared my general point of view on

frameworks. But this framework is useful for telling stories over time – in this case, the story

of Dell's rise, fall, and possible return.

As we will see in Chapter 5, I used Curry & Hodgson's Three Horizons method to

integrate the rich interview and field trip data with available literature and signals about

future technologies.   This framework, shown in Figure 15, helps scenario builders construct

a series of plausible futures using three time horizons (Curry and Hodgson 2008, 1).
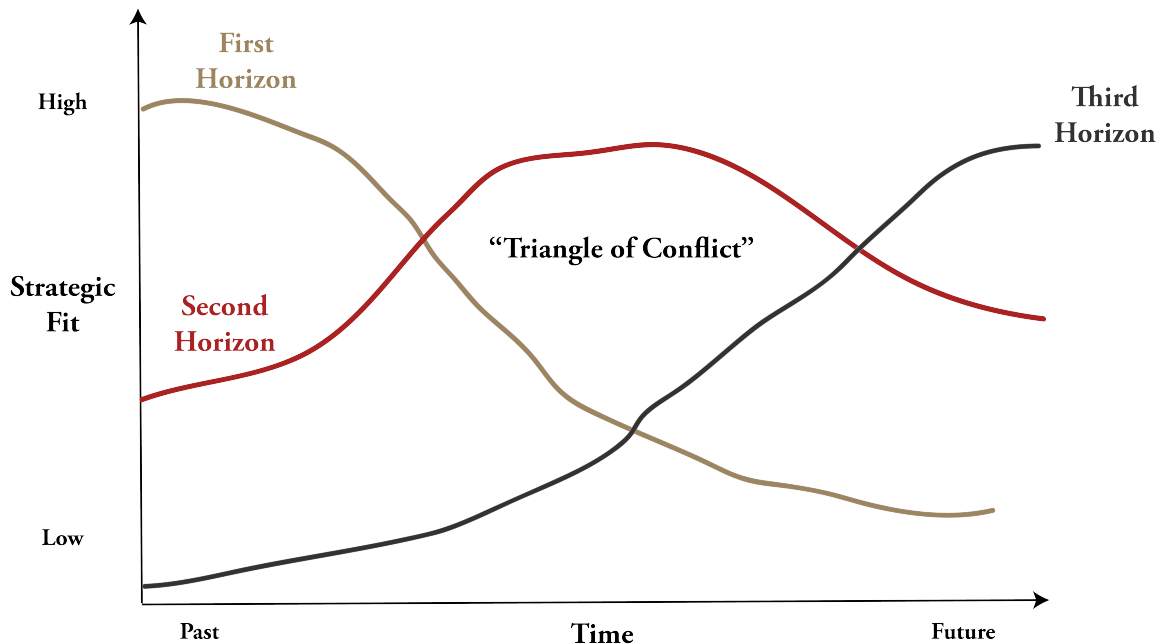
Figure 15 - Author's drawing of Curry & Hodgson's Three Horizons scheme. (Curry & Hodgson, 2008, 2)

The First Horizon represents the older system, technology, or culture, which has lost

fit as the world around it has changed. The Third Horizon represents the future system,

culture, or technology, which is a more appropriate response to the changing external

environment. There are "weak signals" of the elements of the Third Horizon in the present

day. The Second Horizon represents an intermediate space, typically characterized by

conflict and turmoil. In order to resolve the conflicts of the Second Horizon, managers must

"see beyond (the) current system, motivated by vision, values, and beliefs" (Hodgson &

Sharpe, 2007, 140).   The Three Horizons model can be used to describe the present (First

Horizon) and the future (Second and Third Horizons), as described in "Seeing in Multiple

Horizons: Connecting Futures to Strategy," by Andrew Curry and Anthony Hodgson

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(Curry and Hodgson 2008, 2-3), or it can be used to describe the past, present, and future (Norman 2013, 15). I have chosen the latter approach, because it is critical to understand the culture that made Dell one of the world's most successful companies in the 1990s in order to understand why that risk-taker's culture is so important to its future.

Before moving from frameworks to the Dell case study, it's important to understand why large companies like Dell must innovate in the digital age. There are 125 million small and medium enterprises in the world (Kushnir, Mirmulstein, and Ramalho 2010, par. 1). Can't they carry the innovation load, and aren't they more likely to be less bureaucratic and thus more innovative? Why is it worth studying whether innovation can be renewed in large organizations, particularly Dell?

Chapter 4

Research Question

and Methods

Chapter Four – Research Question and Methods

Where Does Innovation Go to Die?

"This is the time for (IBM CEO Ginny) Rometty to prove wrong the thesis that large enterprises have no chance of surviving through innovation," says Yale's Jeffrey Sonnenfeld, in a recent article in Fortune magazine (Lev-Ram 2014, par. 13). Scott Anthony, of the Harvard Business Review, notes, "Most people continue to believe big companies are where innovation goes to die" (Anthony 2014, par. 12). As early as 1934, economist Joseph Schumpeter said,

> …new combinations are, as a rule, embodied, as it were, in new firms which generally do not arise out of the old ones but start producing beside them; to keep to the example already chosen, in general it is not the owner of stage-coaches who builds railroads. (Schumpeter 1934, 66)

When start-ups like Instagram (2010) and Foursquare (2009) can appear and grow to over 1 million users in less than 24 months (Shontell, 2012), lumbering giants like Dell, GM, and IBM seem positively anachronistic, throwbacks to an earlier time before mobile phones and social media put the customer in control, turned millions into content creators, and spawned 13 year old global pop stars from viral YouTube videos. My thesis focuses on one of these giants, Dell, and answers the research question:

"What caused Dell's growth rate and stock price to decline in the mid-2000s, and how might Dell thrive once again?"

But who cares? Why does it matter? It is worthwhile to assess whether large US-based corporations such as Dell can survive, and indeed, thrive, through innovation because a) innovation is vital to prosperity, and North America in particular has fallen behind, b) large corporations have access to the capital needed to invest in innovation, and c) large corporations have a *higher* tolerance for risk than smaller companies, simply because they have more financial assets with which to absorb failure(s).

Economic Importance of Innovation

Innovation is vital to prosperity. Nobel Laureate Sir Ernest Rutherford once said, "Gentlemen, we have run out of money. It is time to start thinking" (Augustine 2010, vii). Schumpeter, in his book, *Capitalism, Socialism, and Democracy*, identified "creative destruction," or innovation that both creates new companies and destroys old ones, as the driving force of capitalism (Schumpeter 1950, 81-86). According to Schumpeter, this creative destruction causes continuous progress and improves standards of living.

More modern scholars, economists, and business leaders concur with Schumpeter. According to a 2005 report called *Rising Above the Gathering Storm*, prepared for the Presidents of the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, 85% of the increase in per capita income in the US can be attributed to disruptive innovation (Augustine 2005, 1). The *Gathering Storm* committee, led by

former Lockheed Martin CEO Norman Augustine, concluded that the primary driver of the future economy and job creation will be innovation, particularly in the sciences and engineering (Augustine 2010, 5). The *Gathering Storm* report goes on to cite several disturbing facts regarding where and how R&D dollars are being invested, notably that a) GE now has the majority of its R&D personnel outside the U.S., b) 77% of global firms planning to build R&D centers will do so in China or India, and c) U.S. consumers spend more on potato chips than the U.S. government spends on energy R&D (Augustine 2010, 6-11).

According to Dr. Christensen, innovation must be of the disruptive or "market-creating" type in order to create jobs. Disruptive innovations create new classes of customers because costs or complexity are driven down so radically that an entirely new class of customers can afford the product (i.e., when computing went from "mainframes at millions of dollars" to "desktop computers for $2,000," millions of consumers bought PCs). He states that sustaining innovations have a relatively minor impact on jobs (because existing customers simply buy the new product rather than the old product). Efficiency innovations destroy jobs, because they improve processes and worker productivity, meaning fewer workers are needed to produce the same goods (Christensen, 2014, par. 11-14).

If the U.S. does not create a climate that encourages disruptive innovation, I believe it will not raise the standard of living for the average American, because it will not create

high-wage jobs. The World Economic Forum ("WEF") recently released its Global

Competitiveness Report for 2014-2015, in which the U.S. ranked 3rd, after sliding from 1st

place in 2009 to 7th place in 2012 (Kolawole, 2012). In that report, the WEF describes the

importance of innovation to raising standards of living as follows:

> Although substantial gains can be obtained by improving institutions, building
> infrastructure, reducing macroeconomic instability, or improving human capital, all
> these factors eventually run into diminishing returns. The same is true for the
> efficiency of the labor, financial, and goods markets. In the long run, standards of
> living can be largely enhanced by technological innovation. ("Methodology: The 12
> pillars of competitiveness," 2015, par. 29)

As noted by HBS professors Michael Porter and Jan Rivkin in their report, *An*

Economy Doing Half Its Job, the U.S. economy is recovering, in *some* respects, from the

financial crisis of 2008-2009. Corporate profits are rising, as are U.S. stock markets and

initial public offering ("IPO") proceeds. U.S unemployment now stands at 5.7%, down

from peak unemployment of 10 percent in late 2009 (Meyer 2015, par. 11), but wages have

not improved, and the labor force participation rate has declined. As Janet Yellen, Federal

Reserve Chair, noted on March 18, 2015:

> …the labor force participation rate is lower than most estimates of its trend, and
> wage growth remains sluggish, suggesting that some cyclical weakness persists.
> (Meyer 2015, par. 13)

Yellen noted that the U-6 unemployment rate of 11.3% is at an "abnormally high

level" and "signifies a weakness that would be good to address" (Meyer, 2015, par. 9). U-6 is

a broader measure of unemployment, and includes discouraged workers as well as those

working part-time when they would like to be working full-time (Meyer 2015, par. 5).

Finally, while the unemployment rate has declined, it took over 6 years for the number of

jobs to return to their 2007 peak (J. Rivkin & Porter, 2014, 3).   Discouraged workers and a

declining labor participation rate are serious problems for world economies given the need to

support the bulge of retiring Baby Boomers (De Wulf, 2012) and fund their health care

costs.

The new jobs are not distributed equally among all sectors of the population. In

addition, many, particularly the young, are "mal-employed", a term used by Rivkin and

Porter to describe those who hold jobs that do not require the knowledge and skills

developed in college (J. Rivkin & Porter, 2014, 24).
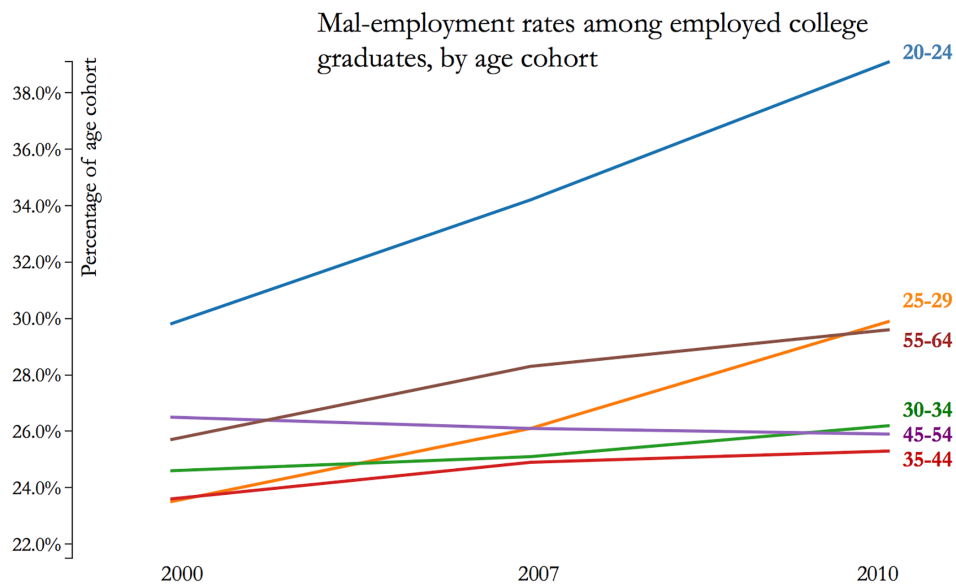
Figure 16 - "Mal-employment" rates by age cohort. Source: (Fogg & Harrington, 2011, 57) (J. Rivkin & Porter, 2014, 25)

Household incomes have also stagnated. After adjusting for inflation, the average

hourly wage for non-management private sector jobs has approximately the same purchasing

power as it did in 1979 (Desilver, 2014, 5). The distribution of incomes has also changed.

Among the bottom 10% of income earners in the U.S., weekly wages have fallen almost 4%

since 2000. For the top tier of earners, wages have risen 9.7% (Desilver, 2014). Why the

disparity in results between the income tiers, and between rising corporate profits and

stagnant household incomes? Christensen argues that it is because we are focused on cost-

reducing efficiency innovation rather than job-creating disruptive innovation. He states:

> Our current economy, however, has gone off of the rails in large part because we are
> focused almost entirely on efficiency innovations—on streamlining and wringing
> bottom line savings and additional profits out of our existing organizations…As long
> as this continues to happen, we will continue to experience the tremendous chasm
> between capital investment and the creation of meaningful numbers of new jobs and
> especially of highly specialized jobs. (Nisen, 2012, par. 4-5)

I believe that if the US wishes to create high-wage jobs and raise the standard of living for all

Americans, not just a few, it must foster job-creating disruptive innovation.

Large Corporations and the Propensity to Innovate

Large corporations have access to the capital needed to invest in innovation. This

point was underlined by the near-catastrophic events of 2008-2009. In 2008, the global

economy experienced a 100-year flood. The Great Recession of 2008-2009 was heralded by

the unprecedented failure of Wall Street firm Lehman Brothers. That led to a one day loss

of over 500 points in the Dow Jones Industrial Average, which presaged a brutal decline of

almost 50% in major stock averages over the next few months. Unemployment climbed to

10%, and the US government had to bail out home lenders Fannie Mae and Freddie Mac

(Hausman and Johnston 2014, 2720). The Great Recession wiped out retirement dreams.

It also caused an increase in risk aversion among corporations, which began hoarding cash

(Johnston, 2012, 8). Banks tightened credit, and U.S. venture capitalists ("VC") reduced

financing by 40% following the collapse, from $32.1 billion to $20.4 billion.

US Venture Capital Investments
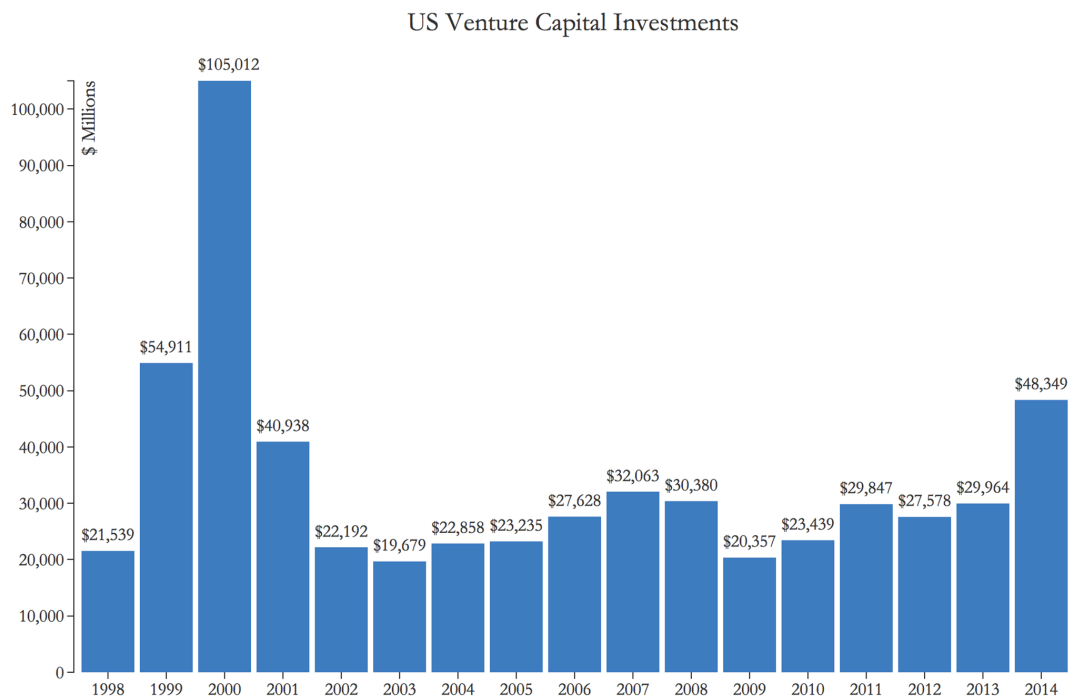
Figure 17 - US venture capital investments by year, 1998-2014. (PriceWaterhouseCoopers, 2014)

Large corporations, by contrast, have significant amounts of cash waiting to be deployed. Compare the balance sheets of America's large tech giants to the total U.S. venture investment of $30 billion in 2013 (the last year for which Dell's cash balance is available). Microsoft had $84 billion in cash in 2013, Google had $59 billion, Cisco had $47 billion, Apple had $41 billion, and Dell had $12 billion (Cherney 2014, 11). With interest rates now near zero, debt financing is also abundant and cheap. Corporations are awash in capital (Bain, 2012, 17) and have greater *capacity* to innovate than small firms.

Scholars have found that large companies also have a *higher tolerance for risk* than small companies. This is counterintuitive to anyone who has worked in these large organizations.   However, I believe it reflects the more significant assets large firms have, not a more entrepreneurial attitude among executives managing large core businesses. If Corporation X has $50 million in cash and Corporation Y has $250,000, I argue that Corporation X's managers will be more likely to invest $100,000 in a new venture, simply because one mistake is not "life threatening" to that corporation. Research supports this view. For example, Michael Walls and James Dyer found risk tolerance increases with size, but at a decreasing rate (Walls and Dyer 1996, 1007). They note that larger firms have more resources to absorb failure, learn from experiments, perfect the innovations of smaller companies, and pivot in new directions. Ronald Howard found that corporate risk tolerance grew in proportion to financial measures such as sales and income (Howard 1988, 689-690).

Other scholars, however, note that there are certain factors that hold big businesses

back from innovation once they hit a certain scale. Robert Sutton and Huggy Rao, in their

2014 book *Scaling Up Excellence*, cite, for example, the "replica trap," (Sutton and Rao 2014,

37) in which large companies assume that an innovation in one location will work across the

globe. Sutton and Rao, like Linda Hill, advocate the use of "guardrails" as a way to provide

local leaders with flexibility to innovate while staying within key constraints. They also cite

Jet Blue as an example of how the actions of a few committed employees ("heroes") to

delight customers does not scale (Sutton and Rao 2014, 72-78), as JetBlue found out when

hundreds were stuck on the tarmac on Valentine's Day 2007 (flight-by-flight interventions

to get planes airborne no longer worked once JetBlue had 800 flights a day). Large

organizations also tend to develop bureaucracies, as is well known. Sutton and Rao state,

> As organizations and programs expand and age, they often propagate ever more
> convoluted procedures and processes. Ballooning brigades of administrators must
> justify their existence. So they busy themselves by writing more rules and requiring
> colleagues to jump through more hoops – stealing bandwidth, effort, and willpower
> from more essential work. (Sutton and Rao 2014, 105)

Jim Collins (2009, 63 and 81), in *How the Mighty Fall,* also describes an obsession with

growth which sets up a vicious cycle of expectations (and I would add, a lack of time to

experiment and innovate), a related declining proportion of the right people in key seats,

problematic leader successions, and an obsession with reorganization and internal issues as

obstacles that companies face as they try to scale up innovation.

In summary, large companies have the power to make significant changes by applying

their considerable human and financial capital to global problems, if they can navigate

through the scaling challenges that Collins, Sutton, and Rao describe. Large firms are more

resilient than smaller firms, for whom one mistake can be financially fatal. As Scott Anthony

notes, "Big companies have the fulcrum. Innovation can be their lever" (Anthony 2014, par.

15). That's why studying how large organizations can regain their innovation edge matters.

Can Dell Come Back to Innovate Again?

But why Dell, in particular? Because Dell, once known for one of the most

significant innovations in marketing, has been given up for dead by some industry watchers.

In 1993, BusinessWeek touted Michael Dell as one of the industry's most innovative

marketers:

> Dell's formula is elegantly direct: He has cut out the dealers and distributors, designs
> and assembles most of his PCs from off-the-shelf components, and runs a no-frills
> operation whose main focus is customer service. That model has won him kudos
> from across the industry. He may not have the high-tech vision of a Bill Gates or a
> Steve Jobs, but "it is probably true that Michael is the most innovative guy for
> marketing computers in this decade," says Philippe Kahn, chairman of software
> maker Borland International Inc. "He's the quintessential American entrepreneur
> that does something everyone says is impossible." (Forest et al. 1993, par. 4)

However, Dell's fortunes shifted dramatically in the mid-2000s. A 2012 Forbes

article was titled, "No End in Sight for Dell's Lost Decade" (Cohan, 2012). The stock

declined by over 50% from 2003 to 2013. Market share dropped from 18% in 2005

(Shilov, 2005, par. 6) to 12% in 2013 (Sacco, 2013, par. 2). One interviewee asked, "How did Dell go from one of the most admired companies in the world to a cocktail party joke?" More importantly, how might it come back?

