Disruption

The Future Arrived Yesterday

Disruption

Three themes:

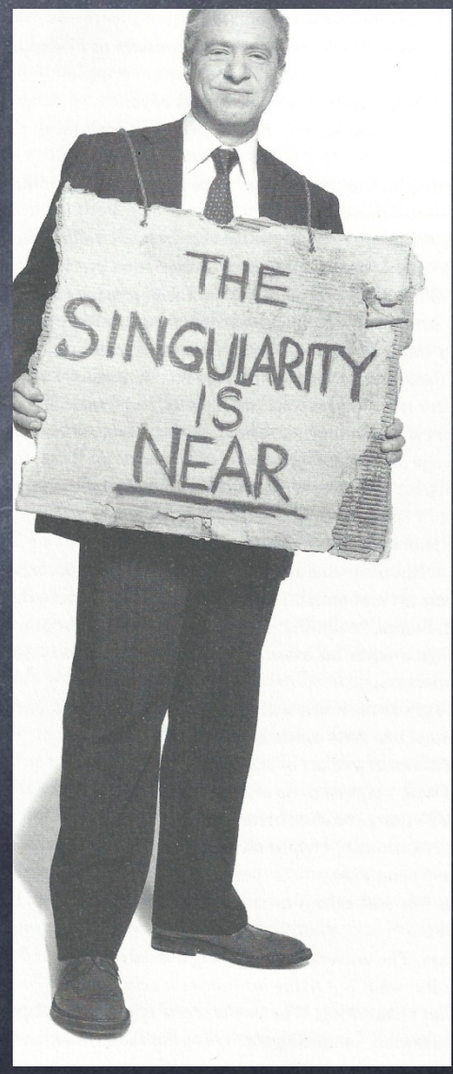
1. Speed
2. Scaleable businesses
3. Paradox of competency

