

# **Disruptive Creation™**

## **A Venture Capital Perspective**



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*Max P Michaels is the CEO of KnowledgeCube Ventures, an early-stage venture capital firm based in New York, that he co-founded with Professor Ed Roberts of MIT and Richard Berman, a Wall Street veteran. He has over 15 years of experience in private equity, investment banking, strategy consulting, and business development. He formulated the vision for KnowledgeCube, developed the business strategies, established the deal flow, and assembled a strong technology team to execute the vision. He expanded the operations of the company to Boston, Seattle, and Brussels and led investments in software companies in the US and Europe.*

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*Max has won several awards during his career. His pioneering work on "Growth Options" was the 'Ultimate Winner' at McKinsey's Worldwide Practice Olympics. His contributions to strategy and corporate finance have been applied at several Fortune 500 companies and have been featured in Financial Times, Journal of Corporate Finance, Strategic Management Journal, McKinsey Quarterly, McKinsey on Strategy and 20/20 Foresight, a Harvard Business School book. He has served on the Boards of several high-technology startups including MoleculareWare and Cirqit.*

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### **Introduction**

The famous economist Keynes once said that every businessman is following the ideals of some long dead economist. It seems to me that the ideal that has captivated the entrepreneurs is the concept of Creative Destruction; an ideal introduced by Joseph Schumpeter in 1938. The ideal has spread like wildfire; and entrepreneurs and VCs have gotten caught up in it like fireflies!

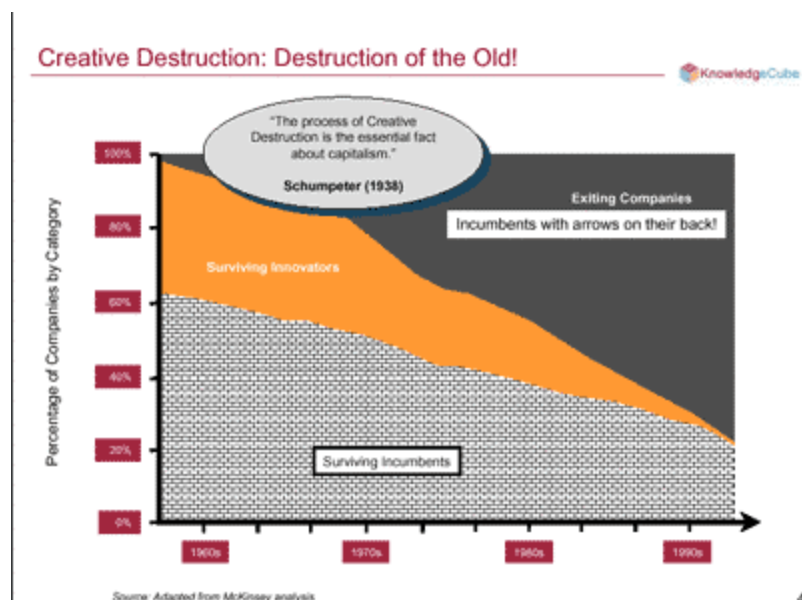
The process of creative destruction is not much fun for most involved, especially when it is compressed to twelve months. During June 2000 to June 2001 many brick and mortar companies disappeared. Many high-tech ventures like Lucent and Winstar have seen their customers disappear. Their market valuations have come crashing down. Over one thousand new ventures such as Desktop.com and eve.com have been abandoned. Over a million jobs have been lost in the US alone. Over \$100 Billion of VC investment has gone down the drain. Over \$3 Trillion in market cap has been lost among the 4000 tech companies in Nasdaq. Thanks to the network effects, 'everyone' has been affected.