Research Methods

My own history and experience at Dell has inspired and informed this work. I was employed by Dell from 1992-2005, including 7 years at corporate headquarters in Austin. During this time I developed relationships with employees at all levels of the organization. These relationships benefitted this study, as these (now former) employees were willing to speak openly with me about their experiences to create a partial oral history of Dell.

In an effort to understand Dell's evolution and answer the research question, I used several methods. I first launched a blog, www.techdisrupters.com, in order to help identify former Dell employees who might be willing to talk with me.

Four bodies of literature were then iteratively explored, including innovation and foresight, capital structure and innovation, the digital age, and company cultures. This method helped me understand key innovation and foresight frameworks and identify "real world" examples from digital history with which to illustrate the frameworks. I then conducted field research, namely 10 expert interviews with former Dell employees and partners, as detailed in Appendix C. The recruitment of these individuals was approved by

the university's Ethics Research Board. The approval document is included in Appendix A.

As part of the interview process, participants were asked to sort various cards representing the

drivers of Dell's success in the 90s. This

stack-ranked "card sort" was then

supplemented with other questions. The

interviews yielded key insights and

perspectives that informed my analysis, such

as the impact the pressures of Wall Street had
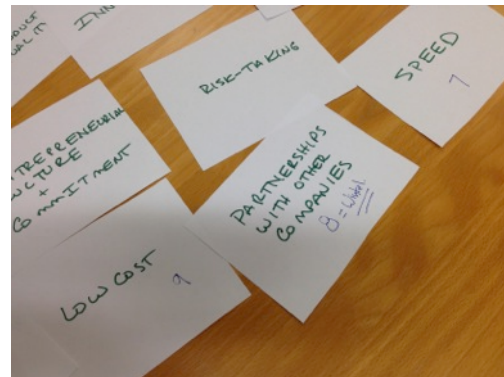
Figure 18 - Card sort.

on the company. Once the interviews were complete, I created visual word clouds of the

interview transcripts. This helped me to identify key themes, which I then reviewed in the

context of Hill's "Willing and Able" framework to identify both success factors and gaps that

impeded Dell's ability to innovate.

I supplemented these interviews with participant observation methods at Dell World

in Austin from November 4-6, 2014, where I participated in discussions with employees and

customers in breakout sessions. This trip was vital in understanding Dell's new product

strategy and emphasis on innovation. Following this trip, I used the Three Horizons

method to identify possible scenarios and possible future options for Dell.

During the course of my thesis work, I developed the Intelligent Gambler©

framework, as discussed further in Chapter 5. This framework helps companies assess

investments in a portfolio of new technologies based on the risk associated with the degree of

difference between the current business and the new business, and also the capital required to

launch the new business.   An interactive d3.js visualization of Dell's acquisitions over time,

arrayed against the Intelligent Gambler© framework, forms the core of my physical

exhibition. This visualization can be viewed at www.heathersimmons.ca/acquisitions.html.

The d3.js software code and related credits for this visualization, as well as for all information

visualizations in this paper, can be found at https://github.com/heathersimmons/ThesisFinal.

The visualizations are supplemented by selected video clips from the interviews, which can

be viewed at http://www.heathersimmons.ca/dell.html.

Chapter 5

Interview Results

and Analysis

Chapter Five – Interview Results and Analysis

Selected quotes from the interviews are included below, along with my analysis. The

analysis is structured according to Curry & Hodgson's Three Horizons model. Summary

conclusions are as follows:

- During Dell's First Horizon (roughly 1984-2000), its success was driven by four

factors: a) the direct business model, b) entrepreneurial culture and commitment, c)

risk-taking, and d) leadership.

- In the Second Horizon (roughly 2001-2012), a combination of a) a leadership shift

and the development of a more risk-averse management tone and b) the pressures of

Wall Street (i.e., being a public company), coupled with an overreliance on the

business model, drove out innovation. This, in turn, caused a lack of timely

investment in new and growing product categories such as mobility.

- Dell's Third Horizon began in 2013, when it went private. Dell has reset its

product strategy to focus on higher growth, higher profit products such as security

and the cloud. In order to build that new product mix quickly, it went on a buying

spree – spending $18 billion on 40 acquisitions in 6 years ("Daily Report: The New

Dell," 2014, par. 4). It has also identified the critical need for innovation and a

return to a more entrepreneurial culture. In short, it has a solid plan to radically remake itself as the world's largest start-up, and now must execute on that plan.

The First Horizon – Four Advantages

According to interviewees, the direct business model, entrepreneurial culture and employee commitment, risk-taking, speed, and execution, and leadership were the most important factors in Dell's success during its First Horizon. These four elements created a seemingly unstoppable machine that marched to the #1 global market share.

The Direct Business Model

Dell's direct business model was one of the most significant sources of advantage, according to interviewees. As Tom Martin, former Vice President of Marketing, noted, "The obvious thing is, Dell had a business model, which led to a structural cost advantage that was mathematically significant. A 10 percent or so cost advantage, in a commodity business, is material, especially when you're purchasing a lot. If you're buying scotch tape, 60 cents vs. 66 cents for a roll at Target does not change the purchase decision. If you are spending $60 million, 10 percent is material. And it was structural, so it was hard to copy – because competitors had other business models, and felt that they had to abandon those models in order to pursue the direct model. And the gap out in cashflow in that transition was too big, so they couldn't, or thought they couldn't, copy it." Bill Sharpe, the former

CEO of Sharpe Blackmore, concurs: "The business model was the #1 driver of success. It was so disruptive. It defied logic. Without the original business model and the disruption it caused, you'd never have had a Dell – you would have never gotten off the ground."

Michael Dell believed strong customer relationships and the free flow of information were the most valuable benefits of the direct model (Payne and Allen 1999, 3). While Dell has shifted its business model strategy to include the channel so that it may effectively target small to mid-size businesses, and other competitors have increased direct sales, Dell still sells about 65% of its products directly (Burke, 2014, par. 6) far more than other competitors.
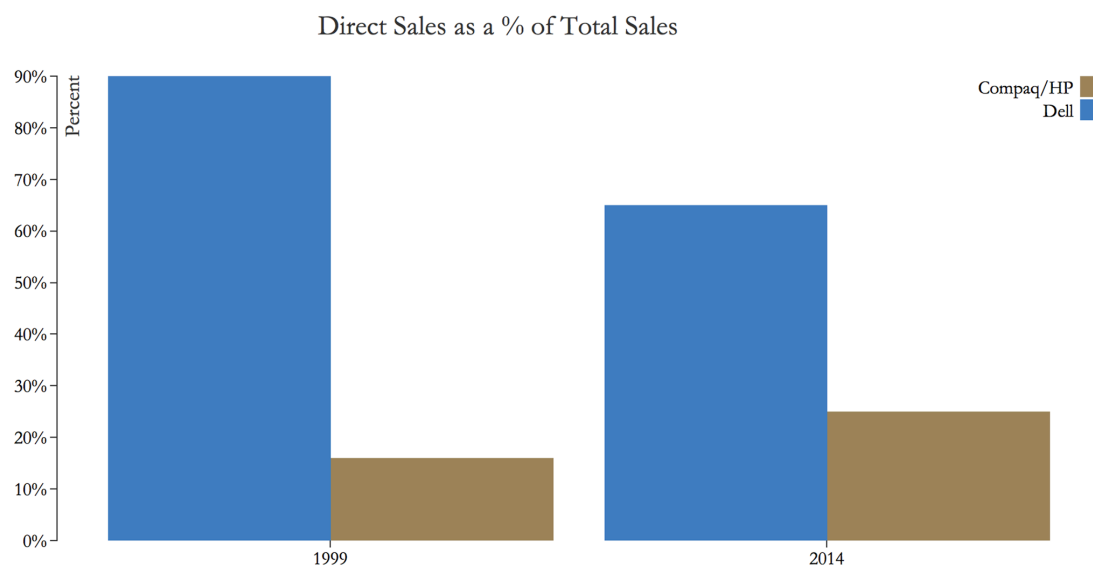
Figure 19 - Direct sales percentage. (Kraemer & Dedrick, 2002, 1)(Lawrentz 2013, par. 6)(Burke 2014, par. 6)(Schultz 1999, par. 23)

Without the direct business model, Dell would not have had a double-digit cost advantage or direct relationships with customers. The model was crucial to Dell's success.

Entrepreneurial Culture and Commitment

Entrepreneurial culture and commitment drove the relentless execution that continually enhanced the advantages of the direct model. In Hill's terms, entrepreneurialism and commitment were two of Dell employees' *shared values*.

As one employee who worked in Corporate Services said, "The direct business model could have been anything – jeans that zip up in the back, whatever. If you have leadership and employee commitment, you can do anything. Each quarter, the Dell leadership team would figure out exactly what we needed to do this quarter, or for the next two quarters. They would make it absolutely clear, we would focus on that and we would just go fucking do it. And that's exactly what would happen. There was leadership, and employee commitment, and people getting it done." Similarly, Indraj Gill, a former marketing director in Asia Pacific and North America, says, "Dell could have been built on selling pink Cadillacs – it was the entrepreneurial culture that made it work. And the leadership. Culture is #1 because that was what it was all about. You don't stay until 3:00 in the morning doing a price move just for money. That level of commitment doesn't happen for just a job. There is a culture of rewarding, intangibly and tangibly, risk-taking. Just do it. We all gave of ourselves.   This culture came from Joel Kocher. It started from the top. The culture wasn't formalized. It was there because of certain individuals."   The relative youth of Dell employees was also a factor in the amount of hours employees were able to put in. In

1993, the average age of a Dell employee was 28, the same age as Michael himself (Forest et al. 1993, par. 21). As one former employee notes, "We just did what it took to get it done. We'd work 12-hour days, and then go to Trudy's for drinks and dancing, then get up at 6 a.m. and do it all again. We worked really hard. And played hard. One of our Christmas parties in the late 80s was held at the Frank Erwin Center, in Austin, a huge arena. We all still remember that party."

THIS IS OUR NIGHT TO PUT ON THE DOG.

On Saturday, December 17th,
the joint will be jumping.
With holiday cheer, laughter and
dancing to the sounds of Duck Soup.
So, join us for the
Dell Computer Corporation Christmas party
from 8:00 until midnight
There'll be cocktails, refreshments,
good food, and other festive treats.
And bring a guest.
Because it wouldn't be Christmas
without our best friends.
The Frank Erwin Center
1701 Red River

Figure 20 - Dell holiday party invitation from the late 80s.

As former marketing and product development director Pamposh Zutshi said, "We were working 16-17 hours a day, and not feeling tired at the end of it. That was due to the employee commitment, and the leadership. There was such alignment between the top levels and the front line employees.   We were very aligned – amazingly aligned, actually." While some might say this was an environment ripe for burnout, entrepreneurial employees knew that "start-ups" required hard work. They loved being the underdogs to the

"corporate suits" just down the road in Houston (Compaq, which had the #1 market share), and knew it would be difficult to get the level of responsibility they had at such a young age, anywhere else in the Fortune 500.

We also used humour to break the tension. During one quarter, when the Americas corporate desktops team was tasked with selling 195,000 desktops (nearly 50% year-on-year growth in a market growing in the low teens), our marketing team repeatedly voiced their concerns that this goal was unattainable. I responded, "My mom could hit that number, if she only came in on Tuesdays. And only worked at lunch hour." Team member Indraj Gill snuck into my office one day after the quarter ended, took a photo from my desk, and came back with some t-shirts for the team. The front and back of that t-shirt looked like this:
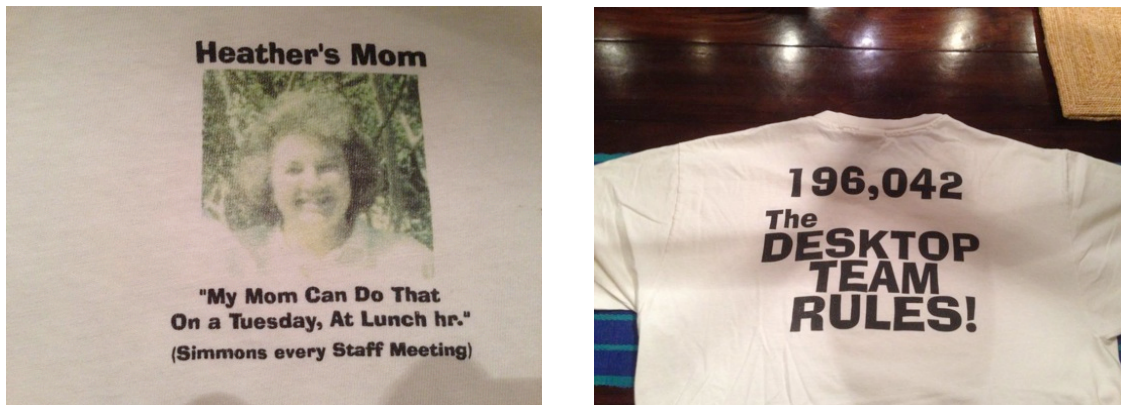
Figure 21 - Front and back of desktop team's t-shirt, mid-90s.

Winning also inspired a lot of hard work.

A Corporate Services director who worked at Dell in the early 2000s also notes that

this level of employee commitment was not driven purely by financial incentives. She says,

"If I were hiring today, I'd look for people with a bias towards action, who were

collaborative, and could learn on the fly. They have to have that commitment, and that is

such a tough thing to test for. A lot of people are just looking for the next rung up, the next

job, the next stock options. Dell was successful because people believed in it. People focused

more on their jobs than the stock options. There was a difference, because the people that

came in, the strategic guys, they all said, what can you do for me in stock options? And

people like (names a number of engineers who had been there since the 90s), were the guys

that didn't really care about that. And they were the guys working 16 to 18-hour days."

In sum, Dell's entrepreneurial culture included *shared values* of commitment, a bias

towards action, and clear communication. Employees were aligned around a common

purpose: to topple Compaq for the #1 market share. This helped create an environment in

which employees were *willing* to innovate.

Risk-taking, Speed, and Execution

Risk-taking, speed and execution were also important elements in Dell's success.

According to interview participants, part of this was driven by the company's non-

hierarchical management structure, and part of it was ingrained in the people Dell hired,

who preferred to beg forgiveness rather than ask permission in the early days. A former

director of operations described the culture in the early 90s as, "Complete cowboy

management. I didn't have to talk to my boss about anything, because Michael was always

in my office. It was ready, fire, aim. That worked where you had the right people." Or as

an operations manager who was hired in the 80s put it, "The entire North American

materials planning team at the time was just a few people. The materials and production

planning teams would get together every morning, and figure out what parts we had on hand

and what we could get hold of that morning. Then, we'd figure out what we could build,

and tell the sales guys to go sell that. You just figured it out, and you never asked permission

in the beginning. Then, when we did start to get some structure, there was so much trust

between the bosses and the workers. Approvals were fast." (Basadur might observe that Dell

had an abundance of implementers in the early days).

This rapid-fire execution was highly data-driven, which created some guardrails or

rules of engagement while allowing the company to pivot quickly (*creative agility*). Dell had

an advantage in this area – because it sold direct, it had data about what its customers

bought, how many times they called, what ads they responded to, and how often their

machines broke. As Bill Sharpe says, "Dell was doing big data way before everyone else, and

that was an advantage. We started building an analytical model with feeds from Dell's call

center that tracked variables like spend, region, colour, ad placement, and the like, and then

ran a regression that predicted the number of phone calls you'd get. This allowed us to

quickly identify what was working and not, and constantly refine and redeploy the budget.

We were at least 10 years ahead of our time on Big Data. The critical thing was, it was

highly, highly actionable. And the competition literally could not keep up."

In the early days, partners such as Bill Sharpe also noted the company's willingness to

take risks (a *shared value*): "A lot of other clients go on autopilot – i.e., 'let's run TV for 13

weeks and then get ready for spring season. ' They are not out there actively saying 'what

can we do to change things?' And so what happened was, Dell significantly unbalanced the

competition. The competition was too legacy bound, too enterprise bound, and they had no

analytics. All they started to do was follow what we were doing. IBM started running ads

that looked virtually the same. So we wrote the president of IBM Canada a letter saying,

'You know what, we can save you a lot of money. Just have us do your ads, because we have

all the templates, and your ads are so similar to ours. You won't have to pay your expensive

agency.' We never got a response."

One example of this risk-taking and related speed of execution was the company's

handling of the Intel floating point unit crisis of 1994.   I was 31, and had just been

promoted to marketing director for North American corporate desktops, Dell's largest

product business. I had uncharacteristically decided to actually take the entire Thanksgiving

holiday off. (Within about 6 months of my joining Dell, my workaholism was legendary, as

shown in this Powerpoint presentation slide that my boss, Tom Martin, jokingly put up in

April 1993, ostensibly to explain how marketing projects would be resourced):
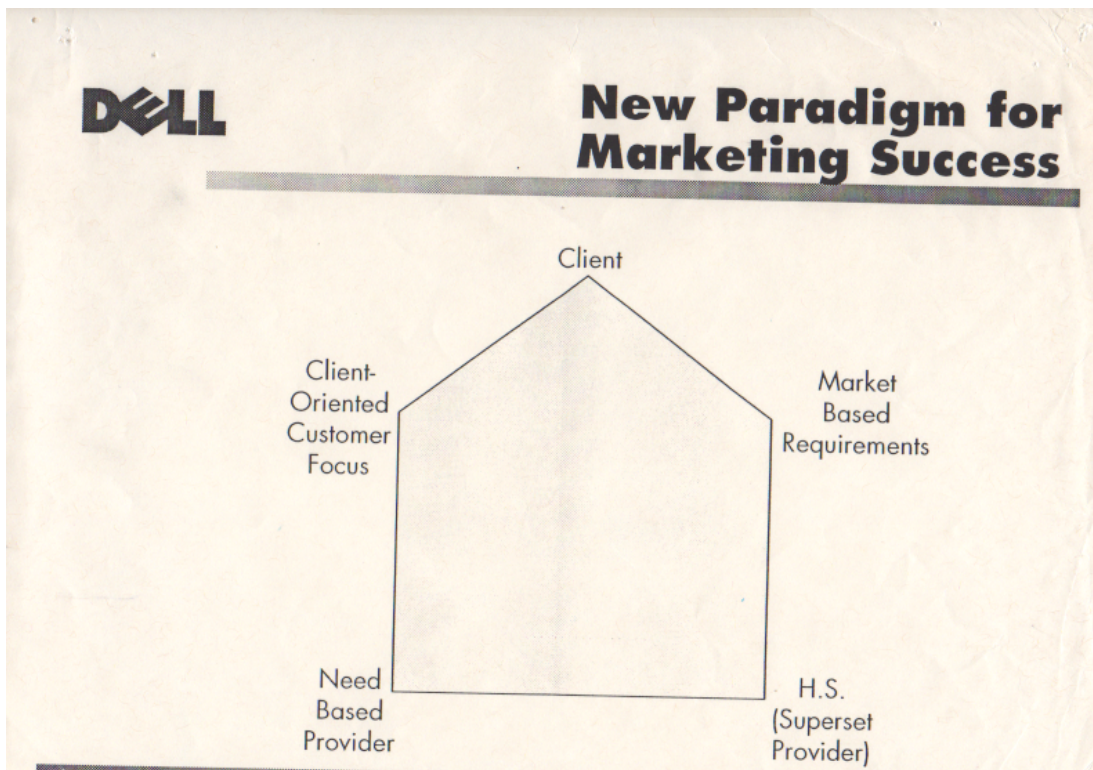
Figure 22 - Tom Martin's presentation to the marketing group, April 1993.

I'd driven 3 hours from Austin to Dallas to have dinner with a friend and was just

sitting down to eat my turkey dinner when my phone rang.   It was Tom, explaining that

there was a crisis associated with Intel and that he needed me to come back to Austin that

very day. The New York Times had just run an article detailing how the Pentium chip

miscalculated very large numbers (Markoff 2014, 2). The flaw affected all of the millions of

Pentium computers already shipped. Dell was the leader in Pentium chip shipments. It was

the only time I'd ever heard Tom sound worried. Intel, a $10 billion company at the time,

would eventually take a $475 million charge to earnings, the equivalent of half a year's R&D

budget, related to the crisis (Pandya and Shell 2005, 5).

That evening at 6 pm I was in his office in Austin, and we spent 4 hours discussing a

possible plan of attack. The next morning, about 15 Dell employees, including me, a

director of operations, and Jeff Clarke (then director of desktop engineering and now Vice-

Chairman of Dell), met in a conference room.   Whenever we were gathered in a room

together, it usually meant something serious had hit the fan. The former director of

operations described why the three of us were in the room for most major crises of the 90s:

"We shared a common trait – we could see the solution to a problem. 'Houston, we have a

problem.' We didn't need to think about it for a long time – just do it.   Dell was lucky

from that standpoint – it had people who could look at big problems, and say the solution is

this and this – and if we execute to that, we'll be alright. Dell let that talent rise."