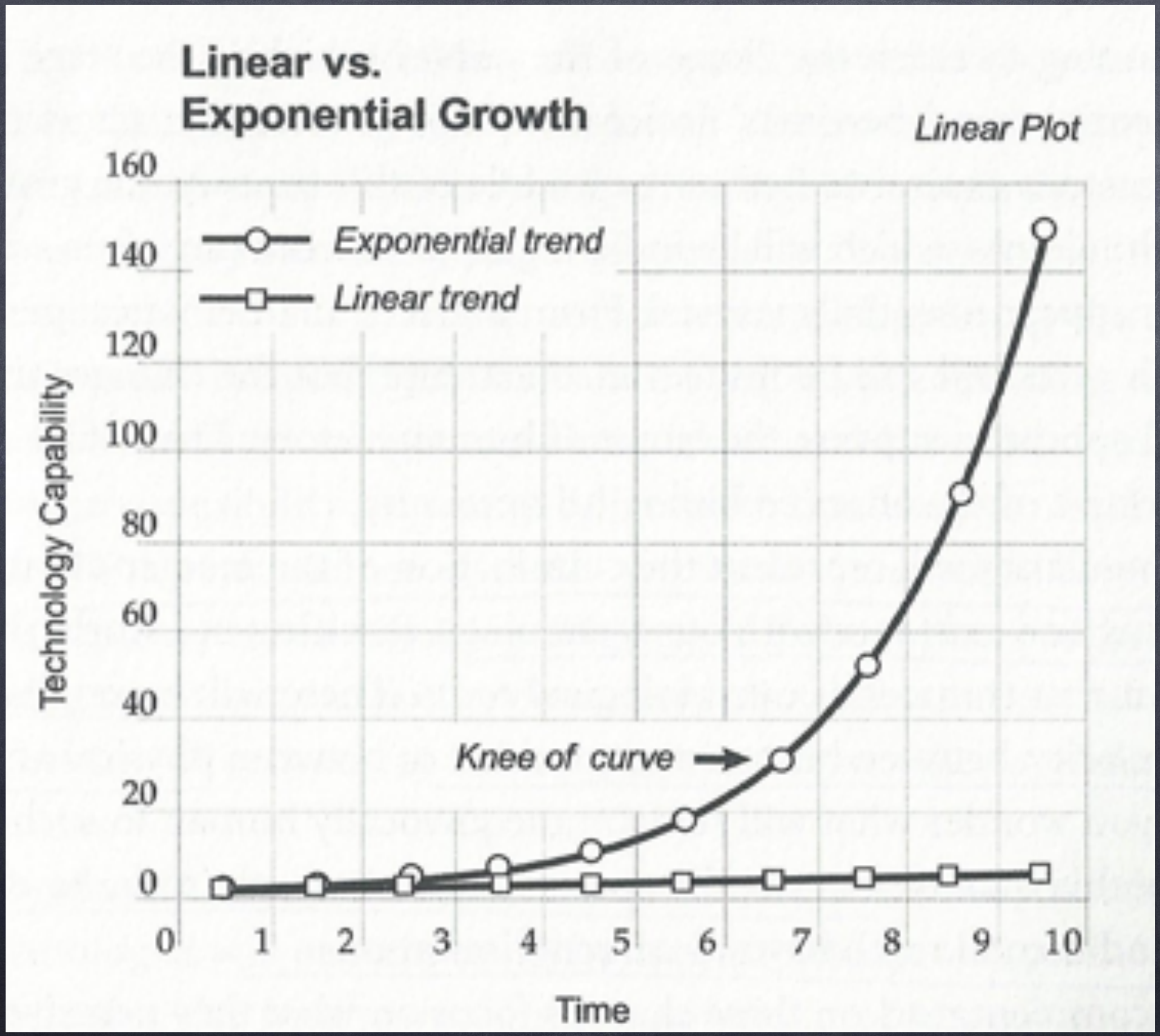
Disruption
1. Speed

The concept of Singularity

Gordon Moore 1965
Ray Kurzweil 2005

The future isn't what it used to be!

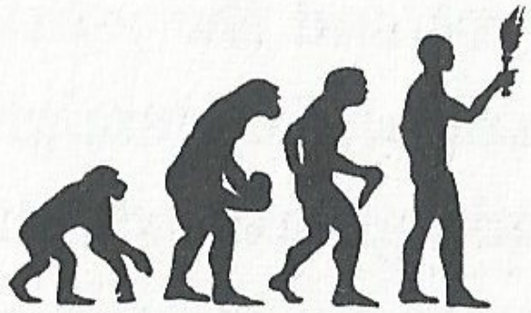



Linear vs.
Exponential Growth
Linear Plot
Exponential trend
Linear trend
Technology Capability
Knee of curve
Time
160
140
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10

Disruption
1. Speed

The future isn't what it used to be!

Countdown to Singularity



Linear Plot

Time to Next Event (Years)

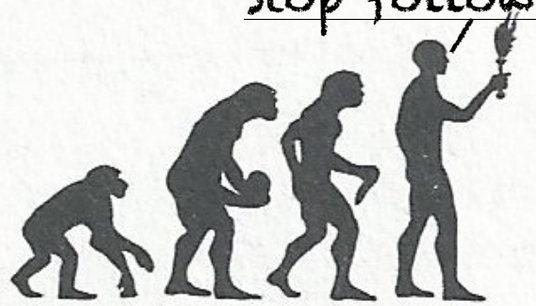
10^{10}
10^{9}
10^{8}
10^{7}
10^{6}
10^{5}
10^{4}
10^{3}
10^{2}
10

Life
Eukaryotic cells, multicellular organisms
Cambrian explosion (body plans)
Reptiles
Class *Mammalia*
Primates
Superfamily *Hominoidea*
Family *Hominidae*
Human ancestors walk upright
Genus *Homo*, *Homo erectus*, specialized stone tools
Homo sapiens
Homo sapiens sapiens
Art, early cities
Agriculture
City-states
Writing, wheel
Printing, experimental method
Industrial revolution
Telephone, electricity, radio
Computer
Personal computer

$4x10^9$ $3x10^9$ $2x10^9$ 10^9 0

Time Before Present (Years)

Stop following me!