On the brighter side of what I call disruptive creation, the strong such as Siebel and Intel have survived; we have seen some phenomenal success stories like Qualcomm and Akamai. We have all

seen the potential of innovation, both disruptive and supportive. We saw over 1000 IPOs in Y2000 alone (in Y2001 the number was under 100). There was a major market correction; still at least \$10 trillion in wealth has been created over the past ten years (clearly a lot more than what could be compensated through tax cuts). More importantly we have all learned from our experiences, as entrepreneurs and investors. I am here today to share our experience and learning over the past three years.

Here's what I would like to discuss today. First, what is disruptive creation and why is it so important? Then we will discuss the three key players driving the process - innovators, incumbents, and investors. Finally, we will discuss how each one of these players can best respond to the phenomenon. Given my background and experience I would like to elaborate on the strategies from a venture capitalist point of view.

## Creative Destruction: Incessant destruction of the old!



According to Schumpeter, the process of industrial mutation incessantly revolutionises the economic structure from within, incessantly destroying the old one, relentlessly creating a new one. This process of Creative Destruction is the essential fact about capitalism.

A recent McKinsey research studied around 500 companies over a period of 36 years and confirmed the thesis of creative destruction among the S&P 500 companies. Almost 70 percent of the companies suffered substantial destruction. Not only were the original incumbents affected by the gales of destruction but also a large number of innovators.

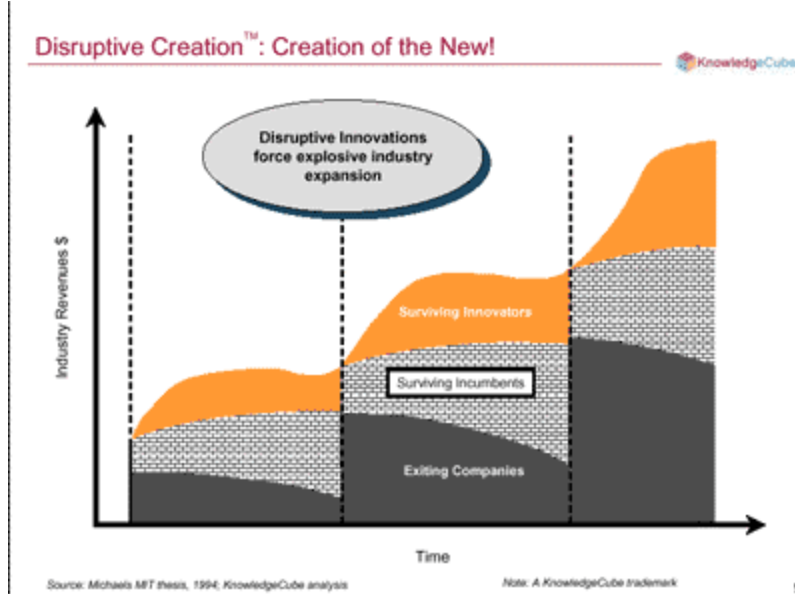
### The pace of creative destruction has accelerated

There is enough anecdotal evidence to support this. There were 50 Airplane companies in 1920; 2 majors remain today. There were 22 Online Flower companies in Feb 2000, only 4 remained in Feb 2001. The empirical study by McKinsey found that the average life of a company in the S&P 500 has decreased from 25-35 years to just under 12-14 years.

A McKinsey study found that the US economy is currently dominated by companies that were either non-existent or were in the bottom 20 percent of the US economy in 1962. They predict that in 36 years time, the New US Economy will be dominated by companies that are not in the top 80 percent today.

However, I think it is more important for us to focus our attention on the creation.