In Basadur's terms, the problem had found us. It was time to generate ideas, evaluate

alternatives, and plan – at light speed. I grabbed a whiteboard marker, and started scribbling

ideas as people threw them out. About 3 hours later, we had figured out that the key was,

first, to educate customers. This error only affected those doing very complex calculations,

such as extremely precise science and engineering applications (Markoff 2014, 5). The

typical customer would never see it. Second, we would provide those customers who

believed they were affected with a field-replaceable chip module. Those customers affected

by the flaw were likely to be technically sophisticated enough to replace the chip module

themselves. This would save considerably on the cost of shipping whole units from the

customer to Dell and back. Third, for customers unable to swap out the chipset themselves

but still concerned about the impact of the error, we would ship the computer to a Dell

facility, make the repair in the facility, and ship it back to customers.

With those decisions made, I suggested to the team that our top priority had to be

running the numbers so that we could size the financial impact and put it in front of Mort

Topfer, Dell's Vice-Chairman, for approval. At that point, an experienced manager (whom I

did not yet know) raised his hand and politely but firmly said, "Excuse me, Heather. With

all due respect, running the numbers to get Mort's approval is not our top priority. I have

hundreds of tech support reps on the phones. And they are getting a thousand calls a day

about this problem. They cannot just shit an answer. We have to tell them what to say."

And thus was I introduced to the extremely colorful and usually correct Director of

Technical Support, Steve Smith, a two-time Purple Heart in Vietnam who looked out for his

people and commanded the respect of all he led. Steve was right, and his direction would

prove to be critical in Dell's handling of the crisis.   Dell was one of the first to have a

response for customers. Those customers were particularly panicked since Intel insisted,

right up until December 20, 1994 (Emery, 1996), that the flaw was minor and they would

only replace chipsets, at their discretion, once they (Intel) had interviewed customers to determine if they actually needed such a replacement. This was even after IBM had deemed the problem serious enough that it halted all shipments of computers with Pentium-based processors on December 12, 1994 (Emery, 1996).

But the question was, what were we actually going to tell the reps to say? That would impact the financials, and vice versa. Fortunately, Kellie Leonard, a member of the public relations ("PR") team who looked so young I was sure she was an intern, volunteered to write the scripts and craft any messages for the media. On day one, Kellie produced the simplest of messages, which was that Dell would take care of their customers, including replacing their chipsets if customers so desired. This message did a lot to calm the frenzy of customers, who weren't interested in Intel's description of the problem and simply wanted a correct chip in place of the flawed one they had. The only trouble was, Intel at the time had not committed *any* dollars to help manufacturers such as Dell fund the replacements. As far as we knew, Dell could be on the hook for the full repair.

The same day, I calculated the cost to Dell, debated whether we could afford to use the blanket statement "we will take care of our customers" with the PR team, and walked into Mort Topfer's office with the head of PR. I told him that based on my calculations we could not afford to lead with the blanket statement that we would take care of customers. "Mort, if we do that, the costs could be huge. We could go out of business." I started to

explain the calculations on the spreadsheet I'd brought with me. He glanced for a moment

at the spreadsheet, then looked up and said, "I'm sure these calculations are correct. And if

we don't take care of our customers, we'll go out of business anyway." Decision made. As

we were leaving, Mort called me back in to his office and added, "Heather, you know that

number you showed me? I need you to get it down to about a tenth of that." Of course.

In any event, in less than 5 minutes, we went with Kellie's script, and avoided the PR

issues that subsequently ensued for Intel. Also, because our opening line was "We will take

care of our customers," that took a lot of the anxiety out of the situation for those customers,

who were then able to listen rationally to our description of the problem and who was likely

to be affected by it. Most customers concluded it wasn't them. I walked the technical

support floor the next day, and to a person, every rep was following Kellie's script, exactly.

Steve Smith was in the house.

Dell had assessed the Pentium chip problem, developed a technical solution, created

communications scripts, trained support reps, run the numbers, and gotten approval for the

plan, all before competitors returned from the Thanksgiving holiday. But we weren't done

yet. Because Dell had very low inventory levels, it didn't have many systems with the flawed

chips on hand. This created an opportunity to demonstrate the power of the direct model.

On the Friday before Christmas in 1994, about ten Dell marketing leaders held a

conference call. I was the only one still in Austin, as everyone else had left for vacation.

Tom Martin asked me, "Heather, what do you think? Do we have the updated chips in all

our product?" Earlier that day, I had spoken with a senior manufacturing director, who told

me he was 95% sure they had gotten all of the flawed chips out of inventory, and the math

associated with our low inventory levels certainly said that was likely. I relayed that to the

team, and we decided to run an ad guaranteeing that we had the clean chips. The following

full page ad ran in the Wall Street Journal on January 4, 1995, and this is all it said:

Dell's rapid decision-making and calculated risk-taking turned the Pentium chip flaw into a textbook example of PR crisis management, and a marketing coup. It demonstrated the advantages of Dell's model and its ability to execute at great speed. More importantly, it strengthened relationships and enhanced Dell's reputation. And the plan had not broken the bank: financial costs were about 10 percent of what I had calculated, thanks largely to effective customer communication.

Figure 23 - Dell's ad in the Wall Street Journal, January 4, 1995. Source: Photo of ad from author's collection.

A former Corporate Services director sums it up, "A lot of companies can commit to

a strategy, but they don't know how to execute it. Dell actually knew how to execute what

they put forward. A lot of people put pretty plans in place, but they don't know how to execute. Dell did."

Risk-taking was one of Dell's core *shared values* in its First Horizon. Rapid-fire, data-driven decision-making and a strong focus on execution helped create *creative agility* in the face of numerous opportunities and challenges.

Leadership

The final contributor to Dell's success in the 90s, according to participants, was leadership, starting at the top. As one former manager notes, "I hate those gross displays of power. And that was something I appreciated about Michael Dell. He was not a 'kiss my ring' kind of guy. He never screamed at anyone." Michael was known for rolling up his sleeves, and for his informal conversations with employees. An operations manager describes her first meeting with Michael: "I was in a meeting, and we were talking about hard drives. Suddenly, this guy who looks like he's 15 starts reeling off the specs of all the hard drives, the delivery times, and the prices. With no notes. I kept leaning further and further forward across the table, straining to see his nametag, wondering who this young genius was. Finally, I read it – Michael. At that point I realized that 'Michael' was the CEO of the company, and he was now looking at ME quizzically, wondering why I was staring at him."

A former Corporate Communications manager recalls Michael's focus on the details. She says, "One day I answered my phone, and heard, 'Hi, this is Michael.' I said, 'Michael

who?' There was a pause, and I said, 'You mean the Michael who signs my paycheques?' He said, 'That's the one.' He was calling to make sure I had taken out a line in a press release we had written."

A former marketing director recalls, "Michael was very accessible in the early days. He was in all our quarterly marketing meetings, and he knew my name, even though I was a very junior employee. We all felt very safe bringing up ideas and issues with him. Some of the other execs they brought in later, you didn't really want to run into them in the hall."

Michael was also known for his humour. The former operations director recalls his first meeting with Michael: " My first meeting with Michael, we're sitting in the 9th floor conference room. And he said anytime you have to run down to accounting to get a vendor paid and you're selling furniture out of the lobby, it's not looking good." (The former Corporate Communications manager also remembers those days, noting, "We were literally selling these really nice Herman Miller bookshelves and tables out the back door to raise cash in the early 90s.")

Michael also cared about the people he worked with. In 2000, on my last day before I left on my first maternity leave, my assistant came around the corner of my cube, eyes as big as saucers. "Someone claiming to be Michael Dell is on the phone. Do you want to talk to him?" She put him through, and Michael told me that he just wanted to wish me well with the pregnancy, and that he really hoped I'd come back to Dell at the end of my leave.

This intense, smart, and committed leadership extended beyond Michael Dell. As former marketing director Indraj Gill put it, "I used to go to Tom's office for a price move, and after an hour I'd be spent. Tom Martin was one of the top 5 reasons we succeeded. He was so smart. Mort, Tom Meredith (former CFO), Michael, Joel were also key." There were other well-respected leaders who valued risk-taking and execution, including then-product engineering director (and now Vice-Chairman) Jeff Clarke.   A former Corporate Services director notes, "Jeff was hell on wheels, and he was a pied piper. He was all about execution, but he also cared deeply about the people, the products, and the company. He was bright, caring, and articulate. He had a phrase, 'Not execution. Flawless execution.'"

In Dell's First Horizon, accessible leadership helped speed decision-making and rapid execution, a key *shared value* in Dell's early culture. The lack of hierarchy minimized guardrails or *rules of engagement*.

The Second Horizon – Business Model, Culture Shift and Wall Street

Overreliance on the Business Model

Dell's business model advantage and risk-taker's culture was the stuff of business school legend. But, during Dell's Second Horizon from roughly 2001-2012, it became a double-edged sword.   Because of the focus on improving on the model, the Dell team did not spend enough time on what Hill terms *creative abrasion* and *creative resolution* –

encouraging and debating new ideas, then being patient enough to hold those ideas in

creative tension rather than simply picking between one suboptimal option or another. The

former operations director put it simply, "We were so good at execution, we didn't have as

much time for innovation." Tom Martin notes, "From 1990-1993, we spent the time to

understand that the business model was our advantage, the asset we had. Then we worked

very hard to come up with the executional approach that was consistent with that advantage.

The culture you build to focus on executing on a decades-long advantage turns out to

probably be inimical to innovation. So you have an asset, you work to create tens of

thousands of people who are good at executing on that advantage. And then that advantage

goes away. So you now you have a culture that is good at executing on a cost advantage.

But that culture is not very good at changing the game. What we didn't have was a view to

'what is a game changer that could kill us?' We really didn't have conversations about that.

And there was an element of the culture that actively looked down its nose at the

conversation about 'could there be a major shift that would really change things?'" During

the time period Tom describes, there was little scenario planning.   Instead, employees

focused on executing on the company's striking advantage, the direct model.

The former operations director also believes that Dell should have debated whether changes to its business model were required earlier in the game: "In the 90s, Scott Flaig (SVP Operations) pulled all 2,000 people in operations together and said, we're a distributor. Lots of people looked at him funny, because they thought we were a manufacturer. But if you switch to thinking about being a distributor, then it really doesn't matter where you build it. I do think maybe we took that a bit too far – which is why, at $60 billion, this is a tougher company to run. Direct became ubiquitous when the internet came on – there were much lower barriers to entry. Amazon has done the direct model well. You shop there because you can get anything there, delivered when they say. And you totally trust them. We were so narrowly focused on the distribution model – we applied it to servers, to workstations. We did not spend enough time on think tank level. This model has a bottom to it. First, the industry consolidated. Then, the low cost Asian manufacturers jumped in – Acer, Lenovo. Then the South Koreans – Samsung. And the South Koreans have always been good at distribution."

The relentless reliance on the business model in the mid-2000s dampened innovation. A former marketing director says, "Another executive told me how he'd propose something, and be told, 'No, stick to the model. Don't deviate from the model.' What kind of empowerment was that? It drove out innovation." Dell's overreliance on its business model and its pace of execution reduced *creative abrasion* and prevented *creative resolution*.

Leadership and Culture Changes

During the Second Horizon, Dell's leadership shifted. Asked what the #1 factor was in Dell's decline beginning in the mid-2000s, a former Corporate Services director said, "Michael Dell pulled himself out of the day-to-day operations. He thought he had enough players in place, but you had people who didn't really care about Dell. He stepped out. That was probably the biggest factor."

Executive succession is common, healthy, and at some point inevitable. However, in the mid-2000s, Dell's leadership changes were also accompanied by changes in culture and *shared values* as employee headcount nearly doubled in three years. These new employees brought in a very different problem-solving approach, different *shared values*, and new processes and *rules of engagement*. The conflict between these new employees and the entrepreneurial types who drove its first two decades, coupled with the shift in leadership, significantly changed the company's culture and appetite for risk-taking.

Michael has always brought in people with different skill sets to help him. For example, from 1986-1990, Lee Walker, a venture capitalist, served as President. Former Motorola executive Mort Topfer was Vice Chairman of Dell from 1994-1999. These other leaders brought skills that were complementary to Michael's vision and marketing talent. But Michael was always co-CEO or part of the "office of the CEO," providing a crucial link to Dell's entrepreneurial *shared values* of risk-taking, speed, and execution.

In July 2004, Dell elevated former Bain consultant Kevin Rollins to *sole* CEO, and

Michael Dell became chairman. Rollins had joined Dell in 1996 when Dell's sales were

about $5 billion.   He became President of Dell Americas later that year. Rollins and

Michael Dell shared a glass-partitioned office until Rollins resigned in January 2007 (when

Dell revenues were over $55 billion). Results from this 2003-2006 period are shown below

("CAGR" refers to compound annual growth rate), with adjacent periods for comparison.

	1991-2003	2003-2006	2006-2012*
Dell Revenue CAGR	37.7%	11.6%	-.1%
Dell Net Income CAGR	38.9%	-.5%	-1.4%
PC Industry Unit CAGR	16.0%	14.4%	7.3%
Dell Unit CAGR	41.2%	14.8%	-.2%
Dell Multiple of Industry Growth	2.6X	1.0X	NM**
End of Period Market Share	16.9%	17.1%	11.1%
End of Period Employees	46,000	91,500	111,300

Source: Dell annual reports, Gartner, Dataquest and International Data Corporation ("IDC"), (Noam, 2009, 194), (Juliussen, 2010, par. 3) and author analysis.

Note: Dell's fiscal year end is January 31. Therefore, the Dell data for revenues, net income, and employees for "2003-2006" represents the period from January 31, 2004 through January 31, 2007, and so on. All other figures are as of December 31 of the noted year.

* Dell went private in October 2013. Therefore, 2012 is the last full year for which results are available.

** Not meaningful. Dell's unit growth was slightly negative during this period, against a PC industry growth of about 7%.

By the mid-2000s, the personal computer industry was becoming a tougher place to operate in, especially for Dell. Growth had begun to slow, except in Asia, where the direct model had less traction. In 2008, just 15% of desktop PCs were sold via the direct channel in Asia (excluding Japan), compared to 41% in the U.S. (J. W. Rivkin 2010, 19). PC prices and margins also declined as the industry consolidated (HP bought Compaq in 2001, Lenovo bought IBM's PC business in 2004, and Acer bought Gateway in 2007) and low-cost Asian manufacturers entered the industry.   Asian manufacturers had labour costs that were about *80%* lower than costs in the US and Europe (*International Comparisons of Hourly Compensation Costs in Manufacturing*, 2014). In addition, the growth of smaller, less configurable mobile devices such as laptops and smartphones led to a declining value for customized PCs (Collis, Yoffie, and Shaffer 2013, 2). Finally, the driver of innovation and growth shifted from the corporation to the consumer (Lawton 2006, 5), a segment which represented just 15% of Dell's sales, compared to 30% for HP (Lawton 2006, 8).   This shift to the consumer also led to a greater focus on design and retail sales, neither of which were Dell's strengths (Lawton 2006, 5).   Dell's consumer mix over time is shown in Figure 24.
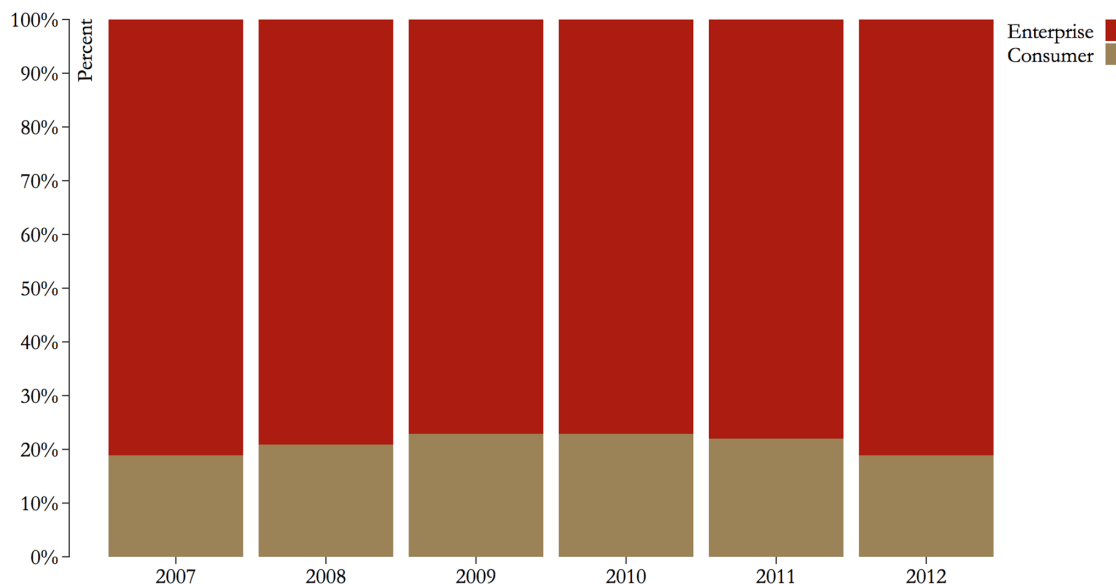
Figure 24 - Dell's mix of consumer vs. enterprise revenues. For this chart, "enterprise" refers to business, government, and education accounts. Note: Dell's fiscal year ends January 31. Therefore, Dell's 2007 consumer mix of 19%, as shown above, represents revenue mix for the fiscal year ended January 31, 2008, and so on. Source: Annual reports.

It was a tough hand to play. Industry growth rates continued to drop as more smartphones and tablets were introduced. However, Dell's growth slowed even more dramatically, dropping from 2.6X the industry growth rate to 1X the industry growth rate. In 2007, HP surpassed Dell as the PC industry unit market share leader (Kitagawa 2008, par. 4). Dell's revenue and net income growth also slowed significantly, and Dell repeatedly missed analysts' earnings expectations (Frei and Harris-Van Keuren 2007, 3).   Beyond revenue and net income growth, other metrics suffered as well. A drive to cut costs by staffing U.S. call centers with temporary employees led to a decline in Dell's U.S. consumer customer satisfaction ratings from 79 (in 2004) to 74 (in 2005), the steepest decline in the

industry (Lee 2006, par. 3). Dell recalled 4.1 million laptops with defective Sony-made

batteries, but not before internet videos of flaming laptops made Dell a reluctant internet

sensation (J. W. Rivkin 2010, 13). Some criticized Dell for being slow to offer faster and

cheaper AMD processors (chips) in addition to Intel chips (J. W. Rivkin 2010, 13). These

factors influenced Dell's stock price relative to competitors, as shown below in Figure 25 (the

stock price at December 31, 2003 is used as the base price and set to 100% for all
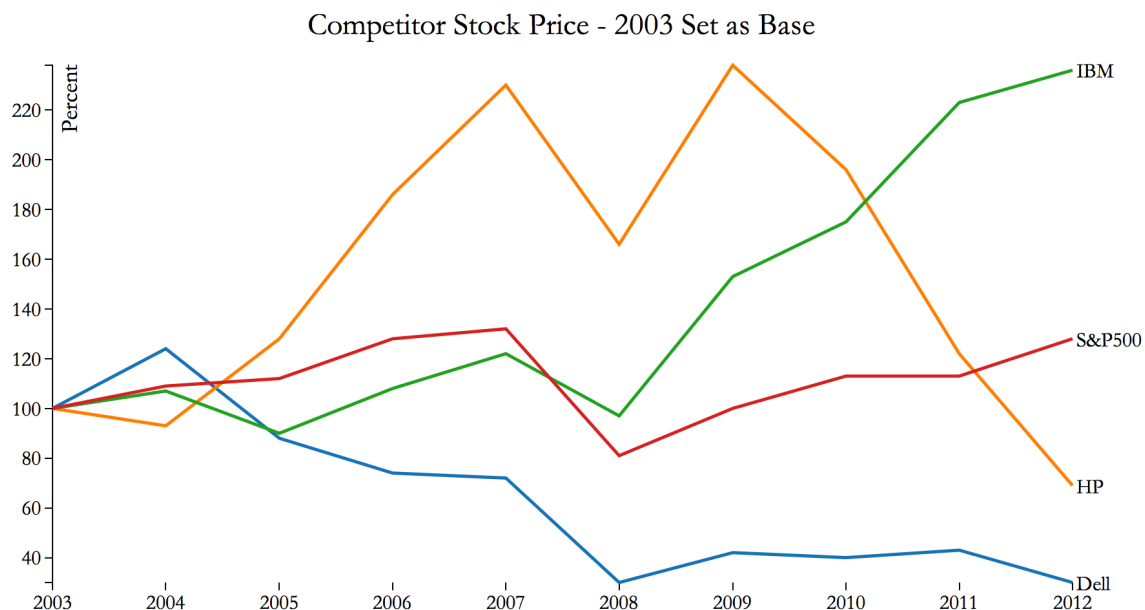
competitors):

Figure 25 - Stock price by competitor. Stock price as of December 31, 2003 used as base and set to 100% for all competitors. All data are as of December 31 of the noted year. Source: ("Dell closing costs," 2015)**, Google Finance, Yahoo Finance.**

During this time, Rollins was instrumental in helping Dell put in place the

infrastructure required of a mature $50 billion company. A former Corporate

Communications manager notes, "Before Kevin got there, we were always rounding the

corner on three wheels at a hundred miles an hour. He made sure we hired enough people

that the wheels did not fall off." As noted above, Dell almost doubled its employee count

between the end of 2003 and the end of 2006, from 46,000 to 91,500. Many ex-consultants

from Bain, McKinsey, and other shops were hired during this period. By the time I returned

to Austin in 1999, following a two-year assignment in Toronto, it seemed like you couldn't

swing a slinky without hitting a former consultant. They were everywhere, and they brought

a significantly different perspective than the largely entrepreneurial types who drove Dell's

first two decades.