Countdown to Singularity

Logarithmic Plot

Time to Next Event (Years)

10^{10}
10^{9}
10^{8}
10^{7}
10^{6}
10^{5}
10^{4}
10^{3}
10^{2}
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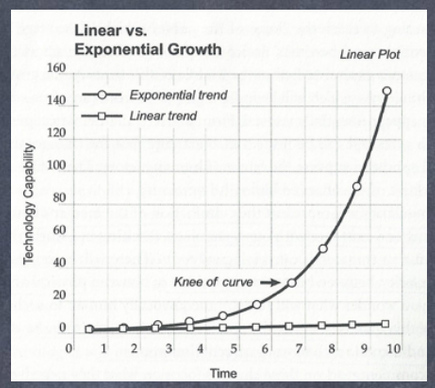
Telephone, electricity, radio
Computer
Personal computer

10^{10} 10^{9} 10^{8} 10^{7} 10^{6} 10^{5} 10^{4} 10^{3} 10^{2} 10

Time Before Present (Years)

Disruption
1. Speed

- Argument: It cannot continue to grow like that . . .



- But that's a misjudgment!

Disruption

1. Speed

- Q: Why do we misjudge the future?
- A: People intuitively assume that
  - transformations in one area (technology) will result from a single trend - and that nothing else will change!
- Confluence of technologies

Disruption
2. Scaleable businesses

- We are talking about horizontal integration with no marginal cost,
  i.e.
- Technology + Zero marginal cost for expansion
  -> Scalable disruption

For example . . .

Disruption
2. Scaleable businesses

- UBER is an app: They don't own a single car. Still, it is now the biggest taxi company in the world!
- Ask any taxi driver if they saw that coming

Disruption
2. Scaleable businesses

- Airbnb doesn't own a single hotel property. Still, it is now the biggest hotel company in the world.
- Ask Hilton if they saw that coming

Disruption
3. (In)competency

Paradox:
Corporations confronted with disruptive changes in market/technology do not fail because they are incompetent* . . .

*

bureaucracy,
arrogance
“tired” execs
poor planning
short term views,
or even: bad luck

Disruption

3. (In)competency

Paradox:

. . . they fail because they are GOOD - or even excellent - companies

The "Kodak Moment"

- Kodak was way too slow to recognize the rapid switch in the camera market from film towards digital technology.
- Loosing ground on camera sales was bad enough, but it was a fatal blow when the consumables business (film and film processing) collapsed!

- It happened between 1998 and 2002 . . . all while Kodak denied the new trend!

More "Kodak Moments"

- SEARS missed the emergence of discount retailing, home centers

- IBM mainframe business missed the minicomputers* market
  Minicomputer companies all missed the desktop market
  Desktop companies all missed the laptop** market

* Wang, HP, Nixdorff
**Apple, Tandy

Keys to "Kodak Moments"

When an inferior product beats out a superior market . . .
HOW?