## Disruptive Creation™: Relentless creation of the new!

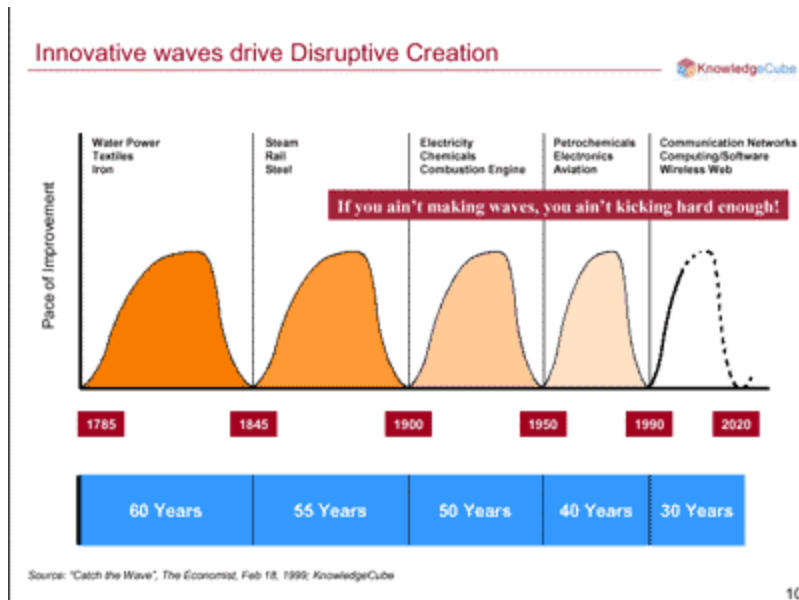


Though the innovations may endanger them, they do not deliberately seek to destroy the current products or the incumbents. Though Schumpeter talked about the waves of destruction, the more important message was that innovation is the source of all wealth creation. I would like to take it one step further. I believe disruptive innovations underlie all wealth creation.

Of course there is disruption. Known ways of doing things are changed. The rules of the game are rewritten. Tracks are changed making track record meaningless. The value of competencies and knowledge change. But the overall outcome is creation. This is particularly true in growing industries, characterised by expansion.

Disruptive Creation affects all parties: Innovators, Incumbents and Investors. For Innovators there is experimentation, turbulence, and loss of efficiency. For Incumbents there is loss of skills, infrastructure, jobs, and customer relationships. For investors there is resetting of expectations and betting on a different set of players.

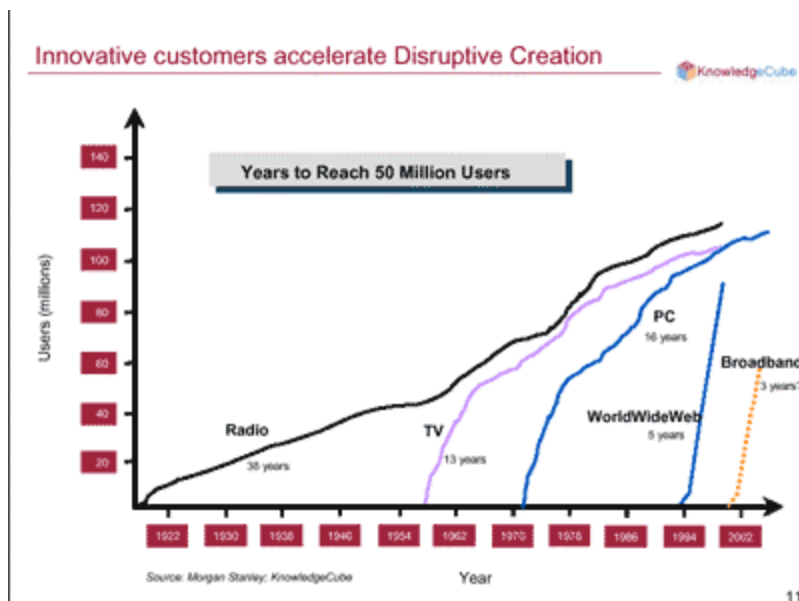
## Innovative waves drive Disruptive Creation



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The waves of technological innovation occur periodically; they drive the economy forward. Steam Engine and Telegraph transformed the 19th century. Electricity was the primary driver in the 20th century; innovations in electromagnetic spectrum electronics followed. In the recent industry we have seen disruptive technologies in computers, copiers, cameras, and even cars. Communication Networks, Computing Software and Wireless Web will continue to change the 21st century.