The influx of Ivy League-educated, highly analytical consultants helped Dell think

about strategy, not just execution. "That was a good thing Michael did – bringing Bain in –

they brought visionary talent. We were so focused on execution – we needed another layer

to define what the strategy was.   Kevin Rollins, for example, got us out of retail – because of

the channel conflict," noted a former operations director.   The former consultants also

developed some of the analytical models that capitalized on Dell's advantage in having direct

data about the customer.

But the consultants also brought a strong process orientation, a focus on cost-cutting,

and a seemingly endless quest for data that was antithetical to Dell's "risk-taker's" mentality.

In addition, the consultants brought a very consistent background and rigorous approach to

solving problems (in contrast to the fast-moving implementers populating the company at the time).   I worked at consulting company McKinsey & Co. from 1990-1992, with some of the smartest people I've ever met (some with arrogance to match). At McKinsey and other firms, the quest for the "right answer" is paramount, and pursued with relentless vigor and, sometimes, a degree of intellectual arrogance. As McKinsey partner Pete Walker noted in a 1993 Fortune article, "It's almost never that we fail because we come up with the wrong answer. We fail because we don't properly bring along management. And if the company just doesn't have the horses, there are limits to what we can do." (Huey, 1993) Oh my.

Typical McKinsey studies, predicated on an exhaustive problem-solving approach, could last 2-12 months. This works in some industries, but not in high tech, where Moore's Law rules. Wait 6 months to make a decision, and you could miss most of a product cycle.

Former product marketing director Pamposh Zutshi describes the impact of the consultants' quest for more data as follows: "I think a large part of it is: at the director level, you had a lot of people like me, from the 90s, who believed in just getting out there and getting it done. Then, in the 2000s, a layer was added between the director and the GM – the VP Marketing. And almost all of those new VPs were former consultants. Some of the consultants Dell hired were like former 777 pilots who are used to all their fancy instruments. So we brought them in and put them in a really fast Cessna with an altimeter. As the plane starts diving toward the ground, these guys are screaming, 'Where are my

instruments, I need my instruments!' Meanwhile, the simple altimeter clearly tells them they are nosediving and should pull up on the stick. In the 2000s, it was all about the quest for the perfect data. I always remember you telling me that we will never have all the data, and shouldn't wait for it." Bill Sharpe notes, "Dell had a split personality back in the mid 1990s. It was, on one hand, a profoundly sales driven culture – lots of hyper sales guys. But there were always consultants, also, throughout the time I worked with Dell. Ex-McKinsey, Ex-Bain, etc., etc. Consultants who tended to think a lot and didn't do much. There were more consultants over time. And consultants who moved into marketing who never should have been there.   I had a Dell marketing guy (we'll call him John) who was a former consultant come to me years after we'd worked together. John told me, 'I was uninformed about marketing. Marketing always has to push forward, to go. Whereas I was always saying no, stop, prove it to me.'" Sharpe continues, "This, to me, was the timeframe when Dell lost its way. That's not the way marketing works. You have to test, refine, go." Indeed, Roger Martin, a former consultant himself, says that the two words which will kill innovation are "prove it."

> There is no data about how a genuinely new idea will interact with the world in advance of said new idea actually interacting with the world. Therefore there is no way to prove it will work in advance. (Martin 2014, par. 2)

A former Corporate Services director describes the impact of the massive influx of consultants on Dell's culture: "During 1999, we were bringing on thousands of people.

Dell knew they were having difficulties acculturating the new people. They had to teach them and say, 'everyone has a plan, but very few people can execute it.' They had a 50% turnover of director and VP levels in first 6 months. In the first 6 months, most high fliers from other companies failed. If you were a people manager, you had to be a 5,000 foot/50,000 foot people manager. One day, you had to have the details, then the next day you had to be able to talk strategy at the highest levels. There are very few people who are wired to be 'strategic doers'. They're either one or the other." Basadur's framework would support the difficulty of finding employees who are "strategic doers" – the likelihood of a person being both a conceptualizer (strategist) and an implementer (doer) is remote. Finding a critical mass of these strategic doers was not easy, but Dell managed to do it through the early 2000s by looking specifically for such attributes as "dealing with ambiguity" and "learning on the fly" when hiring. And then Dell began its massive hiring effort in 2004.

The Corporate Services director continues, " Dell realized (in the early 2000s) they had the wrong hiring model, because they kept hiring these people that were very, very strategic, and couldn't get in and do the work. They had MBA students by the hundreds coming in. They lost their culture. They lost their ways. After a while, Dell had as many cultures as they had managers, because each one was interpreting it a different way. When they came out with the Soul of Dell, they were trying to get back to that, that culture, but

they didn't have the person sitting in front of them, saying this is what I believe, this is the

direction that we should be going."

The sheer increase in the number of employees from 2004 to 2006 also drove the

development of that dreaded big company disease – bureaucracy. In February 2007, when

he returned as the company's CEO, Michael Dell wrote the following in an internal memo

to Dell employees:

> We have great people…but we also have a new enemy, bureaucracy, which costs us
> money and slows us down. We created it, we subjected our people to it, and we have
> to fix it! (Slagle, 2007)

I experienced the increase in bureaucracy myself over time. This is best illustrated

with two contrasting stories. A couple of months after joining Dell in 1992, I was speaking

with an engineer, the late Dennis Burleson, about a product he was offering in "stealth

mode" to one of our largest customers. The product he described to me was preinstalled

software – software that came "ready to run" when you fired up your PC. This was back in

the early 90s, when computers came with a blue or black screen, the operating system

installed, and not much else. Installing application software such as Microsoft Office meant

sitting at your desk with a cup of coffee, a stack of at least three 5 ¼" floppy diskettes for

installation, and a couple hours worth of time on your hands. Dennis explained that he had

written a software script that loaded the application software ordered by the customer onto

the hard drive as it made its way down Dell's assembly line. Because Dell built computers to

the customer's specific order, it could, using Dennis' script, load the customer's required software for them. Other competitors, who built to stock, would have no idea what software to put on the PC. They instead relied on resellers to do this. Dennis' idea was simple, brilliant, met a significant customer need, and was something only Dell could do. I asked, "Dennis, how many people have you told about this idea?" Not many. Dennis replied that he did not have enough resources as it was, and said, "If we told the world about this, I'd be swamped." Exactly. Dennis agreed that if I could triple his resources, he would let me tell the world about the idea. I raced back to my desk, ballparked the economics of the idea for Dell, and wrote an email directly to Dell's president, Joel Kocher, proposing that we launch the business and triple Dennis' resources. I had only been at Dell two months and had never met Joel, so I thought that he might not read my email. In 45 minutes, he sent me a note back: "Sounds good. You need a sales comp (compensation) plan. Go." Six months later, with a rookie brand manager at the helm and a lot of help from colleagues and friends such as Tricia Traeger, Bob Gutermuth, the late Dennis Burleson, and Jenny Adkins, we launched ReadyWare, consisting of 81 software titles that could be preinstalled to any Dell customer's order. (It was supposed to be 82 titles, but Reader Rabbit Math was somehow misplaced). It was a brand new business for Dell, led by a rookie with no formal authority or resources, and launched in 6 months during Dell's First Horizon.

Fast forward to May 2003 at Dell Canada, when my boss (a former Bain consultant), told me that within the next 3 months we needed to dramatically reduce sales costs by shifting about half of Dell Canada's consumer sales force to Hyderabad, India. Setting up a call center in India had been done before, in the US and a few other geographies, as well as by Dell Canada's technical support team. Dell Canada's Financial Services team had just begun the process. Dell had a call center building in Hyderabad, with empty seats waiting to be staffed. My boss (we'll call him Tim) gave me the contact information for a Dell group in the US who was managing the process and assisting regions who wanted to shift headcount to lower cost geographies. I phoned the lead for this group (we'll call the group "Global Call Centers"), who explained that it would take 12-18 months to make the transition to Hyderabad. (12-18 months??? I was incredulous. What were we doing? Developing a skyscraper? Building a rocket ship? Brokering peace between warring nations? What on earth took so long?). I asked as much, and he said, "Well, for starters, it will take you at least 6 weeks to fill out our form. Then, it goes into the queue, and we review it. Then, we might have some questions. There are lots of other regions trying to do this too, you know, and we are managing the process for all of them." I interrupted, "You'll have your form in 2 days. And I'll wait a week for you to get back to me with a date by which we can meet your rep in Hyderabad. If you don't get back to me by then, we'll do it ourselves." I think he thought I was kidding.

We submitted the form two days later, putting our best estimates in for complex questions, such as the proportion of calls we thought could be handled by our Canadian reps vs. our future Hyderabad call center. I let the Global Call Centers lead know the form was in and politely waited the interminable week (patience is not one of my virtues). At the end of May 2003, I phoned our best and most senior sales manager, Tara Fine, a 28 year-old woman with great leadership skills. Tara's outstanding interpersonal skills belied a steely resolve and "whatever it takes" attitude. And she had sales chops – her single-day record for sales by an inside sales rep still stands today. I offered Tara the opportunity to build Dell Canada's sales organization in India as a 3-6 month project. (Even I thought 3 months was a bit tight given that India was halfway around the globe and neither one of us had ever been there). Tara asked to think about it for a day. About two weeks later, Tara was on her way to the airport for her flight to India. That very day, my boss Tim called me, saying he was concerned that Tara, with only 6 years of working solely in Canada under her belt, might not have the experience to handle the complexity of this start-up effort in a foreign country. Thinking that sending someone else might be a better choice, he asked, "Do you have a back-up plan?" I replied, "Tim, no, I don't have a back-up plan. Tara's our very best sales leader, and she's started new businesses for Dell before. She'll find a way to get it done. And if you really want me to develop a back-up plan, you better tell me now. Because she's on her way to the airport as we speak."

Tara landed in India, hired an outstanding senior sales manager to run operations there, and within the next few weeks had hired 42 sales representatives and 4 sales managers. She also addressed numerous operational issues, not the least of which was balancing call volumes so that they flowed between India and Canada appropriately given the resources available in each call center at various times during the day. (OK, so the Global Call Centers team might have been right about that one – it *was* a complex question requiring considerable analysis). On August 18, 2003, we took our first call in Hyderabad. We'd pulled the whole thing off in just over 3 months, including the two weeks I spent impatiently "following" the corporate process and waiting for it to work. Within a year, those Hyderabad reps were hitting the same performance targets as our Toronto reps. Meanwhile back in Canada, I had managed to not screw up the sales organization too badly, thanks to two of our sales managers who stepped up to help me.

About two weeks before Tara's team took our first call in Hyderabad, I got a call from a Global Call Centers representative, who said that she had reviewed our form and had a few questions. No wonder the damn process typically took 12-18 months. Launching a brand new, industry-first business from scratch with no formal resources took 6 months during Dell's First Horizon. Setting up a sales call center in India, following a known process previously executed by the U.S. and your own technical support organization, and

with "help" from a corporate team, was *planned* to take 12-18 months during Dell's Second Horizon.   Michael was right – bureaucracy was the new enemy.

The lesson? Dell, through its hiring model, which looked specifically for the ability to deal with uncertainty and learn on the fly, found a critical mass of "strategic doers", and this was a key part of its success in its First Horizon. And then, in its Second Horizon, the company sought to bring in more strategists, and build the infrastructure required of a mature company. This was likely a reasonable response to becoming a $50 billion company, but the shift in hiring was too much, too fast. The rapid growth in headcount and the influx of strategists, with their focus on intellectual rigor and process, dampened Dell's *shared values* of risk-taking and speed and created bureaucracies. This, in turn, reduced Dell's *creative agility*.

Risk-Taking Slows

As noted above, one of the most significant aspects of the change in culture was a decline in risk-taking, which impacted the company's ability to innovate. Pamposh Zutshi says, "I think by the 2000s we had become a big company, more process-oriented, for the right reasons, to some extent, because the dollars were so much bigger. In the 90s, the most important thing was to get it done. In the later part of the 2000s, it was almost more important to be able to explain why you failed than to succeed.   So your 37 page Powerpoint deck became more important than actually making it happen."

The company's success and related competition for resources may have been a factor. Indraj Gill comments, "The risk-taking completely stopped. It changed from a meritocracy at some point…When I was running Optiplex (corporate desktops), it took me two years to convince everyone we needed to split our product line. This was unpopular, because it meant we needed more resources we didn't have." Bill Sharpe adds, "I felt that the longer I worked with the company, the more risk averse it became, to the point I had to switch out the people who worked on it. The penchant for action is one of the things that actually slowed down in the company. What drove the risk aversion? It was so successful, that over time nobody wanted to mess with the formula. Everybody thought the train would keep on rolling. What's the line – the emperor has no clothes? It was sacrilege to suggest that things might change. **The tolerance for risk-taking in the company was, at the end, almost completely and totally, none."**

Sharpe also saw the impact of the drive to execute on innovation. "I think it was entrepreneurial at the top, and at a certain managerial level. But below that, it was execution, execution, execution. Nobody was coming up with smart ideas. At Dell, what I saw was that over time innovation slowly got throttled down. I remember getting so many grey Dell Latitudes – my IT guy came in with a new Dell one day. And I remember thinking, ok, this is just like buying another Ford sedan. I wasn't going to take it home and show anyone."

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Sharpe continues, "When we were doing a competitive review one day, I said, I think we better put Apple back in. After Jobs came back. Everyone laughed, and said that's an idiotic idea. But I said, no, Jobs is capable of radical innovation."

Some Dell employees recognized the need to return to an innovative culture, but were hampered by the fact that almost 80% of Dell's revenue was in commodity PC products, with low margins that did not permit significant investment in research and development ("R&D"). By the second quarter of Dell's fiscal year 2014 (the last quarter before it went private), Dell's R&D had climbed to 2.2% of revenues (Dell, 2014, 1), up from 1.2% in the fiscal year ended January 30, 2004 (Dell, 2004, 32). However, the 2014 figure was less than that of rivals IBM, whose R&D totaled 6.2% of revenues (IBM, 2014, 123), or HP, whose R&D totaled 3.1% of revenues (Hewlett-Packard, 2014, 55). The more consumer-focused Apple spent 3.3% of its 2014 sales on R&D (Apple, 2014, 33). A Corporate Services director said, "At Dell, you had a dichotomy, engineers who desperately wanted to go back to an innovative culture, back to the days when PCs blew up in the lab because you tried something new. But they were also realists, who understood that PCs were a commodity. On the other hand, they were also looking at Apple in the early 2000s, and saying these guys are really innovative, and if we don't get back to that, we'll be less than they are. And they were right."

Tom Martin gets the last word on the topic: "I would say we had an anti-innovation culture. The adoption of the belief in execution as the core took on a quasi-religious cast, such that anything that didn't look like that was viewed with suspicion." The death of risk-taking (a *shared value*) at Dell, coupled with a focus on executing on the core business and model, eventually drove out *creative abrasion* as employees stopped bringing new ideas forward. And the absence of *creative abrasion* made *creative resolution*, so critical to disruptive innovation, "not applicable."

Pressures of Wall Street

The pressure to hit Wall Street's earnings targets also reduced Dell's ability to innovate. As Tom Martin puts it, "Another damaging thing was the focus on the stock price – all that execution was driving up the stock price. We had a formal proposal on mobile devices in 1998. It wasn't dismissed because it was too early, but because it wouldn't materially add to the stock price. We thought it would be a $1 billion business within 3 years, and that was not enough. A couple years later, we would have projected a $5 billion business, but it would have cost real money to pursue it. So it would have been rejected because, by then, we were struggling to hit flat earnings."

He continues, "By the 2000s, the stock price did a lateral for 10 years. At that time, conversations would be about Wall Street not understanding if we put money in X, and it knocked money off the stock price. 10 percent of it was about the intellectual component –

having a group that can help you see what direction to take, and 90 percent was about

managing Wall Street. Ideas would get rejected, either because they were immaterial, or too

big and would cost too much to go after. I hate to be so simple-minded about it, but I think

that was most of the deal." Of course, many companies face the pressures of Wall Street.

There were 5,008 companies listed on major U.S. stock exchanges in 2013 (Strumpf, 2014).

They all face these pressures. The pressure was accentuated for Dell because of, first, the

company's extraordinary success. Dell's stock rose 19,008% between the end of 1991 and

the end of 1999 ("Dell closing costs," 2015), compared to a 91% increase for Apple's stock

over the same period ("AAPL Historical Prices | Apple Inc. Stock - Yahoo! Canada Finance,"

2015). The stock market's expectations for Dell were very high. Second, a management

shift and a related focus on cost-cutting increased pressure to "focus on the core" rather than

experiment. Third, a market shift away from Dell's strengths (such as the explosion of

consumer-driven innovation exemplified by Apple's "i" products) made achievement of

targets difficult. And fourth, thin margins in commodity products left little room for error.

A 2012 study by Daniel Ferreira, Gustavo Manso, and Andre Silva concluded that

the pressures of Wall Street impact a firm's ability to invest for the longer term:

> …public firms choose more conventional projects. Their managers appear
> shortsighted: they care too much about current earnings. They find it difficult to
> pursue complex projects that the market does not appear to understand well. Public
> firms go private after adverse shocks, when it is clear that their business models are no
> longer working, and there is a need for restructuring. (Ferreira, Silva, & Manso,
> 2012)

Martin adds, "I remember parking lot conversations about mobile. When you go from a low percentage of laptops to a high percentage of laptops, you have a less configurable machine being built by the same outsourced company. So HP and Dell have the same supply chain, because they were outsourcing to the same guy. And then you could see that smaller devices were coming, which were even less configurable. This was 1998-1999. We had parking lot conversations about the mobile business, and also formal business presentations. The conversation about treating this business as innovation-driven was treated like talking about transfer payments at the Republican convention – it wasn't done."

Pamposh Zutshi relates another story about the impact of being a public company on business decisions. "If you do the before and after, the inflection point was the late 90s, early 2000s.   In Product Group at the time, we had a couple of new business ideas. One was digital TVs, we had 22 percent share of the world's flat panel displays. It would have been a $5 billion business for Dell. We took our first TV from Powerpoint to product on the shelf in 4 months. And we won every award at the CES (Consumer Electronics Show) tradeshow that year.   And it wasn't just consumer – any business has digital signage. We had the relationships – we weren't going in cold. The beauty was, we would not have to fight to get into these accounts – it was the same account executive. We had 40% share in corporate desktops and notebooks in the Americas. This was 2004." In the early-to-mid

2000s, gross margins for digital signage were between 20-25% (Planar, 2004), higher than for PCs, although they have since fallen.

Zutshi continues, "We already had revenue in digital TVs, so it wasn't like we were asking for seed money. We asked for $2.5 million to set up shop (mostly for hiring engineers). The senior executive said no – he wanted us to stick to the core. In 2004, Dell missed corporate earnings, for 2-3 quarters in a row. So, the stock tanked. So, in his judgment, we had to go back to the core. But we could see margins on desktops were very light, notebooks were headed the same way – we needed new sources of revenues. And we already had pilots in (very large retailers) for digital signage – in the first year. That was when I first felt that I was done with Dell."

This "focus on the core" in order to hit short-term earnings targets took its toll on Dell's ability to capitalize on major industry product transitions. Sharpe states, "Also, Dell completely and totally failed to see where the future of personal computing was going – Apple moved into content, started to create an ecosystem. Dell missed content, ease of use, ease of design, the consumer, and perhaps most importantly, Dell missed mobile. At the end of 2006, Intel, Dell, and Microsoft ("MS") all missed mobile – a huge tech transition and they missed it. All are still playing catch-up. MS buys Nokia, writes it off. Google buys Motorola, sells it for a vast loss. All these guys didn't see it coming."

Other Changes and Conflicts

Dell also struggled to find an inspiring *purpose*, an element in Hill's framework, after it achieved the #1 worldwide market share position in 2001. A former marketing director said, "Dell became a soul-sucking experience over time. It had a purpose at the beginning – to be #1. After we hit #1, it was 'then what?' There was nothing to strive for anymore. Dell had a purpose, but the purpose wasn't reset. It just became about cost-cutting – 'how can we squeeze more blood out of the turnip?' Employees became cogs in the machine."

Cost-cutting also impacted Dell's relationships with suppliers and partners. A former Corporate Communications manager recalls, "We were squeezing contractors and suppliers. We'd pay them in 45 to 60 days, instead of 30 days like most businesses. It was brutal." Bill Sharpe notes that Dell could be a difficult culture to partner with: "We had to put tough people on the account. Dell was an odd culture, in that, with few exceptions, it was not a particularly friendly or approachable culture. The demands on everyone were so intense, it took away the ability to create relationships or kick around ideas. You were kind of in a machine. Dell was kind of soulless. I called it Texas capitalism." As we will see in a few pages, partnering with other companies, particularly start-ups, is vital to Dell's success moving forward.