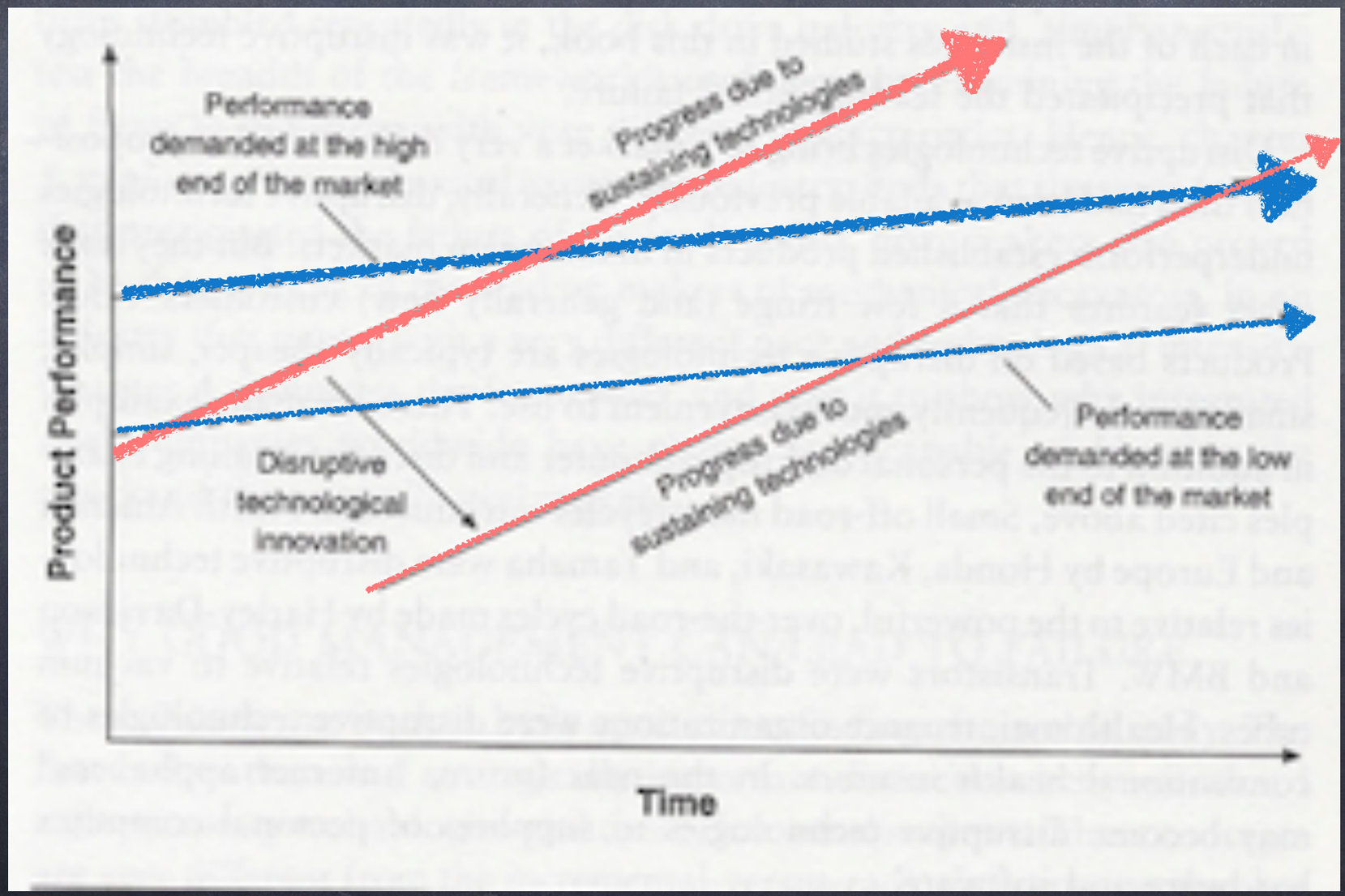
Definitions:

SUSTAINING TECHNOLOGY
-> product improvements (incremental or radical)

DISRUPTIVE TECHNOLOGY
innovation -> inferior/underperforming products
that cater to the fringe markets . . .
simpler, cheaper, smaller, more convenient

Another "Kodak Moment"

When an inferior product beats out a superior market



Example : Laser vs Inkjet printers

Disruption
3. (In)competency

Why did some of the most successful companies with the most heralded executives fail?

They execs didn't see the disruption coming!
Why not?

Because they were great at running their business!

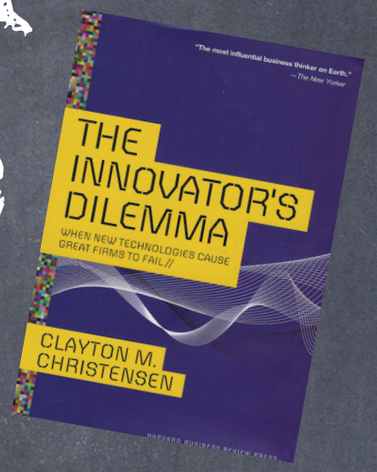
Disruption
3. (In)competency

-> GOOD companies listen to their largest and/or most profitable customers...who don't want the (cheaper, simpler, good enough) products

-> It is the small and least profitable customers in insignificant market segments that first buy the 'disruptive' products

Therefore, GOOD companies don't pursue disruptive technologies . . . until it is too late

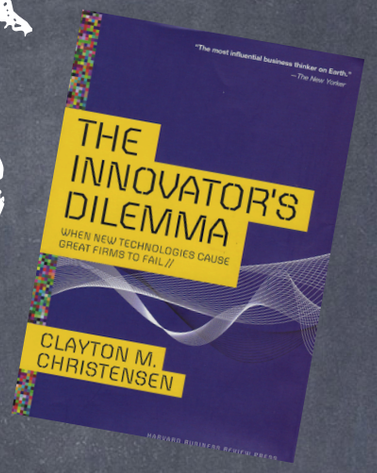
Disruption
Summary of dilemmas



Principle #1: Companies depend on customers and investors for resources because companies with investment patterns that don't satisfy customers/investors do not survive