## Innovative customers accelerate Disruptive Creation

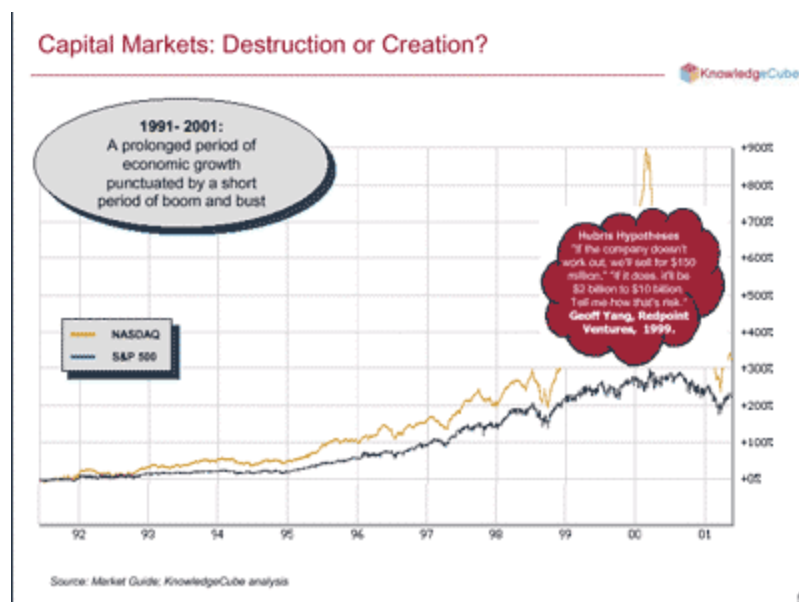


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By some estimates, over 200 million people use the world wide web today; according to Nicholas Negroponte of MIT MediaLab, over \$1 billion will use the web by 2005, mostly from the developing countries. It is important to note that the demand for innovations has increased as evident from the

increasing penetration of the global markets. WWW is going strong supported by complementary technologies in the communication and computing space such as fibre optics and wireless technologies.

## Capital markets: Destruction or creation?



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During 1991 to 2001, we saw a prolonged period of economic growth punctuated by a short period of boom and bust.

Most people view the outperformance of technology stocks as a bubble; they forget the periods of underperformance; many analysts have attributed the excessive valuations to 'forecasting errors.' I believe forecasting errors is a simple explanation for a complex phenomenon.

As George Soros explained, market prices are not merely the passive reflection of independently given demand and supply; buyers and sellers play an active role in shaping those preferences and opportunities. According to Soros, this reflexive interaction renders the financial markets inherently prone to boom and bust.

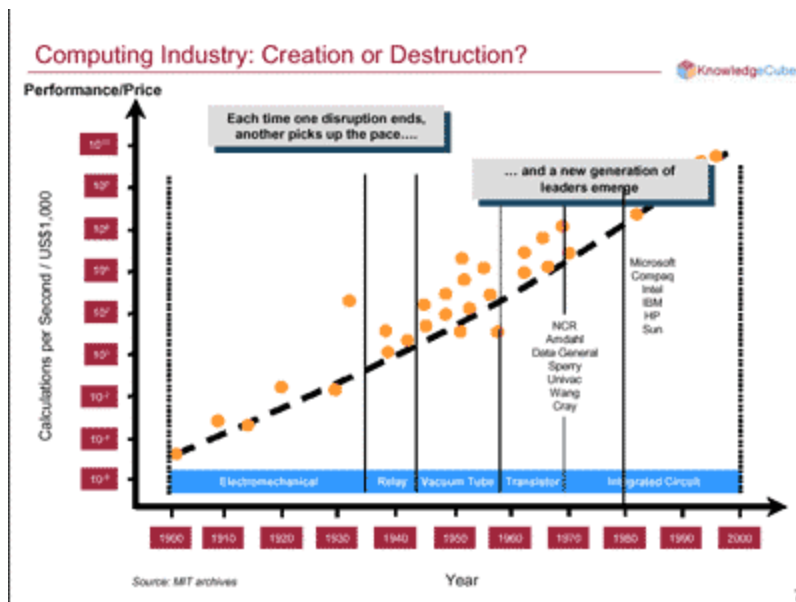
Over the past decade, the perceptions of the markets participants were highly influenced by the euphoria that preceded the bust - an underlying belief that every innovation has the potential to destroy existing industries and create new ones. This led to a number of companies going public much before they had developed viable business models. In the exciting world of startups, there are always many firms in lots of trouble. It's just that they have traditionally disappeared long before they ever reach the business pages of Wall Street Journal or trade in public markets.