This relentless focus on cost-cutting also took its toll on Dell's customer service. Ironically, Dell's stated mission was and is: "Dell's mission is to be the most successful

computer company in the world at delivering the best customer experience in markets we

serve." Bill Sharpe says, "Customer experience was terrible. Then the outsourcing of service

went to India. I remember being on those calls – it was obvious it was not going

well…That's where Dell Hell started – a complete and total collapse of customer service and

the outsourcing of everything – a hollowing out of what had worked. It was all part of this

relentless cost reduction – reduce costs, reduce costs, reduce costs." "Dell Hell" is also well-

documented in Dell customer comments online. In 2012, Rafe Needleman, a CNET writer,

wrote:

> …a whole day of work re-organized for a tech (from Dell) who doesn't show up? The
> phone call from a (Dell) rep asking me to rate a support call that didn't happen?
> Nobody disrespects a customer like that and keeps their business for long.
> (Needleman 2012, par. 5, 10)

As a further example, a laptop customer posting on tomsguide.com had this to say in 2014:

> I have a four year in-home next day service contract from Dell and explained to them
> what happened…they would be willing to send a tech over to reinstall windows on
> the bad drive even though it would probably cost them less to send me a new drive
> than it would to send the technician! Is it just me, or is Dell's behavior really this
> bureaucratic? (Anonymous, 2014, par. 5, 6, 7)

> While a 2014 survey by Laptop magazine indicated that Dell's customer service is

improving, it still noted that the call time to Dell's consumer service centers lasted just over

27 minutes, the longest call time of any vendor in the survey (Low 2014, par. 1).

Some cost reduction was necessary because Dell's industry was commoditizing. However, the relentless focus on cost-cutting caused Dell to lose sight of its *purpose* and damaged Dell's reputation for service.

Interviewees' Views on The Way Forward

Dell went private in October 2013 and stands poised to begin its Third Horizon, in which an organization typically articulates a preferred future state and executes on that plan. Interviewees were asked what their vision of Dell's preferred future state would be. Getting a purpose back and restoring the entrepreneurial culture were high priorities.

Indraj Gill recommends, "Create a set of values that this company is about. Dell's gotta find what its purpose is. What kind of culture is valued? And then protect those people even if they piss people off. Not caustic people, but people who are doing the right thing for the business, not for personal gain. If the culture's about risk-taking, don't beat people up who make mistakes. Protect people who live the values. The risk-taking culture doesn't survive without leaders backing you up."

A former manager in Corporate Services notes, "To get Dell out of where they are and to go forward, they still need leadership and employee commitment. I don't know if they can get the culture back. They're so big and they've been there for so long now. If they did some really interesting recruiting, took risks at the leadership level, maybe. Hire mavericks, risk-takers, people who are not afraid to lead, with some charisma."

Those to-be-hired risk-takers need leaders who will listen. Tom Martin said, "For example, the military is an execution culture. It takes a special general to listen to the corporals who actually talk back to them – 'you know if you do that, we're going to be dead?' Michael is an extremely good listener. Any entity the size of Dell has people capable of solving these problems. He needs to make it clear to his lieutenants that they need to listen to these corporals who talk back. Michael was such a good listener, he may have made the fairly common mistake that everyone was like that, and would listen. Dell executives needed to find the dissident players and bring them forward. And I'm not sure that happened."

Martin also recommends that some foresight and experimentation, as well as methods for investing capital in smaller firms, is critical. He says, "You do actually have to know what to do once you free yourselves from the stock market shackles. You need 5 or 10 percent of the population focused on figuring out what the game changers are. It would be easy enough to have a group of people focused on that. Whether you paid attention to them or not is a different thing. Knowing that an asteroid is going to hit the earth is not really useful if you are not planning to launch missiles to knock them out of the sky. You have to work massively overtime on the belief that innovation or massive change is going to happen. And as a management team, you've got to be willing to respond, and you have to be willing to do the experiments to address the change that's coming."

Martin also recommends that senior Dell executives take a venture capitalist's ("VC") perspective on investment in new areas. He says, "Some simple projects can be launched with existing human resources and minimal capital, like ReadyWare (Dell's preinstalled software offering, launched in 1993). But at the other end of the spectrum, imagine that automotive computing were some day going to be a $50 billion business divided between 3 players. Someone at Dell has done the analysis and figured out that this is a game changer – but it's complicated. That's because the regulatory, legal and reliability environment of automotive requires prototypes and lobbying and testing. We need $10 million and 30 people to create a new venture. But the essence of that new venture is a PC – in a different form factor. So we need partners and standards, but it is in or near our wheelhouse. Now in this case I think our VCs (Dell's senior executives) need to make a different and difficult set of decisions. Such as, is it a decent business, on paper? Do we have the right people to experiment with this thing and are we willing to give them up to go do it? And, how do we measure it?"

I think Tom is right, and as usual our conversation inspired some creative thinking. Dell has to place some intelligent bets on technologies and companies in this age of exponential digital acceleration. I think Dell has to become an "Intelligent Gambler," using the framework (yikes, clearly, it is time for me to leave academia) in Figure 26:

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The Intelligent Gambler
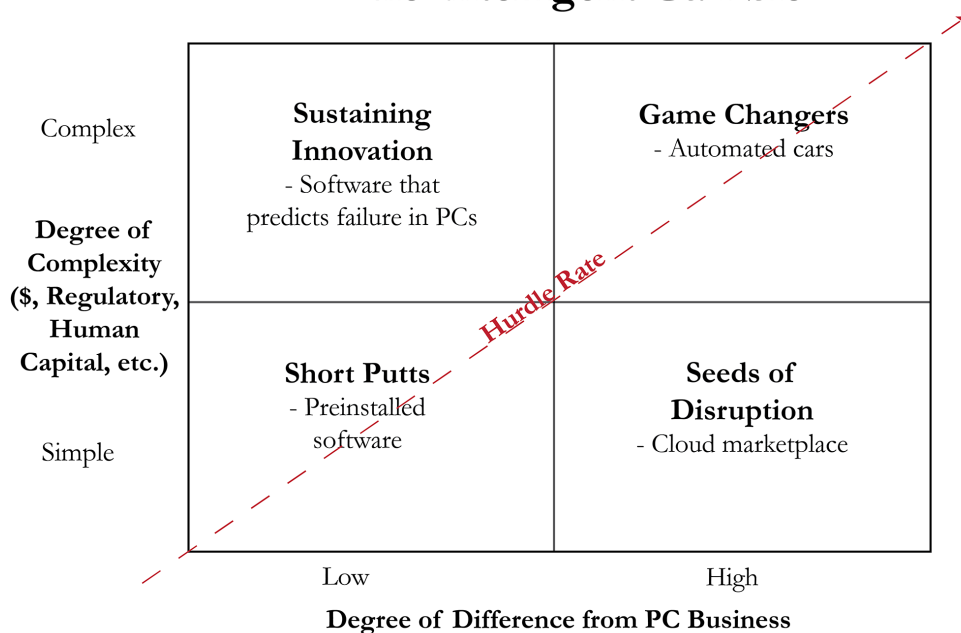
Note: Required rate of return, or "hurdle rate," rises for investments which are higher up (more complex) and to the right (further from the core business) on the framework, because those investments are riskier.

Intelligent Gambler© Heather Simmons 2015

Figure 26 – "Intelligent Gambler" framework for managing corporate venture investments.

In the Intelligent Gambler© framework, a company makes investments in a portfolio of new technologies based on the risk associated with the degree of difference between the current business and the new business, and also the capital required to launch the new business. The required rate of return (the "hurdle rate") rises as the degree of difference increases (to the right on the horizontal axis) and as the degree of complexity rises (up on the vertical axis). For example, some projects are relatively similar to the current business (in this case PCs), and require only existing human resources and little financial capital. To use a golfing analogy, they are "short putts." Little is risked, and so the hurdle rate expected is

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low. They are analogous to relatively safe short-term Treasury bills, which have yielded a

return of about 3.5% since the market's inception in 1928 (Damodaran, 2015). On the

other end of the spectrum are "game changers." These involve projects with a high degree of

difference from the current business, which also require significant financial and human

capital. They may require skills or IP not found in the current business, necessitating an

acquisition or partnership. These are high risk, and require a high expected rate of return as

a result. They are analogous to (much) higher risk stocks. Stocks in general have provided a

return of about 10% since the stock market's inception in 1928 (Damodaran, 2015), clearly

much higher than the 3.5% low risk return that Treasury bills provide. The actual hurdle

rate required in each box will vary by business.

Developing an Intelligent Gambler's mentality would give Dell a significant

advantage in a competitive environment of extremely rapid change. First, partnering with

smaller companies would allow Dell to avoid some of the "big company" problems of bloat,

bureaucracy, and internal focus identified by Collins. Second, technology is changing with

increasing rapidity, as noted by Brynjolfsson and McAfee, and winners and losers are

difficult to predict. Dell has significant cash, at a time when venture capitalists are risk

averse. Bets on technologies "close to home" (left side of the framework) will help create

sustaining innovations that extend existing advantages, while bets in areas less related to the

PC have potential to disrupt those industries. Dell can create competitive advantage by

using its significant capital to make appropriate bets on diverse technologies. This is

important because, in the digital era, winners and losers in a particular space are difficult to

predict due to the pace of change. As Elaine Chin, Chief Wellness Officer at Telus, puts it,

when asked to pick the future winners and losers in wearables, "It's like we're right at the

beginning with mainframe computers – whomever we pick won't be around in 5 years.   It

won't be FitBit – the market dominant force in wearables today. They are coming up with

incremental stuff – they don't have their eye on the guy down the street with the bioscan."

Dell's acquisitions since 2008 are plotted against the Intelligent Gambler©

framework in Figures 27 and 28. Figure 27 depicts Dell's acquisitions in 2008 alone.
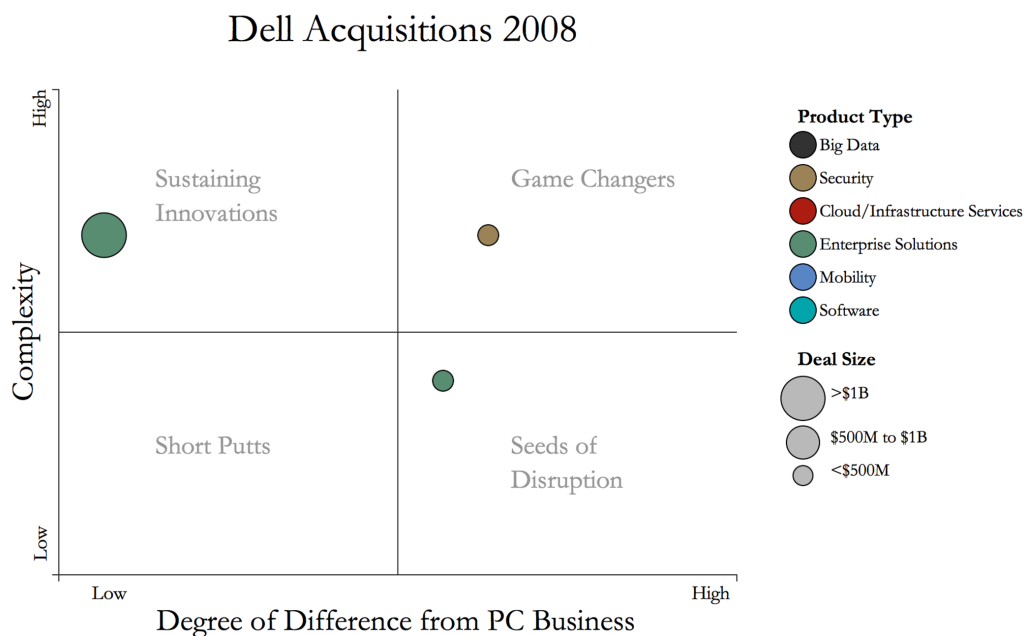
Figure 27 – Dell's acquisitions in 2008, applied against the Intelligent Gambler© framework. Source: Dell annual reports and press releases.

As shown in Figure 27, Dell's acquisition activity in 2008 was fairly modest, consisting

principally of a $1.4 billion purchase of EqualLogic, a maker of a type of storage called

iSCSI.

Between 2008-2014, however, Dell acquired over 25 companies. Notably, Dell

made 10 acquisitions in the infrastructure/cloud services space, including a $3.9 billion

purchase of Perot Systems in 2009. The company also paid almost $2.4 billion for Quest

Software, a maker of server and application performance management software. Finally,

Dell made three additional security acquisitions during this period, including SonicWALL

for $1 billion in 2012, and SecureWorks for $612 million in 2011.

Dell's acquisitions throughout the period 2008-2014 are plotted against the

Intelligent Gambler© framework in Figure 28. (For an interactive version of this chart,

please visit http://www.heathersimmons.ca/acquisitions.html). Appendix E provides further

details on each acquisition.

Dell Acquisitions 2008-2014
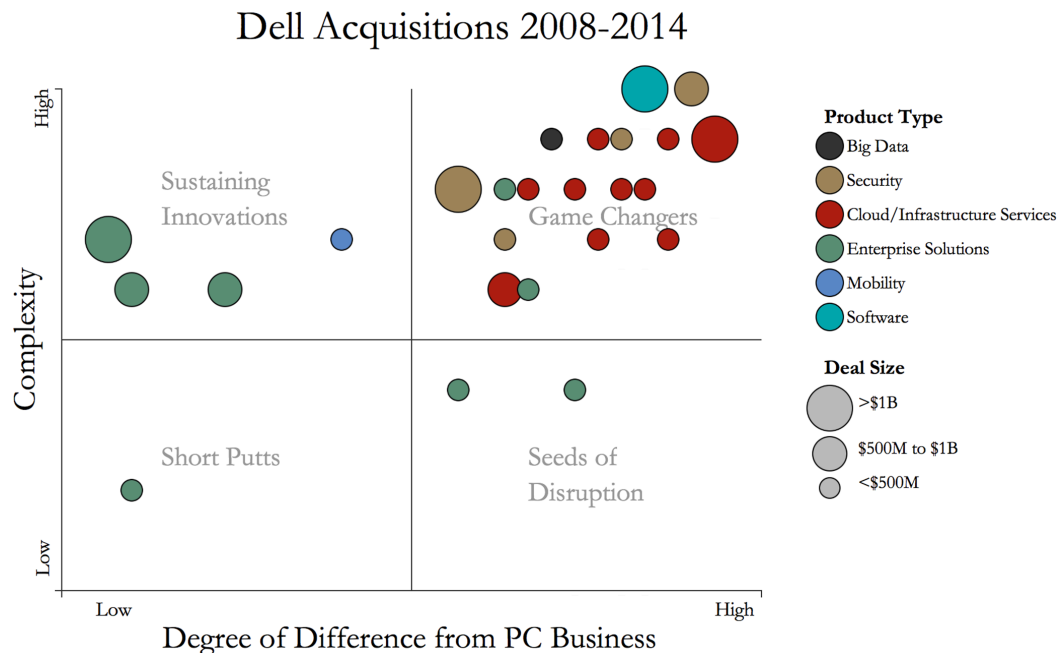
Figure 28 - Dell's acquisitions between 2008 and 2014. Source: Dell annual reports and press releases.

As shown in Figure 28, most of Dell's acquisitions have been in the "Game Changers" box - high complexity, high degree of difference from the PC business. Importantly, Dell's massive customer base allows it to introduce these acquisitions to larger customer opportunities and to fuel their global expansion. Dell also has the power to combine innovations from this portfolio of acquisitions. For example, the threat data from SonicWALL's millions of appliance firewalls around the globe ("SonicWALL Firewall - Information, Reviews, Prices & Training - Firewalls.com" 2015, par. 2) can be combined with the billions of cyber security events that SecureWorks sees every day (Gagliordi 2014, par. 8) to give Dell unprecedented insights into threats. By seeing more information on

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threats, Dell knows more and can then proactively protect its customers.   By applying Brynjolffson and Mcafee's "recombinant innovation" concept to its portfolio of acquisitions, Dell creates innovative solutions for customers and further leverages its advantages of scale, global complexity management, and significant cash flow.   Dell has boldly refashioned its product strategy around these acquisitions, as will be discussed in a few pages.

The Third Horizon – Changes in Culture, Structure, and Products

As noted above, Dell's rise during its First Horizon was driven by its entrepreneurial culture and employee commitment, which fostered risk-taking and rapid execution.   Most of this execution was directed to improving on its direct model, which was another significant source of advantage.   As described in the previous section, during Dell's Second Horizon, four conflicts arose, all associated with the pressures of Wall Street and a shift in culture:

1.   There was and likely still is a conflict between the entrepreneurial types ("intrapreneurs") who populated Dell's first 15 years, and the process-oriented, analytically rigorous people hired from roughly the early 2000s onward.   How can Dell restore the entrepreneurial mindset and values so critical to innovation, without throwing out the processes and guardrails required in a $50 billion+ company?

2.   There was a conflict in terms of product and business model strategy.   Should Dell stay in the PC systems/services business (requiring more product innovation), or

become a distributor of a wider variety of products (requiring more business model innovation)? Should they exit the client PC business (i.e., desktops and notebooks) entirely, and focus instead on servers, storage, software, and services?

3.   There was a conflict related to Dell's customer service reputation, particularly with consumers, which suffered greatly in the 2000s as service was outsourced to India in an effort to reduce costs. How can Dell address the negative perception of its service?

4.   As demonstrated by Carl Icahn's vigorous, protracted, and very public fight to keep Dell public, there was considerable conflict about whether Dell should have gone private. Dell boldly went private in 2013, in the largest such transaction since the financial crisis. Now the question is, should Dell stay private or go public once again at some point in the next few years?

My visit to Dell World in November 2014, along with a crowd of about 5,000 others, helped considerably in demonstrating how Dell has addressed these conflicts as it moves into its Third Horizon, which began when it went private in the fall of 2013. At Dell World, Dell rolled out its new product strategy, designed to address the dizzying array of trends in the market today. In small group sessions, it also revealed its approach to regaining its risk-taker's culture.

Return to Entrepreneurial Culture – with Guardrails

Dell needs to regain their entrepreneurial spirit, while not losing *all* of the rigorous

analytics and process that constitute the "guardrails" needed in a $60 billion company. They

have begun to do so, although infusing this spirit throughout the organization will likely be

an ongoing, challenging task as cultures shift somewhat slowly. Dell has recognized that

innovation is vital to its future success, and that it must re-develop a culture in which the

benefits of risk-taking exceed the costs, from the employee's perspective. This was evident at

Dell World, where Dell's classic openness and transparency was on full display. In response

to a question I asked about his earlier comment that Dell employees had at one point been

"afraid to fail," current Dell CFO Tom Sweet said, "We, for a number of years, fell into the

trap of a management tone that said there wasn't enough reward for trying something and

not quite getting there – it was more of a stick if you tried it and you didn't get there.   And

recognizing that that was beginning to stifle risk-taking, and you need some element of risk

in a business – not everything's going to work. You just don't want it to be a disaster, by the

way, so it has to be a thoughtful risk-reward thing. For a number of years, I think we fell

into that trap, and then we lifted our heads up a few years ago and said, 'this isn't the way

we're going to be successful.' Michael deserves a lot of credit for that…You gotta have the

culture and the tone at the top that says, 'We want this conversation, we're willing to

change.'" In other words, Dell is re-creating an original *shared value*, namely risk-taking.

Sweet was part of a Dell World panel titled "Rethinking innovation to enhance the customer experience." It also included Rebekah Iliff, Chief Strategy Officer of AirPR (a Dell partner), Jai Menon, Dell VP and Chief Research Officer, Mike Cote, VP and General Manager, Dell SecureWorks, and Jim Luisser, Managing Director of Dell Ventures. Kicking off the panel, Rebekah said, "(It) really has to do with entrepreneurship, and acquiring the skills and expertise to continue to innovate at this rapid pace. Within the (Dell) organization now, it's no longer a question of 'do we need to innovate'? It's 'how do we make innovation central to the organization, and how do we move faster?'"

Some of the innovation is coming from new acquisitions, such as SecureWorks. Cote said, "Innovation is going to come from multiple sources: the guys who are paid to sit around and think about 'n+2' (i.e., beyond next generation) technology, and also from your front line people, the people who are doing things, who see how we could do things differently and better. Figuring out how to get that that feedback into the organization and up (is key). And, as we've all said, the failure word is not a bad word." Indeed, "failure" allows companies to learn from mistakes and pivot as needed in new directions.

Cote's organization, now called Dell SecureWorks, was purchased by Dell in 2011. The company was not integrated into Dell, and headquarters remained in Atlanta. As one current employee said to me after I commented on the stepped-up pace of Dell's

acquisitions, "Yes, and we no longer just absorb them like the Borg (the fictional alien race in

Star Trek that assimilated other races)."

Guardrails for managing risk remain in place, although the shift back to an

entrepreneurial culture was much in evidence at Dell World. For example, new "innovation

councils" fund pilot projects and review execution against defined milestones every month.

Tom Sweet also commented, about Cote's organization, "After Michael said 'grow, and we'll

give you as much capital as you need,' the one thing I added to that was, 'and by the way,

you have to generate one dollar of cash flow in that growth strategy.' That was my quid pro

quo in that conversation." In other words, Dell is re-creating a *shared value*, rapid execution,

while maintaining some guardrails or rules of engagement.