The key take away though from the above analysis is that more has been created than has been destroyed. The current disruption will pave the way for the next wave of innovations.

### More creation than destruction

In order to see the enormous value created in the last decade, we just have to look at the S&P 500 companies. They have created more than \$9 trillion of economic wealth in the last decade.

## Computing industry: Creation or destruction?



Computing industry offers some solid proof of fundamental value creation. The industry has continuously beaten the market expectations for technological performance and customer value.

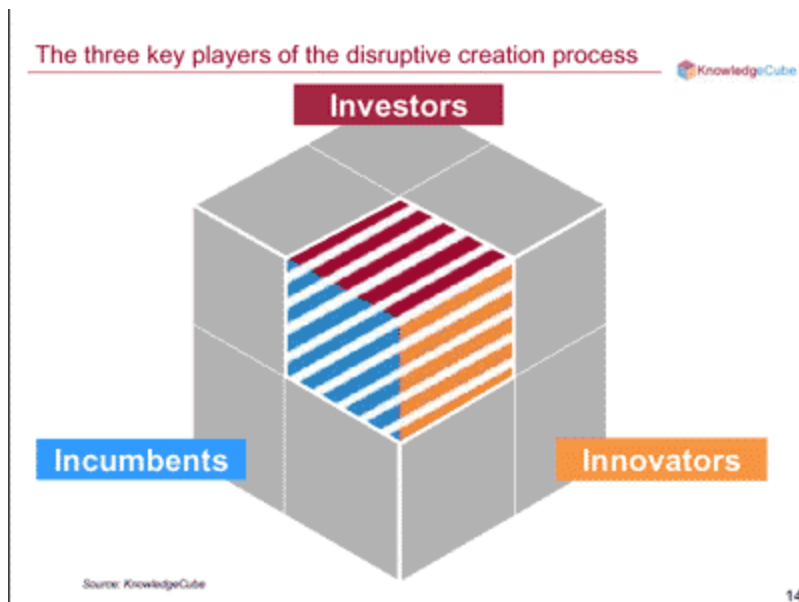
Technical limits occur due to discontinuities in the laws of nature. For instance, the technical progress in the computer industry has ridden Moore's law - the 1979 revelation of the founder of Intel. According to the law, the performance-price of chip densities and hence computers doubles every eighteen months. At Intel, the cost per transistor has continued to drop by a factor of three and four every three years. Today's top-of-the-line Pentium 4 chip runs at 1.7 gigahertz and has 42 million transistors. By 2007, Intel predicted the new technology would allow it to build chips with one billion transistors that operate at a speed of 20 gigahertz.

The computer industry is currently dominated by companies that were either non-existent or were in the bottom 20 percent of the industry. It is quite possible that 30 years from now, the computer industry will be dominated by companies that are not in the top 80 percent today.

### More value was created than was destroyed in the computer industry

The PC industry created far more value than that was destroyed in the mainframe industry. If you look at the computer industry boom, it was really divided into several stages. First, there was the mainframe, then the mini-computer, then the PC, then the local area network, and finally client-server computing. While investors were going through each development, we were thinking about each innovation separately. But when you add it all up, it represents a 30-year commercial boom based on 'the computer'. I think it will be the same way when we look back on the Internet boom.

## The three key players of the Disruptive Creation process



Innovators, Incumbents, and Investors are the three key players in the disruptive creation process.

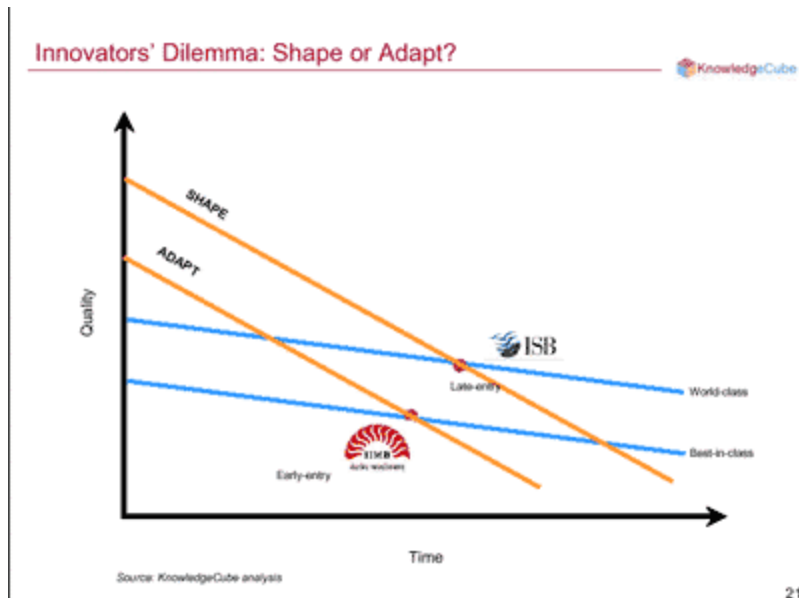
### Innovators from MIT

Innovators have created significant value. The US has been a hot bed of innovation, creating over \$1.3 trillion in new revenues over the past three decades. MIT with its 9,000 students has been a major contributor. MIT companies accounted for over \$55 billion in revenues in 1998, with companies such as Aspen Technology, a process optimisation software solution with revenues of over \$268 million and Qualcomm with revenues over \$2 billion.

### Innovators' dilemma

The innovators' dilemma is to shape the market segment or to adapt to the existing expectations. It is when the innovators take bold actions to shape the industry that the innovations take the form of disruptive creation. The shaping strategies would include an early offering of a total solution with a new product architecture. Canon's introduction of its low-priced compact copiers will be a simpler example. A more recent example will be Qualcomm in the CDMA space.

## Innovators' dilemma: Shape or adapt?



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Qualcomm, a new player in the wireless space, introduced Code Division Multiple Access (CDMA), a technical standard that determines how information travels and is communicated through a wireless network. It competes with TDMA and GSM introduced by its competitors such as Motorola. Qualcomm's shaping strategy was characterised by phenomenal performance improvements and strong momentum. And due to its unsurpassed voice quality, system capacity, and flexibility, CDMA is on its way to becoming the leading global standard for next-generation, digital wireless communications products and services.

Motorola, the incumbent, chose to adapt to the market by betting on multiple technologies. The strategy paved the way for Motorola to lose its technological leadership and focus on manufacturing and marketing.

### Incumbents' dilemma

The incumbent's dilemma as illustrated in the book by professor Christensen is about responding to the disruptive technologies now or later. The risk of pre-emption forces them to act quickly while the irreversibility of the investments delays their decisions.

Pioneering incumbents often cannibalise their own products and markets by gaining early entering; when the innovation originated elsewhere they would simply buy it; they use their superior market knowledge to their advantage. Followers will adopt innovations more slowly, trying at first to defend their existing products and markets.