The return to hiring entrepreneurs, and the stepped-up pace of acquisitions, may

increase *creative abrasion*, *creative resolution*, and *creative agility* at Dell. In short, it could

increase Dell's ability to innovate. This ability to innovate is reflected in Dell's substantially

revamped product line, bringing us to the discussion of the second conflict.

Changes in Product and Service Strategy

Dell has also made a number of decisions and investments to resolve the second and

third conflicts. Dell has reset its product strategy based on customer feedback and

technology trends. At Dell World, I was quite surprised to see the degree to which Dell has

shifted its product direction beyond commodity PCs and related services, and towards

higher-margin, higher growth businesses that have not commoditized. While execution on

this strategic shift remains, the strategy, at least, is in place – indicating that Dell's Third

Horizon has already begun.

As highlighted at Dell World, Dell's four technology focus areas are cloud, big data,

mobile, and security. In their breakout sessions and technology showcases, Dell also

highlighted partnerships associated with the Internet of Things (i.e., connectivity and

intelligence in everyday items such as cars and refrigerators), and they are now selling 3D

printers made by MakerBot. They restated their commitment to end-to-end computing

(providing everything that an information technology customer needs – from PCs to servers

to cloud to software to service). They are most definitely *not* getting out of the PC business,

which still provides the entry point for 70% of their new customers (McCabe 2014, par. 11).

Figure 29 - Dell's product showcase, featuring big data and the Internet of Things ("IOT").

Wait, isn't this product strategy very "same-y" (as my very precise graduate program

director puts it), relative to IBM and HP? Yes and no. Yes, in terms of the product

categories Dell is pursuing. It would be sheer folly for Dell to not be in cloud, big data,

mobile, and security, which consistently hit the "top worries of IT directors" and "top 10 IT

trends" lists (Gartner, 2014, par. 5, 8, 11, 14). In addition, as shown in Figure 30, these

markets *each* represent profit pools approaching the size of, or larger than, PCs. Support for

each calculation in Figure 30 is in Appendix D.

Dell's Agile Product Portfolio
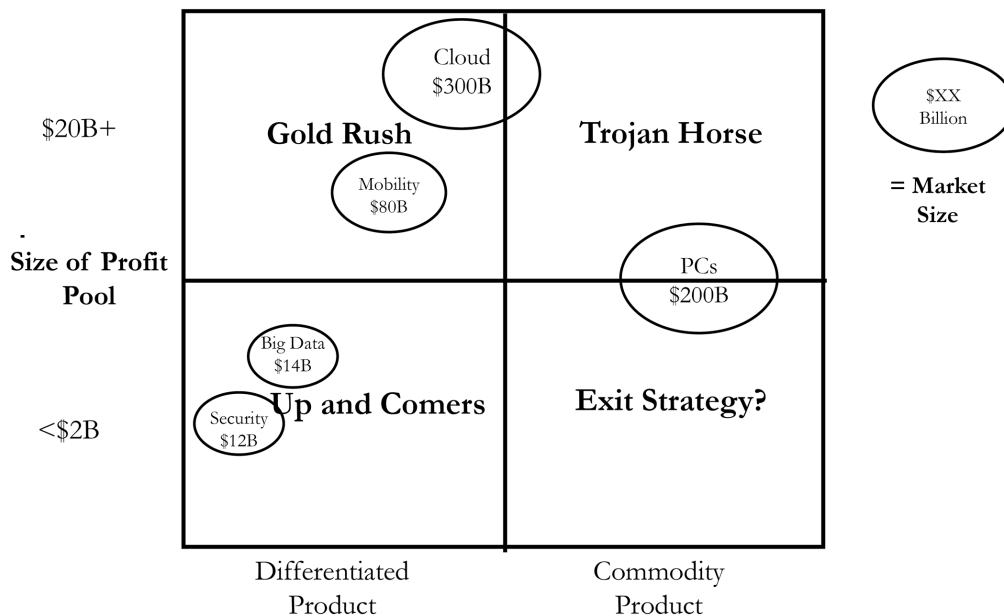
Figure 30 - Author's Agile Product framework depicting Dell's revamped product mix. Source: analysts' reports, author's analysis.

So, if Dell is going to be a profitable player in the IT business serving enterprise

(business and government) customers, it needs to have product offerings in these categories.

However, Dell *differs* from HP and IBM in that, first, it is the only IT player providing end-

to-end computing. End-to-end computing is the provision of complete IT solutions, from

PCs to servers, software, data management, security, and cloud offerings. Second, Dell has

always been a leader in open standards (Fuscaldo, 2003), not proprietary solutions.   Open

standards are important to IT managers who are trying to increase compatibility and choice

and cut costs (Glick 2012, 9). Third, it has a stated focus on simplifying the customer

experience (Turner, 2008, 1), which would significantly differentiate it in a world of rapid

change and complexity.

Dell is the only major IT player providing end-to-end computing. IBM sold its PC

business to Lenovo years ago, and HP just announced a decision to spin off its PC business.

Dell is therefore leveraging assets it uniquely has, such as a complete mix of software,

services, PCs, and enterprise products, and direct relationships with many enterprise

customers (at one point Dell had a 40% share of the US corporate market). Once Dell is in

these enterprise accounts, it can sell customers its newer, higher-margin products such as

security. Dell is also leveraging its massive advantages of scale ($50 billion+ in revenues) and

ability to manage complexity (111,000 employees). Harvard professor Michael Porter's Five

Forces framework in Figure 31 reveals that scale is indeed a major requirement for success in

end-to-end computing, and the key is to move powerful customers into "stickier" products

such as security and big data services rather than commodity PCs.

End-to-End Computing Five Forces Analysis

Threat of New Entry
- Minimal, requires scale and ability to manage
complexity across multiple busiensses to compete

Supplier Power
- Low, most components
are commodities and
readily available from
alternative suppliers

Competitive Rivalry
- Dell is only large IT vendor pursuing
end-to-end computing including PCs
- IBM and HP have exited or spun off PC
business
- However, rivalry is generally fierce,
particularly in public cloud (Amazon,
Google), and mobility (Apple, Samsung).

Buyer Power
- High for enterprise
customers, modest for
sm/mid businesses

Threat of Substituton
- High for PCs and mobility - due to smaller devices
- Low for security, big data, cloud - switching costs

Figure 31 - Michael Porter's Five Forces analysis, applied to end-to-end computing. Source: Author's analysis.

Regarding these newer products, Dell is often already a recognized industry leader (in

capability if not in market share) in those markets, frequently due to a savvy acquisition. For

example, in managed security services, Dell SecureWorks is positioned in Gartner's Leaders

Quadrant, ahead of IBM, HP, Cisco, and Juniper (Kavanagh 2014, 2). Gartner noted Dell's

Counter Threat unit's security expertise, and its relationship management, as strengths.

Gartner also positions Dell in the Leaders Quadrant for private cloud and for Platform-As-A-Service (McNabb, 2014). Gartner highlights Dell Boomi, an application that facilitates simple "point and click" integration of other applications in the cloud. A detailed Five Forces analysis by product offering is in Appendix D, including indications of Dell's position relative to competitors (according to Gartner, IDC, etc.).

Within these product categories, Dell focuses on open standards rather than proprietary solutions. For example, in the cloud arena, Dell is co-developing offerings that run on Red Hat's Linux OpenStack platform, instead of developing their own public cloud, as HP and IBM did (Burt 2013, par. 1, 4, 6). Dell's Cloud Marketplace, as discussed further below, is an easy-to-use, vendor-agnostic platform which allows customers to choose the best cloud solution for their needs.

Dell's new product strategy leverages its strengths (scale, capital, and an existing beachhead in business accounts – namely, PCs), while making bets in differentiated, higher margin product categories. These bets will allow Dell to continue to innovate, rather than simply cutting costs to become the low cost player in a pure commodity market (PCs). It also allows plenty of upside for growth – Dell's market share in each of the cloud, mobility (tablet), big data, and security markets is less than 5% (Macomber 2014, par. 9) (Kelly 2013, par. 7), (Ubrani 2014, par. 5), compared to about 13% (Kitagawa 2014, par. 6) in PCs.

With this new product strategy, Dell is demonstrating creative resolution. This strategy has elements of both product/service innovation and business model innovation. For example, Dell SecureWorks launches Dell out of the commodity hardware business and into the higher margin, faster growth security software business, complete with counter-threat intelligence experts and security operations centers around the globe. When Dell acquired SecureWorks in 2011, SecureWorks was processing 13 billion cyber events per day. By early 2014 that number had grown to 70 billion cyber events per day (Gagliordi 2014, par. 8), and at that growth rate is likely about 120 billion daily cyber events today. Security software is clearly a significant product innovation. Dell's cloud focus, on the other hand, has elements of business model innovation. For example, in November 2014 they announced Cloud Marketplace, a portal that allows developers and IT managers to "compare, purchase, use, and manage" public cloud services and applications from Amazon, Google, Salesforce, Taleo, and others. The portal is vendor-agnostic and self-service. Recognizing that it is unlikely to be able to compete with Amazon, Google, and the like in providing public cloud services, Dell has become a vendor-agnostic distributor of those services. They are in essence renting hardware to end users, and selling hardware to cloud providers. By building strong partnerships with Amazon, Google, Salesforce, and others, Dell ensures that its servers, storage, and PCs serve as the backend infrastructure in those clouds. The creative resolution to the second conflict is thus: Dell will innovate in both IT-related products and services,

and in the business model that allows them to distribute those products and services where

they do not have an advantage in the product/service itself. The significant shift in Dell's

product and services mix is shown in Figure 32 below.
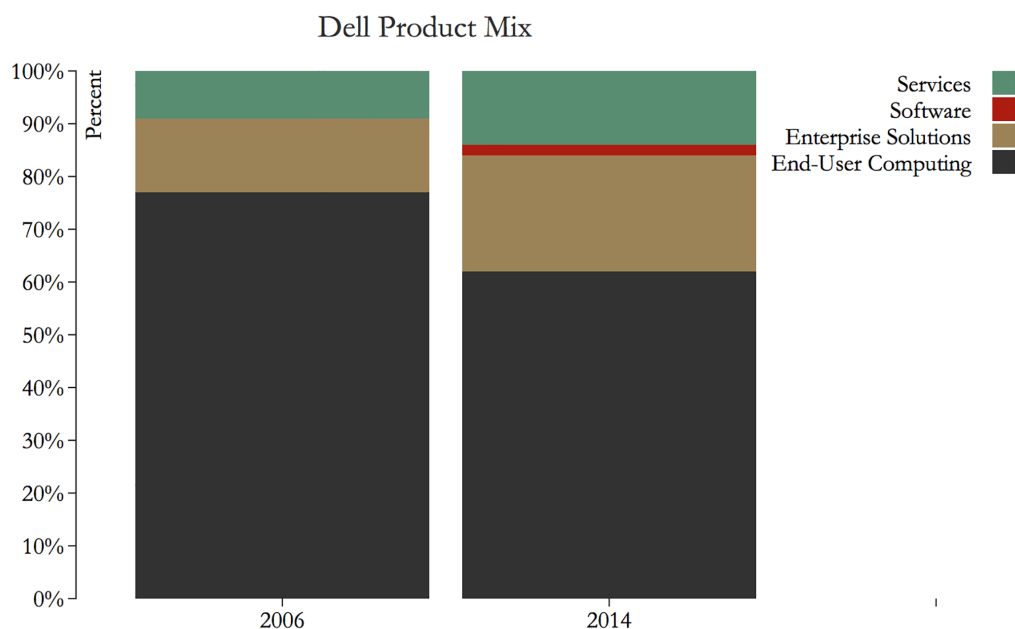
Dell Product Mix

Figure 32 - Dell's product mix over time. Source: Dell annual and quarterly financial reports.

One of my thesis advisors, reading the first draft of this thesis, said that I "sounded

like a 14 year-old schoolboy with a crush on Madonna" in my enthusiasm for Dell's new

product strategy (my advisors are a staid bunch). He insisted that I find the weakness in it.

Well, that's easy. As noted earlier in Chapter 5, Dell clearly was late in transitioning to

mobile form factors such as tablets, although it now has a tablet, the Dell Venue. It is not in

the top 5 in tablet market share. Tablets are a hardware product that will likely commoditize

like PCs did (making relatively early market entry the only hope of making significant

profits). However, Dell chooses to be in the tablet business since tablets are complementary

products to notebooks, in that users can now perform many computing tasks on a tablet,

such as surfing the internet, or sending email. Dell appears to be focusing its mobility

offerings on consulting and offering security products associated with the increasing "bring

your own device" ("BYOD") trend in corporations, in which employees bring their own

mobile phones and tablets to work rather than being issued a corporate version. Dell's lack

of strength in mobility is a weakness in its vastly improved product portfolio.

And then, as I write the final draft of this thesis, comes this news: Dell wins the

2015 Consumer Electronics Show "Best of Innovation Award"

(http://www.shellypalmer.com/spb/2015/1/11/ces-2015-wrap-up) and "Best Mobile Device"

(http://www.engadget.com/2015/01/08/best-of-ces-2015-winners/) for the Dell Venue

tablet. The world's thinnest tablet comes with a "breathtaking infinity display" and a camera

that allows you to manipulate pictures and apply real-time filters to them. Sigh. Never bet

against Michael Dell. It's just a bad idea.

The discussion of tablets as complementary products for PCs brings us to the topic of

wearables, which are complementary products for tablets (for example, the Jawbone Up24

fitness band output is read on a tablet or smartphone). Miniaturization is now allowing

computers to be worn. Dell is investigating new computing form factors (one of the

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breakout sessions I attended featured a Dell partner who was developing a wearable health

monitoring device for seniors), but at Dell World I did not see as much emphasis on

wearables as the market opportunity might dictate.   This stands as an opportunity yet to be

addressed as Dell moves into its Third Horizon. The wearables market is growing at over

60% year on year and will be a $19B market within the next few years (Juniper Research

Ltd. 2013, 16). The market is fragmented, as the PC market was 25 years ago, creating an

opportunity for larger players to consolidate it. As Figure 33 shows, while there are already

companies developing wearable fitness and entertainment devices for the consumer, there

have been fewer applications developed for the business and government markets, Dell's

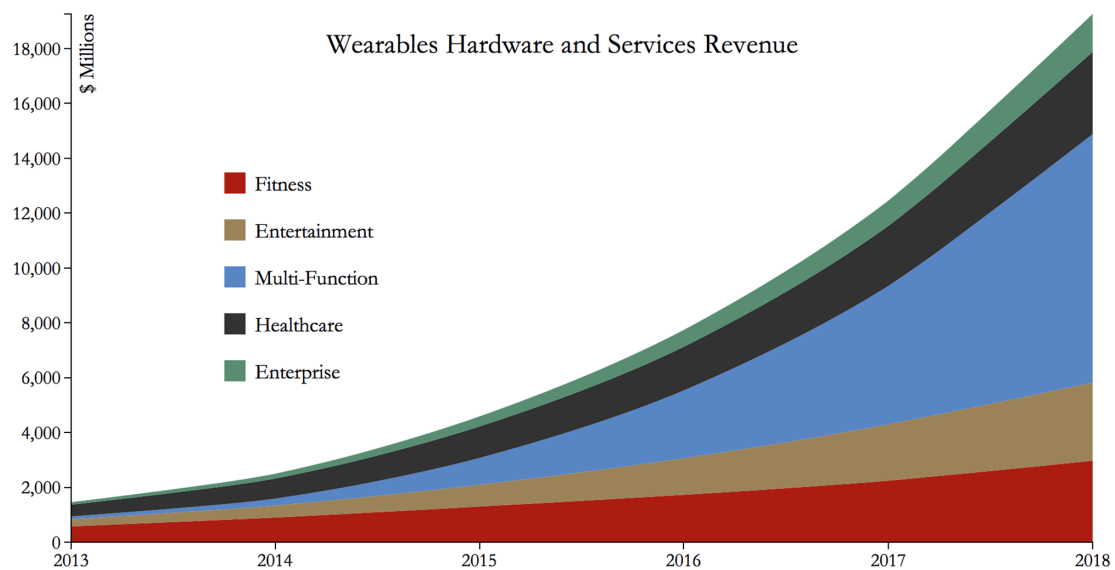strength. Margins exceed 50%, compared to sub-10% for PCs (Yarow 2013, par. 5).

Figure 33 - Wearables hardware and services revenue forecast. (Juniper Research Ltd., 2013)

According to Elaine Chin, Chief Wellness Officer for Telus, the growth in wearables is being driven by the desire for self-quantification, and the healthcare needs of the aging Boomer population. In an interview, she noted, "Self – quantification is the desire to take control of one's *own* numbers. People want to track how much sleep they get, how many sets they do, how many badges for making muffins they get. It's also about healthcare needs. Take, for example, old-fashioned home health monitoring – granny puts her arm in a blood pressure cuff, measures her oxygenation, etc., and is connected to her doctor via some sort of telepresence. This already exists today. Also today, you can download an EKG app, put it on your husband's chest, and send that data to the emergency room. Saves a trip to the emerg, and it's available today. In ten years, we'll be slapping on a device like a band-aid or a temporary tattoo, that transmits all sorts of information to our doctors." "Weak signals" of this trend can be seen in the fitness tracking devices (such as the Jawbone Up24) of today.

So Dell has substantially revamped its product line. How is it addressing the third conflict, associated with its damaged reputation for customer service? First, Dell continues to focus on enterprise customers (business and government) over the consumer. Dell has wisely chosen not to storm Apple's consumer citadel, much as it chooses not to compete head on with Amazon and Google in public cloud services. Dell continues to view consumers as an "opportunistic" market (meaning, Dell will sell to consumers, but it is not the company's focus). As Michael Dell said in a September 2014 interview with CNBC:

> We're bringing powerful solutions to our customers which are generally businesses and institutions. We have a consumer business but there's been a lot of focus at Dell on building solutions across the whole spectrum. So this is a combination of hardware, software, services together, to be able to virtualize an environment, build out a cloud data center, enable a salesforce to be productive but secure at the same time. (Fortt, 2014, par. 16)

Most of the discussion about the consumer at Dell focuses on the "consumerization of IT" (Moorhead, 2012, par. 4), which means the trend of consumers bringing their own devices to work. As shown in Figure 24, consumers have remained about 20% of Dell's revenue mix since the mid-2000s. This shapes Dell's services offerings primarily towards the needs of enterprise customers, who typically require less hand-holding. Second, in terms of creating a competitive advantage in service, I think that Dell will leverage big data internally to create a better customer experience. Because Dell sold directly to the end customer, Dell always had better data on what that customer bought and how often, and what their service history was. In one of the Dell World breakout sessions I attended, Dell managers talked about using their data advantage to create "smart" products that will tell the customer when they need maintenance, or are about to fail. For an IT manager, replacing a hard drive that is about to fail is a 30-minute inconvenience. Replacing one after it has failed (with a user who has probably not backed up all his data) is far more disruptive than that. Moving forward, I think that Dell can provide easy-to-use, low cost, and smart (predictive) products to strengthen their end-to-end relationship with customers. They can also leverage social

media, such as Twitter, to rapidly and cost-effectively deal with service issues. While turning

around its service reputation will take time, predictive maintenance and use of social media

provide a solid start.

Dell has thus revamped both its product strategy and its business model strategy,

reaffirming its commitment to the PC and end-to-end computing. Its new value proposition

has elements of the old – low cost products and services, and the new – "smart" services like

predictive maintenance, and some critical expertise and IP in security.

Going Private

The fourth conflict, whether Dell should remain a public company or go private, was

played out visibly in the press in a battle between Michael Dell and Carl Icahn. The

pressures of Wall Street were a very significant factor in Dell's failing to make the needed

investments in new areas such as mobile devices. Sweet said, about going private, "I think it

was a very symbolic step. Michael loves to talk about the fact that he's no longer on a 90-day

cycle. The fact of the matter is, I'm still on a 90-day cycle, because I'm still talking to all the

debt people, the analysts, but he's not. But I do think it was a catalyst, to leapfrog that

conversation forward, as a demonstration to the organization."

Innovation is likely to increase now that Dell is a private company. A July 2014

study by Shai Bernstein at the Stanford Graduate School of Business concluded that going

public caused a decline in the novelty of patent filings (as measured by the number of

citations a patent receives after it is approved), but not the number of patent filings,

suggesting that transitioning to the public equity markets causes firms to reposition their

R&D portfolio towards more conventional projects (Bernstein 2014, 3). A similar working

paper at INSEAD (working title "Entrepreneurial Exits and Innovation") also found that

innovation quality was highest under private ownership and lowest under public ownership,

again using patents as the measure (Hsu and Aggarwal 2013, 24-25). Hsu and Aggarwal

found that the reason for this was "information disclosure" – since public companies are

required to report their results, managers back safer, more core projects in order to produce

results in the short term. In a subsequent interview conducted by INSEAD Knowledge,

Aggarwal discusses Dell's "going private" transaction:

> Dell is a great example: One of the reasons they've been less innovative over the past
> decade or so is because they've been under constant public scrutiny. Part of the
> motivation behind the buyout is to spur innovation at all levels of the company.
> (Aggarwal and Kessler 2013, 16)

The 2012 study, "Incentives to Innovate and the Decision to Go Public or Private,"

by Daniel Ferreira, Gustavo Manso, and Andre Silva, also concludes that private firms are

more innovative:

> Private firms take more risks, invest in new products and technologies, and pursue
> more radical innovations. Private firms are more likely to choose projects that are
> complex, difficult to describe, and untested…Mergers and acquisitions, divestitures,
> and changes in organizational structure and management practices are more easily
> motivated under private ownership. (Ferreira, Silva, and Manso 2012, 288)

Finally, going private reduces the obsession with growth that is built into the stock prices of fast-growth companies such as Dell. This obsession with growth, as pointed out by Collins, leads to short-term thinking as companies try to hit growth targets, and an internal focus as companies constantly reorganize in an attempt to seek incremental growth at the lowest cost.