A good example in the telecommunications space will be Nortel that gained a lead over players like Lucent in the optical space by adopting the pioneering strategy.

## Incumbents' dilemma: Pioneer or follow?



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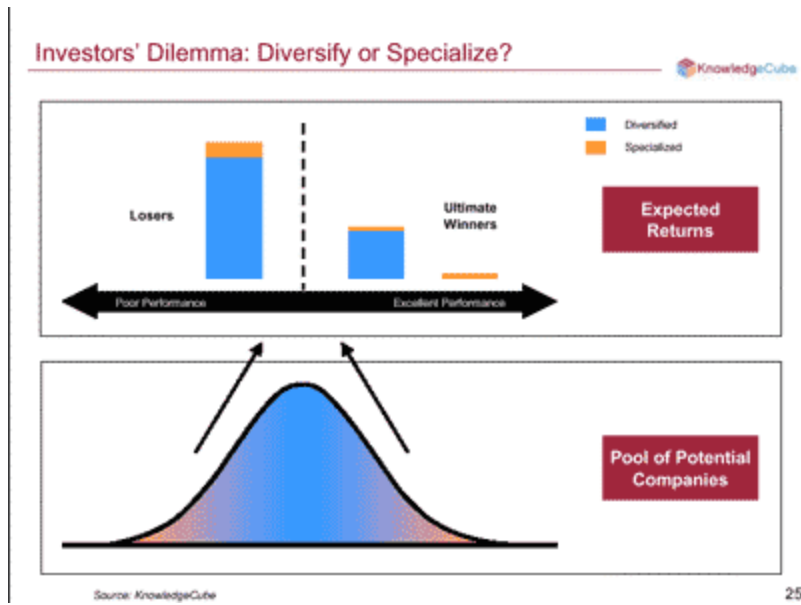
Disruptive technologies cause problems because they do not initially satisfy the demands of even the high end of the market. Because of that, large companies choose to overlook disruptive technologies until they become more attractive profit-wise. Disruptive technologies, however, eventually surpass sustaining technologies in satisfying market demand with lower costs. When this happens, large companies who did not invest in the disruptive technology sooner are left behind. Examples abound in the US in the markets for computers, copiers, cameras, and cars.

The new entrants such as Compaq, Canon, Polaroid and Toyota have been structurally advantaged in grasping opportunities and embracing calculated risk. They won their market share through a better understanding of the dynamics of Innovation and Competitive Advantage - a superior knowledge of the evolution of Industry, Technology, and Product Life Cycles.

## Investors' dilemma

If innovators and incumbents are driven by the price-performance ratio, the relevant ratio for investors is the risk-reward ratio. It determines the expected payoffs for every dollar invested. A higher focus often leads to a higher reward at the cost of an increased volatility. However, venture capital investors have shown that the increased focus helps them to bring better foreknowledge and relationships to bear. Thus, focus does not always increase the risk.

## Investors' dilemma: Diversify or specialise?



Most venture capital investors focus on home runs. Hence the emphasis on large markets and high upside potential. It is easy to forget the potential for loss of principal in those situations. This is an important fact to remember, as only 15 percent of the venture capital funds have been able to beat the public markets.

The alternate strategy is to seek steadfast returns over a period of time by adopting a diversified strategy. This has typically been the domain of public funds and later-stage private equity firms.

### Invest in startup, growth, or expansion?

Once the strategy is chosen, the key decision is to pick the life-cycle stage of companies the firm would invest in - startup, growth, or expansion. As expected, the average returns are higher for the startup investors and lower for the expansion stage investors. However, the key is to remember that private equity is not the science of the average but the art of the exception.

As shown in the parenthesis, the average returns for year 2001 were negative. Despite the negative annual return, 286 Funds raised \$42 billion in venture capital in Y2001. It is interesting to note that 86 of the Funds were first-time Funds and that \$24.3 billion went to early-stage funds. More than \$36.5 billion was invested in Y2001. The accumulated venture capital available for early-stage investing is over \$41B.