The remaining question is whether Dell should *stay* private, or return to the public markets. My own analysis, as shown in Figures 34 and 35, bears out the benefits of Dell staying private. Using the information in Dell's filings with the Securities and Exchange Commission ("SEC") at the time it went private, it is possible to estimate the relative revenue and profit contribution of its core PC business (desktops and notebooks), its core Enterprise Solutions business (servers, storage, and services), and its newer businesses (cloud, tablets, security, enterprise software, etc.). For the information of my fellow accountants, I am using operating income as the profit measure – everyone else, just think plain old "profits," or revenues minus costs. The SEC filings and the work of consultants Boston Consulting Group ("BCG") and J.P. Morgan also allowed me to estimate growth rates for each product category, under both "stay private" and "go public again" scenarios (Collis, Yoffie, and Shaffer 2013, 10-36). Product categories in the charts below include "Commodity Core" (desktops, notebooks, peripherals, and related services), "Enterprise Core" (servers, storage, and related services), and "Innovation" (infrastructure, cloud and

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security services, applications and business process services, software, and tablets).   Details

for supporting assumptions and sources for the scenarios in Figures 34 and 35 are in

Appendix F.   Figure 34, immediately below, depicts the revenue scenarios.

Figure 34 - Dell 2023 revenues under "go public" and "stay private" scenarios. Source: Author's analysis, (BCG, 2013), (J.P. Morgan, 2013), (Collis, Yoffie, and Shaffer 2013, 10-36).

Dell's estimated 2013 revenues (it went private in fall of 2013) were $57 billion

(BCG 2013, 11) with estimated operating income of about $2.3 billion (Dell, 2013b, 30)

(Dell, 2013a, 50-52). If Dell goes public within a year or two, by 2023, it could be a $56

billion company (revenues) with about $3.6 billion in profits. This assumes a compound

annual growth rate ("CAGR") *shrinkage* of about .3% per year, driven by a 6% annual

shrinkage in its core PC business (J.P. Morgan 2013, 12) which is not completely offset by

significant growth in more innovative businesses.   On the other hand, if Dell stays private

and invests in the growth of innovation-driven businesses such as security, big data, cloud,

and mobility, by 2023 it could be an $87 billion business (4-5% CAGR), with $6 billion in

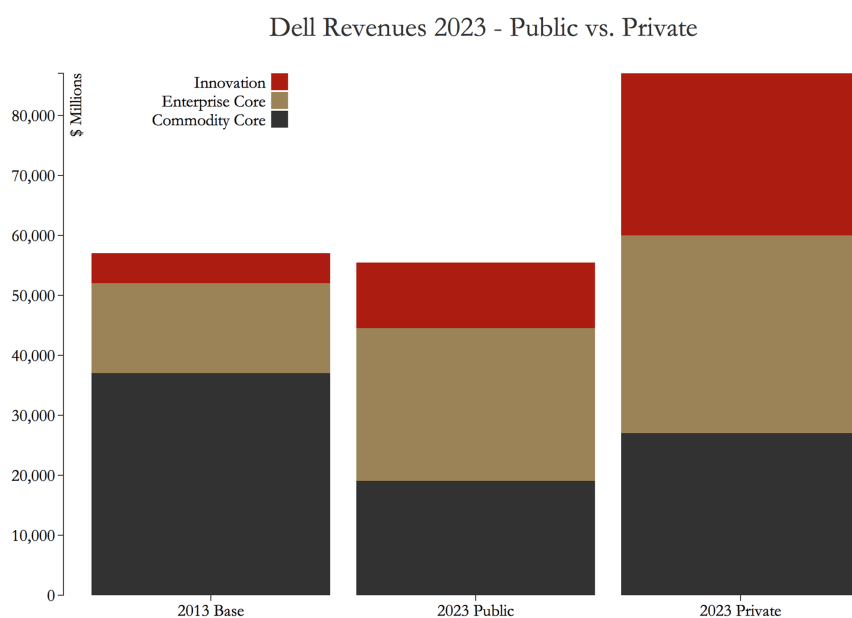profits.   Figure 35 depicts the profit scenarios.
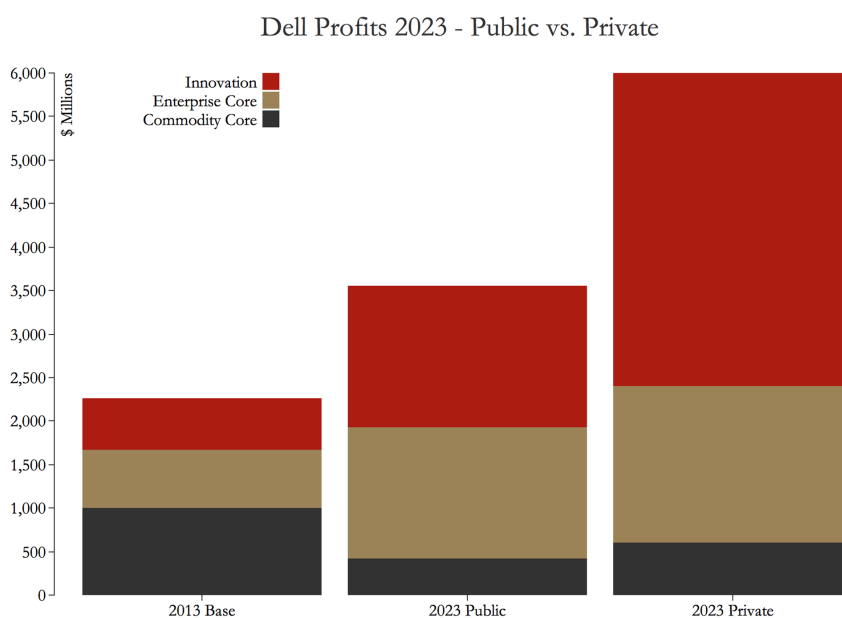
Figure 35 - Dell 2023 profits under "go public" and "stay private" scenarios. Source: Author's analysis,
(BCG, 2013), (J.P. Morgan, 2013), (Collis, Yoffie, and Shaffer 2013, 10-36).

Most of the revenue and profit growth in the "stay private" scenarios is accounted for

by an estimated 18% revenue CAGR in Dell's innovation-driven product lines.   This rate is

1.5X the growth rate (Dell 2013, 5) of those innovation-driven markets, namely security, big

data, mobility, and cloud.   As examples of growth rates in these markets, the security

services market growth is projected to be 15.4% between 2013 and 2019 (Verrastro, 2014),

and the business intelligence (big data) market grew 8% in 2013 (Sommer 2014, 1). Further

details of growth rates by market are in Appendix D. For those doubting that a very large

company can grow total revenues in the 4-5% range, Dell grew at a CAGR of 11.6% during

the period 2004-2006, when it was a $50 billion company. Apple had $183 billion in

revenues in 2014, and grew at about 7% (Golson 2014, par. 3). The important conclusion

in this sea of numbers? I argue that *Dell's 2023 profit could be 70% higher if it stays private*

rather than goes public again.

Dell is now the third largest private company in the world, behind Cargill and Koch

Industries (Nixon, 2014). And based on Michael Dell's comments about the benefits of not

being on a 90-day clock, Dell seems unlikely to go public again anytime soon. *Will* they go

public, and if so, when? Let's start with why companies in general go public. Companies go

public because they need capital, an enhanced reputation with customers, or a boost to their

brand. Dell had about $12 billion in cash (Dell 2013a, 3) when it went private, and strong

cash flow. Dell does not need capital, and it has a leading share amongst its enterprise

customer base as well as a well-recognized brand. Also, the stock market did not recognize

Dell's shift in product mix or record revenue performance in its fiscal year 2012, before Dell

went private. The stock actually declined in 2012. Dell has no reason to go public again.

Will Dell need to go public to create liquidity for the principal investors? Michael
Dell provided $4.2 billion or 75% of the equity in the buyout, and Silver Lake contributed
$1.4 billion or 25% of the equity (Carey and Clark 2015, par. 2, 3).   The remainder of the
$24.9 billion buyout price consisted of $18 billion in debt and some of Dell's cash (Carey
and Clark 2015, par. 1, 8). Dell paid down its debt by $3 billion last year, using its strong
cash flow (Carey and Clark 2015, 8). This resulted in Standard & Poor's (debt rating
agency) upgrading Dell's corporate credit rating by two notches, and upgrading its senior
unsecured debt by three notches ("Dell Upgraded by S&P as It Chips Away at Its Debt"
2014, 2, 8). The price of Dell's debt, as shown in Figure 36, has risen by about 60%.

Figure 36 - Price of Dell debt issue, November 2013 to March 2015. Source: Bloomberg.

Debt investors, therefore, are getting repaid. On the equity side, if Michael Dell or Silver Lake requires liquidity, the company can issue dividends from its cash flow, so there is no need for Dell to go public in order to provide ongoing liquidity for these investors. However, Silver Lake may eventually want to exit its Dell holdings entirely, in order to provide a realized gain for investors in its fund. Indeed, the estimated value of Michael Dell and Silver Lake's equity holdings rose from $5.6 billion in 2013, at the buyout, to $10.8 billion less than a year later (Carey and Clark 2015, par. 2). That is over a 90% gain on the equity alone, in one year. It is an impressive gain, but it is only a gain on paper until someone buys Silver Lake out. Typical holding periods for private equity funds are at least 5 years (Parker 2013, 10), which puts a likely Silver Lake exit sometime after 2018. There is, however, no need to go public in order to buy Silver Lake out. Given the relative proportion of their equity holdings and Michael Dell's other assets, Michael could buy Silver Lake out himself, or the company could do it, again from cash flow. It's also unlikely that Dell will be sold privately to another firm. Given the size of the $24.9 billion buyout in 2013 and the possible 70% increase in profits by 2023, the price would likely be a steep $40B+. Nine of the ten largest high tech acquisitions of all time were for less than $20 billion (Forrest, 2014). Given that Dell has no need to tap the public markets and is unlikely to be purchased by another firm, it will likely remain a private company, with Michael Dell as the principal shareholder.

Whew. I'm calling it now, in February 2015. Dell stays private. By the early 2020s, revenues are $90 billion or so. Profits are $6-7 billion. Dell is recognized as one of the world's most innovative firms. Go ahead and call me crazy. You'll be buying the beers.

One Last Thing

Linda Hill's voice just popped into my head. "Hey Heather, you've talked about Dell resetting its shared values and rules of engagement, and how Dell is using acquisitions, venturing, and its own research think tank to get its creative abrasion, agility, and resolution back. What about 'purpose'? This Third Horizon thing's going nowhere if Dell doesn't have a purpose its people can get behind." The analysis is not complete until you've covered the whole damn framework.

Dell also has its purpose back. Michael Dell has stated that he believes that "technology is about enabling human potential," and he expanded on that at Dell World by saying that technology can help address mankind's greatest challenge – abundance for all (https://www.youtube.com/watch?v=qy-kz1ZhCaQ). Peter Diamandis, Chairman of Singularity University and co-founder of the X-Prize, spoke at Dell World and defined abundance for all as "health, education and access to resources so that every man, woman, and child can live sustainable lives." Dell calls this "Powering the Possible." Several Dell World speakers discussed how technology can help create abundance in all corners of the world. Kiva Loans' founder Jessica Jackley, for example, noted that Kiva's internet-based

micro-lending platform has enabled $630 million in loans from lenders in developed

countries to entrepreneurs in developing countries. Diamandis argued in his Dell World

keynote that the presence of ubiquitous, cheap technology such as accelerometers and

cameras allows poor entrepreneurs in developing countries the opportunity to lift themselves

out of poverty. Michael Dell, who was named the Global Advocate for Entrepreneurship

for the UN Foundation, states that the pace of technological change means that the

proportion of jobs created by emerging businesses will go up (Leber, 2014, par. 9).

Not everyone believes that technology shrinks the gap between rich and poor, or that

the developed world has any business helping those in developing nations lift themselves out

of poverty. For example, Arturo Escobar, author of the 1995 book *Encountering*

Development, expressed the view that western nations have "discovered" poverty in the third

world so that they can reassert their moral and cultural superiority (Reid-Henry 2012, par.

3). Other scholars such as Pippa Norris have argued that technology has the potential to

further the divide between developed and developing countries, because developed countries

have the capital to invest in newer technologies (Norris 2000, 16-17). Richard Maxwell and

Toby Miller (2012, 3) state that by 2007, up to 50 million tons of e-waste generated

annually in the Global North (including the U.S.) were dumped in the Global South

(including Latin America and China). Other scholars point to the risk that jobs could be

eliminated by technology. According to Carl Frey and Michael Osborne, scholars at Oxford

University, up to 47% of U.S. jobs are subject to automation within the next decade,

particularly low skill and low wage jobs (Frey & Osborne, 2013, 38, 42). However, even

with these cautions, "enabling human potential" is a broad, transcendent vision that many

Dell employees will likely be able to get behind. Dell is also working to ensure that

technology does not increase the divide. For example, in 2009, Dell became the first in its

industry to ban the export of e-waste to developing countries ("Recycling your Dell," 2015).

Summary and Additional Recommendations

Will these changes help Dell be more innovative? As shown in Figure 37 below, Dell

has put in place many elements required to create an organization both willing and able to

innovate.
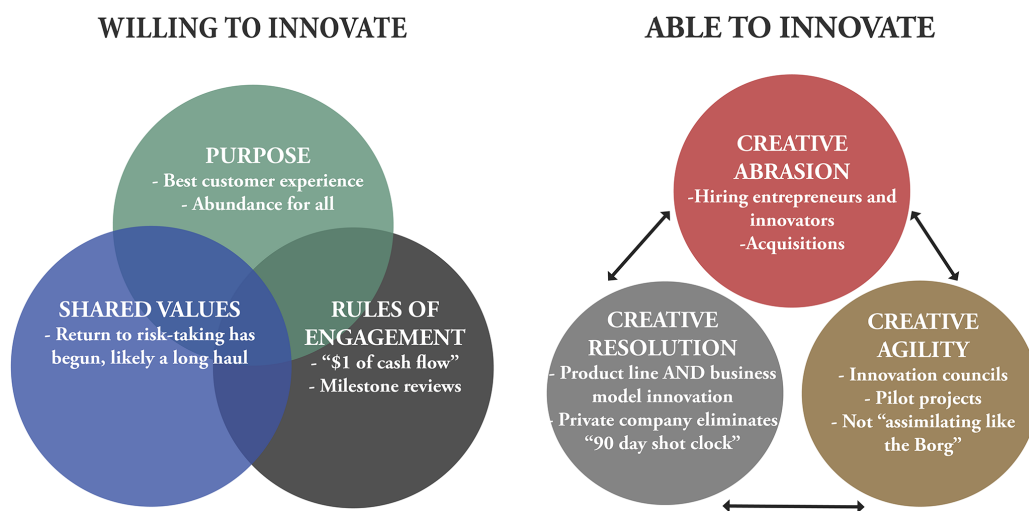
Figure 37 - Dell's current position on the "Willing and Able" framework, as depicted by the author.

We return also to the Three Horizons framework. Clearly, Dell has learned much

from its Second Horizon, and the lessons can be applied to other large firms.

First Horizon
- Direct model
- Execution
- Entrepreneurial culture
- Risk-taking/speed
- PCs

High

Third Horizon
- Risk-taking returns
- Stays private
- Intelligent Gambler©
  on acquisitions
- Higher margin,
  differentiated products
- Predictive analytics

"Triangle of Conflict"
- Risk-taking dies
- Pressures of Wall Street
- Missed product transitions
- Commodity products

Strategic Fit

Second Horizon

Low

**First Horizon
1984-2000**

**Second Horizon
2001-2012**

**Third Horizon
2013-???**

Figure 38 - Dell's current position on the Three Horizons framework, as envisioned by the author.

Dell has articulated a preferred future state and identified several elements required to

get there (principally, an entrepreneurial organization, an exit from Wall Street, and a

revamped product line).   How will they know this is all working? Key performance

indicators might include internal growth and profit targets, patents granted and cited by

others, awards for product and service innovation, and analyst rankings.

Recommendation: Fly Your Freak Flag in Hiring

In addition to these preferred state elements put in place by Dell, I have several

recommendations, based on this study. First, Dell should fly its freak flag in hiring, at all

levels. Urban Dictionary defines the term "fly your freak flag" as: "A characteristic,

mannerism, or appearance of a person, either subtle or overt, which implies unique,

eccentric, creative, adventurous or unconventional thinking" (White, n.d.). As noted in

Chapter 3, intellectual diversity has been critical in some of the biggest innovations of our

time. And as identified in this chapter, Dell's massive influx of people, including many

consultants, helped result in a culture that tilted too far away from entrepreneurial execution

and towards process-oriented analysis. Hire some creative people, some statisticians, and

some artists and designers, and mix them into the business units.

Recommendation: Train Managers to Be Intelligent Gamblers

Second, hire managers who listen, and who encourage risk-taking and thoughtful

failure. Train them to be "intelligent gamblers" and establish regular reviews and incentives

to ensure some of these new technology ideas get funded. As Robert Sutton says, reward

failure and success, but punish inaction (Sutton, 2006, 6). This will be the hardest part of

the transition to the "world's largest start-up," because employees have long memories and

related stories (which are told and retold) of the days when risk-taking was not encouraged.

Recommendation: Stay Private

Third, stay private. As shown in Figures 34 and 35, staying private produces superior profits, relative to going public again.

Recommendation: Combine Innovations to Improve Service

Fourth, combine big data and the cloud to further simplify IT and improve Dell's service reputation. Dell could, for example, extend its predictive analytics advantage in services by making its products predictive *and* self-healing, combining the power of the cloud, software-as-a-service models, and big data. Not only could the hard drive notify you that it was about to fail, but the system could diagnose the problem in real-time, and run the appropriate "correcting" software (like anti-virus, or defragmenter) immediately, without user intervention. It could also automatically back up your system for you, to the cloud. The faulty system could notify Dell that there is an issue, and order the appropriate replacement part.   Adding self-healing capabilities moves services powered by predictive analytics from the "Sustaining Innovations" box to the "Game Changers" box on the Intelligent Gambler© framework, because it requires some investment in companies that are dissimilar to the existing PC business.

Recommendation: Combine Innovations to Simplify IT for SMBs

Fifth, invest human and financial capital into simplifying IT for small and medium businesses ("SMB"), which must make choices about the dizzying array of options for

phones, faxes, computers, cloud services, security, and application software. Dell could, for

example, extend its Cloud Marketplace idea to create an SMB Marketplace, which provides

SMBs with guidance as to the right phone, fax, PC, cloud, security, and application

providers for their needs. SMBs can select the products and services needed, bundle them

with PCs or tablets, and order the entire bundle directly from the SMB Marketplace. Cash-

crunched SMBs could even select an option to pay a single monthly "per seat" charge for

these bundles, with no long-term contracts, using Dell Financial Services as the financing

arm.   At the end of a certain period of use, say three years, Dell could automatically pick up

any old PC hardware and install upgraded versions, simplifying life for the SMB and creating

annuity revenues and long-term relationships for Dell. Long-term relationships in this sector

are highly profitable for Dell – Dell's SMB segment had 11.2% operating income for the

fiscal year ended February 1, 2013, compared to 8.7% for Dell's Large Enterprise segment,

8.3% for the Public (government) segment, and negative operating income for the

Consumer segment (Dell 2013b, 41). Adding an array of new products, services, and

financing options for small business moves the Cloud Marketplace concept from the "Seeds

of Disruption" box to the "Game Changers" box on the Intelligent Gambler© framework,

because of the additional complexity and capital required to integrate multiple products into

a single bundled offering.

Recommendation: Invest in Enterprise Wearables

Sixth, find a way to invest in enterprise wearables, or at least experiment with them in a small way. Wearables may cannibalize smartphones and tablets like those technologies cannibalized the PC industry. Best to be ahead of, rather than behind, that trend.

In sum, Dell's promising third act is built on the bitter lessons of its Second Horizon. Dell has put in place many of the elements required to resolve the conflicts of the Second Horizon, and to re-establish the organization's willingness and ability to innovate, in an era in which innovation is more crucial than ever before. They've put in place an inspiring purpose that employees can get behind. Now all they have to do is execute. And if you don't know whether they can do that, you may not have been following along.

Chapter 6

Conclusions and

Future Research

Chapter Six – Conclusions and Future Research

Conclusions

This study addressed the research question: "What caused Dell's growth rate and stock price to decline in the mid-2000s, and how might Dell thrive once again?" More broadly, the research fused Innovation and Foresight frameworks to create a deeper understanding of how large companies can capitalize on the accelerated pace of innovation fomented by the digital revolution. The study analyzed how innovative cultures are created, lost, and reborn in large companies through the lens of a long-term case study, namely my 13 years at Dell Inc. My long-term personal relationships have given me unprecedented access to the people who helped create Dell. The research also included a three-day visit to Dell's annual customer conference, Dell World, which illuminated Dell's new product and service strategy, as well as highlighted some tensions that had led to the decline in innovation at Dell.

The study identified tensions between the initial entrepreneurial employees who populated Dell in its first 15-20 years, and the analytical and process-oriented consultants who were brought in en masse in the mid-2000s, as Dell nearly doubled its workforce in three years. In addition, the research showed that the tension between the need to identify and invest in future technologies and the need to meet Wall Street's short-term quarterly

targets significantly dampened innovation at the company. The study also highlighted that new technologies are producing new problem-solving possibilities at an exponential rate, and therefore managers must develop what Roger Martin terms "an opposable mind."

The research showed that Dell can't, and shouldn't, return to the past, as it is no longer a $2 billion American company run by a 27 year-old. It has, however, learned much from its changing environment and the bitter lessons of its Second Horizon. The preferred future state for Dell is a) a workforce both willing and able to innovate for the long-term, b) a private capital structure, and c) a product line which is diversified away from commodity PC products, and towards emerging trends such as security, big data, and wearables.

The study showed that achieving this preferred state will require considerable effort to create intellectual diversity within the Dell employee population and to re-establish risk-taking at the company, while maintaining financial guardrails required for a large firm. More broadly, the research identified the need for large corporations to take an "intelligent gambler's" approach to resolving the tensions associated with fostering innovation in large firms by investing in, partnering with, and acquiring other firms which are producing intellectual property and technology in relevant fields. Intelligent gambling leverages assets unique to large companies – financial capital, and the ability to manage global complexity. In high technology, in particular, this intelligent gambler's mindset must pervade the entire organization, not just be tucked away in a mergers and acquisitions ("M&A") group. The

Intelligent Gambler© framework developed as part of the study provides business leaders with a structured approach to analyzing these investment opportunities, based on the degree of similarity to the current business and the complexity of the target business.

The research and analysis also determined that Dell should remain private, because private firms are more innovative than public ones. It also showed that, if Dell remains private, its profits in 2023 could be 70% higher than its profits if it chooses to go public in the next couple of years.

Linda Hill and her colleagues' "Willing and Able" innovation framework provided the most appropriate lens through which to evaluate Dell's return to an entrepreneurial culture. "Willing and Able" is simple and pragmatic. Its elements are also clearly represented in the real-world case study of Dell. It is clear from the analysis that an organization has to have a bunch of risk-taking mavericks who are willing to innovate, as well as a few pointy-headed accountants and leaders with opposable minds in order to enable that innovation. Curry & Hodgson's Three Horizons framework was useful in terms of identifying conflicts in Dell's "messy middle" period of roughly 2001-2012. Porter's Five Forces analysis was useful in assessing Dell's new product portfolio, which moves it well beyond PCs, an unattractive commodity market with high competitive intensity. The study also shows that Dell must improve its customer service, which was historically a strength but became a weakness as Dell cut costs in the early-to-mid 2000s.

Beyond Dell, the study is an illustration of how strategic foresight, the right mix of mavericks and MBAs, "intelligent gambling" and an appropriate capital structure can bring back risk-taking at large corporations. The Intelligent Gambler© framework provides a useful guide for accelerating innovation in large organizations, in a way that balances financial concerns with risk-taking and product portfolio management. The Agile Product Portfolio framework illuminates the need for large corporations to continually invest in "small" opportunities with high growth potential, and to couple those with some sort of cash cow or Trojan Horse business that both pays the bills and allows access to a larger customer set. The work also highlights the importance of integrative thinking, or the agility of thought required for innovating in the exponential acceleration of the digital age.

What did I personally learn during this process? Well, my thesis advisor pointed out that I am both a maverick and an MBA and have an "opposable mind," something that would explain why there always seem to be at least 2-3 voices arguing in my head about any major decision.   In some respects I agree, although I prefer to simplify problems in order to speed decision-making, whereas leaders with true opposable minds are comfortable with complexity. I'm also impatient, so I do not hold conflicting thoughts for long. However, I am comfortable with ambiguity and love to learn new things. I've had so many diverse life experiences that I can usually understand multiple perspectives without becoming wedded to any particular one (all consistent with an opposable mind). I've been a detail-oriented

accountant, a strategic consultant, a risk-taking maverick, a marketer for a $50 billion company, and CEO of a start-up. I will shortly have advanced degrees from two schools, one described as "the Marine Corps of capitalism" and the other an art and design school with an ethos somewhere left of center. I love to learn new things, and that's served me very well in the chaos of the digital era. Which makes me think, if we want more leaders with opposable minds, schools may need to shift their curricula. Teach students to "love to learn," experiment, and prototype in addition to teaching them what they need to learn. (Turns out some brainy people who give Ted Talks agree – see the Marshmallow Challenge at http://marshmallowchallenge.com/Welcome.html). Teach them to seek the different rather than the same, in order to better understand diverse perspectives and have the ability to pull innovation from anywhere. This will eventually create more leaders who have Martin's "opposable mind," and are willing and able to be intelligent gamblers.

In conclusion, this was not just an academic exercise. I lived it. I remember it as an idealistic young woman who had a tiger by the tail, and I also see it now through the lens of 30 years of business experience. It was a hell of a ride, and it is a hell of a lesson for Dell and the rest of the business world.

Future Research

In terms of Dell-specific research, it would be useful to increase the number of former employees interviewed, particularly outside North America, to understand whether the challenges were similar in other geographies. It would be helpful to interview customers who have been with Dell over the entire period of the mid 90s to the current period, to understand their viewpoint on Dell's changing culture, products, and opportunities over that period.

More broadly, it would be useful to analyze the results associated with use of the Intelligent Gambler© framework, across several years and several large companies. This would help assess whether the key performance indicators were effective in identifying both successful and failing investments in a timely manner. A further study could review to what extent public, private, and higher education curricula reflect coursework which develops the characteristics of an "opposable mind," and what changes might need to be made to that curricula. To the extent that other large public companies decide to go private in order to avoid the short-term pressures of Wall Street, it would also be useful to assess whether innovation (as measured by patents, or product awards, for example) increased as a result of their going private. Another inquiry could analyze potential changes in laws and regulations that could help public companies remain innovative. Finally, it would be helpful to study how large companies negotiate a return to, and manage the expectations of, public markets.

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Appendix A
Research Ethics Board Approval Document

Research Ethics Board

August 8, 2014

Dear Heather Simmons,

RE: OCADU 194 "Dell – the Rise, the Fall, the Way Back."

The OCAD University Research Ethics Board has reviewed the above-named submission. The protocol and the consent form dated August 8, 2014 are approved for use for the next 12 months. If the study is expected to continue beyond the expiry date (August 7, 2015) you are responsible for ensuring the study receives re-approval. Your final approval number is **2014-33.**

Before proceeding with your project, compliance with other required University approvals/certifications, institutional requirements, or governmental authorizations may be required. It is your responsibility to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the OCAD U REB prior to the initiation of any research.

If, during the course of the research, there are any serious adverse events, changes in the approved protocol or consent form or any new information that must be considered with respect to the study, these should be brought to the immediate attention of the Board.

The REB must also be notified of the completion or termination of this study and a final report provided before you graduate. The template is attached.

Best wishes for the successful completion of your project.

Yours sincerely,

Tony Kerr, Chair, OCAD U Research Ethics Board

OCAD U Research Ethics Board: rm 7520c, 205 Richmond Street W, Toronto, ON M5V 1V3
416.977.6000 x474

Appendix B
Sample Interview Guide

1. You were at Dell from XXXX-YYYY, in brand and product marketing.   How would

    you describe Dell's culture when you arrived?   When you left?   What were the

    significant deltas between these periods? How did Dell's marketing strategy change

    over this period? Were there any significant innovations?

2. Tell me a story about an experience that sticks with you, from your time working
    with Dell.

3. Dell grew at about 50% year on year for most of the 1990s, and had the highest

    return on equity of any stock in the Fortune 500 during this period. Please rank the

    importance of the following factors in Dell's success, with 1 being the most

    important and 10 being the least important.

    a. Risk-taking/speed of decision-making

    b. Innovation

    c. Entrepreneurial culture and employee commitment

    d. Direct business model – no middleman, lower inventory, lower cost

    e. Partnerships with other companies

    f. Execution

    g. Customer service

    h. Leadership

    i. Incentives/stock options

    j. Other (please specify)

Which of these factors will be most important for Dell's **future** success (pick 3)?

4. Dell's growth then moderated to less than 10% year on year for much of the 2000s. To what do you attribute this slowdown?

5. Dell's made 19 acquisitions in the last 5 years, primarily in the newer areas such as security, big data, and enterprise. How well did Dell partner with others when you were there? What are some best practices that you've seen in this area, from other companies?

6. When we joined, Dell was a $3 billion company. Today, it is a $60 billion company. The direct model was very innovative, but some say Dell has lost its entrepreneurial culture and ability to innovate. What are some of the best practices you have seen in larger organizations, in terms of encouraging and sustaining innovation?

Appendix C
Interview Participants

Horizon	Mktg/Sales	Engineering/Product Development	Operations/ Mfg	Finance/HR/ Service	Partners
1984-2000 (First Horizon)	• Interviewee #10 (North Am) • Interviewee #7(APAC and North Am) • Interviewee #8 (North Am)	• Interviewee #3 (North Am) • Interviewee #5 (North Am)	• Interviewee #3 (North Am) • Interviewee #4 (North Am)	• Interviewee #6 (North Am)	• Interviewee #2 (North Am)
2001-2012 (Second Horizon)	• Interviewee #10 (North Am) • Interviewee #7 (APAC and North Am)	• Interviewee #5 (North Am)		• Interviewee #9 (North Am)	• Interviewee #2 (North Am)
2013-?? (Third Horizon)					• Interviewee #1 (North Am)

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Appendix D
Detailed Five Forces Analysis

	Security Outsourcing	Big Data	Cloud	Mobility (Tablets)	PCs
Market Size	$12 billion ("B") (NTT 2014, par. 6)	$14.4B (Sommer 2014, par. 1)	•$155B for public cloud (Columbus 2013, par. 2, 3) •$32B for private cloud (Gaudin 2014, par. 4) •$143B for data centre (Paye 2015, par. 6)	250 million tablet units or $70-80B ("The State of the Tablet Market," 2015)	315 million units (Kitagawa 2015, par. 14) or roughly $200B (Arthur 2014, par. 9).
Growth	15.4% through 2017 (NTT 2014, par. 6)	8% in 2013 (Sommer 2014, par. 1)	•20% for public cloud(Gaudin 2014, par. 4) •40-50% for private cloud (Gaudin 2014, par. 4)	11-12% for 2014 ("The State of the Tablet Market," 2015)	-.2% for 2014 (Kitagawa 2015, par. 14)
Operating Margin	18-50% (James 2013, par. 6)	Roughly 25%(Alessi 2015, par. 8)	Approximately 20-25% (Gottfried 2013, par. 9)	About 25% ("Biggest Tablet Profit Margins: Microsoft, Apple" 2012, par. 9)	<5% (Arthur 2014, par. 16)
Profit Pools	$3B (calculated as $12B X 25% operating margin)	$4.5B (calculated)	$50B+ (calculated)	$18B (calculated)	$10B (calculated)
Buyer Power	High for large corporations, moderate for small/mid sized businesses ("SMBs").	High, typically large corporations.	High, cost conscious.	High.	High.
Threat of Substitution	Moderate – cloud-based offerings.	Low – learning curve.	Low to moderate, in-house IT.	High - smartphones, phablets.	High, tablets, smartphones.

	Security Outsourcing	Big Data	Cloud	Mobility (Tablets)	PCs
Supplier Power	Low – only suppliers are for servers, storage, energy, and other commodities.	Low.	Moderate, electrical power may become constrained.	Low.	Low – commodity products.
Competitors	• Verizon, IBM, HP, Symantec (large). • Checkpoint, Fortinet, Sophos, Cisco, Juniper (SMB).	IBM, SAS, Oracle, Tableau, Microsoft.	Amazon, Google, Rackspace, AT&T in public cloud. IBM, HP, others in private cloud.	Apple, Samsung, Asus, Lenovo, Amazon.	Lenovo, HP, Acer, Apple.
Dell Position	Gartner Leaders quadrant for both SMB and large, ahead of IBM, HP, Cisco, Juniper (Kavanagh 2014, par. 5).	Not in Gartner Leaders Quadrant (Columbus 2015, par. 4).	Gartner Leaders Quadrant for data center outsourcing (private cloud) along with HP and IBM(Maurer, Ackerman, and Britz 2014, par. 8). Does not compete in public cloud with Amazon, Google, etc.	Not in top 7 in market share (Reader 2015, 7).	#3 worldwide with 13% market share (Kitagawa 2015, par. 14).
Barriers to New Entry	High – big data analytics and expertise required.	High – insights required.	High - requires scale.	High - requires scale.	High – consolidated, requires scale.

Appendix E
Acquisition Detail

Acquisition	Description	Type	Year	Price
EqualLogic	iSCSI storage	Enterprise Solutions Group ("ESG")	2008	$1.4 billion ("B")
Message One	SaaS for compliance, archiving, and disaster recovery	Security	2008	$164 million ("M)
The Networked Storage Company	Transitioning storage network infrastructure	ESG	2008	Undisclosed
Perot Systems	IT consulting services	Cloud	2009	$3.9B
Allin Microsoft Services	Designing scalable networks and application architectures	ESG	2009	$12M
Kace	Management ("mgt") appliances - device discovery, SW distribution, patch mgt	Mobility	2010	Undisclosed
Scalent	Datacenter infrastructure/workload mgt	Cloud	2010	Undisclosed
Boomi	Cloud application management software – allows easy transfer of data between cloud-based and on-premise applications.	Cloud	2010	Undisclosed
InSite One	Cloud-based medical archiving - archive software and storage of medical images, with disaster recovery.	Cloud	2010	Undisclosed
Ocarina Networks	Storage compression and content-aware de-duplication. Data management.	ESG	2010	Undisclosed
Exanet	Clustered network-attached storage ("NAS")	ESG	2010	$12M
Compellent	Mid-range fibre channel storage.	ESG	2011	$960M
Force10	Data center networking – switches and routers	ESG	2011	$700M
SecureWorks	SaaS managed security services	Security	2011	$612M
RNA Networks	Server and memory virtualization technology	ESG	2011	Undisclosed
Quest Software	Server, access, and application performance management	Software	2012	$2.4B
SonicWALL	Security appliances and management, back-up and recovery	Security	2012	$1B
Make Technologies	Application modernization software and services. Application re-engineering. Run most effectively on open, standardized platforms including the cloud.	Cloud	2012	Undisclosed

Acquisition	Description	Type	Year	Price
Credant Technologies	Data protection from endpoints, to service, storage, and the cloud	Security	2012	Undisclosed
AppAssure	Server, data, and application backup and recovery for virtual, physical, and cloud infrastructures	Security	2012	Undisclosed
Gale Technologies	Deployment and infrastructure mgt for on-premise and hybrid clouds	Cloud	2012	Undisclosed
Clerity Solutions	Application modernization and re-hosting. Transitions business critical applications and data from legacy systems to modern architectures, including the cloud.	Cloud	2012	Undisclosed
Wyse Technology	Thin client solutions with advanced management, desktop virtualization, and cloud software.	Cloud	2012	Undisclosed
Enstratius	Cloud-infrastructure management for public, private and hybrid-cloud deployments, either SaaS or on-premise	Cloud	2013	Undisclosed
Statsoft	Predictive analytics.	Big Data	2014	Undisclosed

Source: Dell annual reports and website, (Bort, 2012).

Appendix F
Public vs. Private Scenarios
Supporting Detail

Revenues ($M): Public Company	2013	2023	CAGR	Notes and Sources
Innovation Group	$5,000	$11,000	8.2%	• Dell infrastructure, cloud, security services revenues were $2.4 billion ("B") annualized in 2013 (Dell 2013a, 39). • Dell applications and business process services revenues were $1.2B annualized in 2013 (Dell 2013a, 39). • Dell software revenues were $1.2B annualized in 2013 (Dell 2013a, 39). • Dell tablet revenues were roughly $500 million ("M") in 2013 (BCG 2013, 9). • Total Innovation Group revenues estimated at $5B for 2013 (roughly sum of above). • CAGR estimated at about 8% based on Dell infrastructure/cloud services 2013 growth rate of 8%, consistent with low end of market rate of 8-17% (Sommer 2014, par. 1) (NTT 2014, par. 6) (Columbus 2013, 2).
Enterprise Core	$15,000	$25,500	5.4%	• Dell Enterprise Services Group ("ESG") annualized 2013 revenues $13B, with annualized ESG portion of services revenues $1.2B (Dell 2013a, 39). • Total Dell Enterprise Core revenue therefore estimated at $15B for 2013. • CAGR estimated at about 5%. Boston Consulting Group ("BCG") estimated Dell's ESG revenue growth at 5.1% in base case scenario for Dell Board (J.P. Morgan 2013, 10).
Commodity Core	$37,000	$19,000	-6.4%	• Dell End User Computing ("EUC") annualized revenues of $35B for 2013, net of tablet revenue. Annualized EUC portion of services revenues $3.5B. (Dell 2013a, 39) • Total 2013 EUC revenues estimated at $37B, consistent with BCG estimates. • BCG assumes EUC shrinks at 6% CAGR (J.P. Morgan 2013, 10).
Total Public Revenues	$57,000	$55,500	-.3%	• 2013 Dell revenues estimated at approximately $57B (BCG 2013, 11).

Revenues ($M): Private Company	2013	2023	CAGR	Notes and Sources
Innovation Group	$5,000	$27,000	18.4%	• Michael Dell has said he would like to double the size of the combined businesses represented by Innovation Group and Enterprise Core, by 2019 (Schatzker 2014, p. 3). That growth rate implies these businesses will be about $60B combined by 2023. • 18% CAGR assumed as a private company, or about 1.5X market growth. (Sommer 2014, par. 1) (NTT 2014, par. 6) (Columbus 2013, 2)
Enterprise Core	$15,000	$33,000	8.2%	• Dell server revenue grew 5.7% in 2014 (Eastwood 2015, par. 6), and storage revenue grew 14.3% in the first half of 2014 (Chanthadavong 2014, par. 3). Servers are about 85% of ESG revenue (Dell 2013a, 39). • Dell Enterprise Core CAGR therefore estimated at roughly 8% (weighted avg. of server and storage growth figures).
Commodity Core	$37,000	$27,000	-3.1%	• Dell grew PC units 10.3% in 2014 (Loverde 2015, par. 6). PC average selling prices ("ASPs") decline about 10% per year (Statista, 2015). • 3% annual decline assumed in Commodity revenues due to assumed pricing aggressiveness as a private company (i.e., ASPs decline more than 10%).
Total Private Revenues	$57,000	$87,000	4.3%	

Operating Income ("Op Inc") ($M): Public Co.	2013	2023	2013 Op Inc %	2023 Op Inc %	Notes and Sources
Innovation Group	$585	$1,625	11.7%	14.8%	• Combined operating income ("op inc") for Dell Software and Services was 11.6% in first half of 2013. Services alone was 16.7%, with Software negative. (Dell 2013a, 52). 11.7% assumed. Software should reverse its negative margins. • Op inc therefore assumed to grow 2-3 points faster than revenue for this group under public scenario. Assumed op inc CAGR of 10.8% results in 2023 op inc of $1.625B, or a 14.8% op inc percentage.
Enterprise Core	$675	$1,500	4.5%	5.9%	• Op inc of 4.3% in ESG as of Aug 2, 2013 (Dell 2013a, 51), grows at 5-8% per year (Dell Special Committee 2013, 18). • Assumed 8.3% op inc CAGR yields 2023 op inc of $1.5B, or 5.9% of sales.
Commodity Core	$1,000	$425	2.7%	2.2%	• Op inc of 2.4% in EUC as of August 2, 2013 (Dell 2013a, 50). 2.7% assumed. • Op inc for EUC shrinking at 8-15% CAGR per BCG (Dell Special Committee 2013, 18). • Assumed op inc shrinkage of 8.2% per year results in 2023 op inc for this group of $425M, or a 2.2% op inc percentage.
Total Public Op Inc	$2,260	$3,550	4.0%	6.4%	

Operating Income ("Op Inc") ($M): Private Co.	2013	2023	2013 Op Inc %	2023 Op Inc %	Notes and Sources
Innovation Group	$585	$3,600	11.7%	13.3%	• 2023 op inc is set to approximately 1.5-2 percentage points lower than under public company scenario, to reflect increased R&D spend.
Enterprise Core	$675	$1,800	4.5%	5.5%	• 2023 op inc is set to about .5 percentage points lower than under public company scenario, to reflect slightly increased R&D.
Commodity Core	$1,000	$600	2.7%	2.2%	• Op inc set at same % as public company scenario. Increased R&D unlikely.
Total Private Op Inc	$2,260	$6,000	4.0%	6.9%	