### How do venture capitalists add value?

Another key strategy for venture capitalists is to pick the avenues for adding value to their portfolio companies. Early recognition of opportunities is the key to success in startup investing; i.e., knowing where the puck will be!

Knowledgeable Evaluation and creative structuring offer another major avenue to capture value. Proactive cultivation and harvest offer the most potential to add value to a portfolio company.

### Venture capital investors have led the way in creating value from disruptive innovations

Venture capital is indeed a risky business. Those who have been successful have delivered enormous value to their investors. For instance, Kleiner Perkins delivered 91 times the capital invested in one of their Funds. In the same Fund, their \$8M investment in Cerent, an optical networking company reportedly grew to \$2.4 billion.

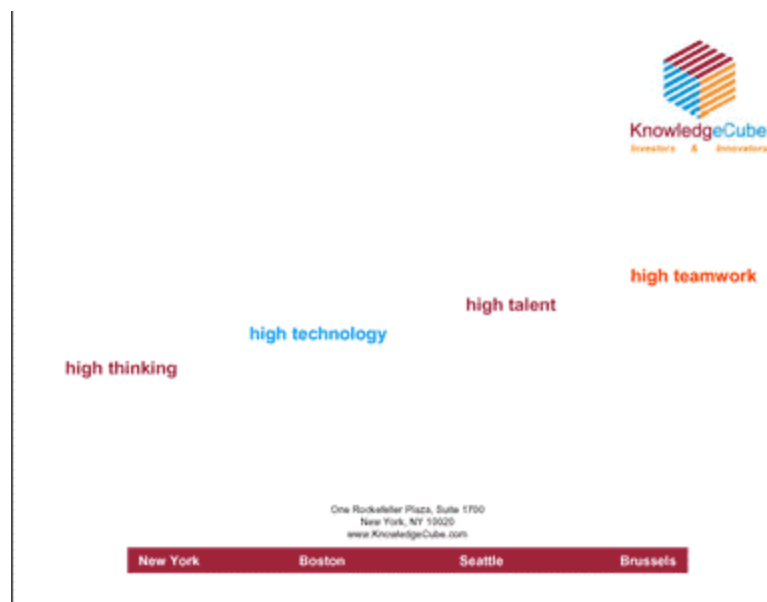
That is the potential and the promise of disruptive creation!

### **The amount of capital as well as the number of venture capital firms have increased over the last decade**

The investors who bet on the innovators are the venture capitalists. Their primary mandate is to create value from the success of new companies and products. They have continued to play a critical role in the evolution of the US technology markets. Over the past three decades, they have invested over \$300 billion creating over \$1.3 trillion in new revenues per year and over seven million new jobs.

In the figure above, the bar shows how the billions of dollars raised each year by venture capital firms have evolved; the blue line represents the number of venture capital firms. As the chart shows, by the end of Y2000 there were over 500 funds in the US and they had raised over \$92 billion. Since the meltdown in the technology markets in Y2001, the venture capital raised has fallen to under \$45 billion; more than 100 venture capital funds have closed shop. Disruptive creation has impacted the investors as well! However, over \$100 billion of capital raised is looking for venture investments in the US at the end of Y2001. At least another \$50 billion of new capital will be raised in Y2002. Disruptive creation will indeed continue to change the world!!

### **Food for thought**



Each one of us participates in each wave of disruptive creation as an innovator, incumbent, investor, or an adopter. I hope the above discussion we will make us pause and think about our respective strategies. From my experience as the CEO of a venture capital firm, I have learned first-hand the profound impact - disruptive and creative - of innovations in one's career and professional life. I am convinced that disruptive innovations will continue to change the world.

Knowledge increases the capacity for innovation. When faced with disruptive innovations, flexibility is the key - if we can't change the wind, we can change the sail.