Result: They have well developed systems for killing ideas their customers don't want

Disruption
Summary of dilemmas



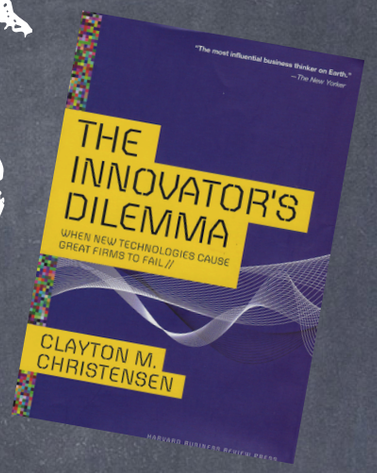
Principle #2:

Small markets don't solve the growth needs of large companies:

A $5 MM company needs $0.5 MM to grow 10%

A $5 Bn company needs $500 MM to grow 10%

Disruption
Summary of dilemmas

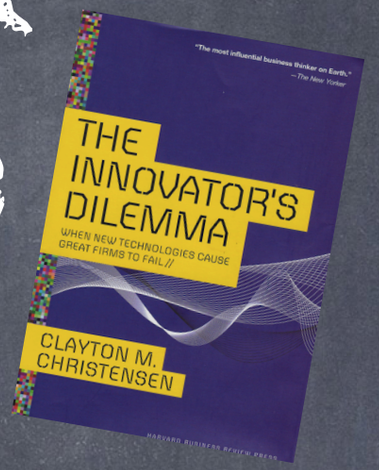


Principle #3: Markets that do not exist cannot be analyzed

Typically, the core of success depends on sound market research and planning

- that's not a problem with sustainable technologies BUT
- with disruptive technologies, market potential is not only unknown, it is unknowable! The only sure thing is that forecasts will be wrong

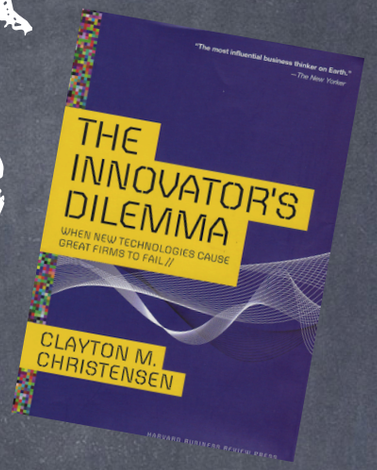
Disruption
Summary of dilemmas



Principle #4:
The capabilities of an organization* defines its disabilities

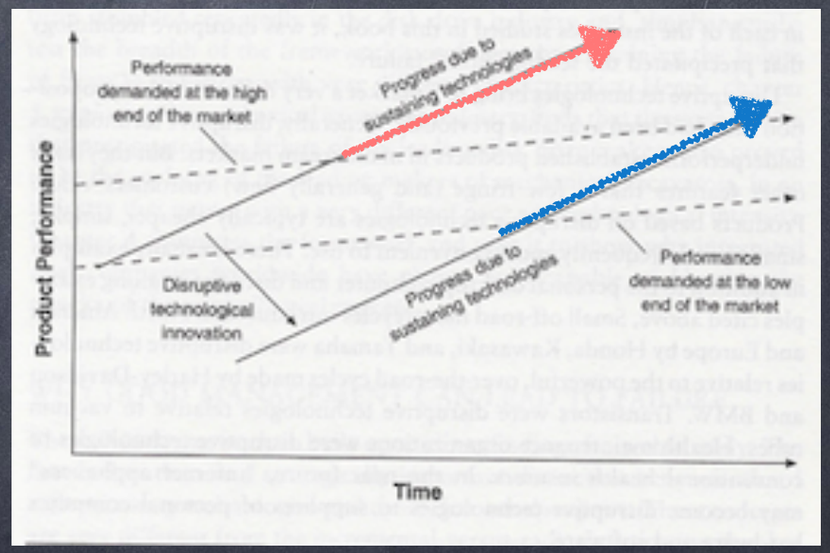
*Corporate capabilities: culture, systems and processes used to transform
labor, materials, capital, and information into products and services of greater value

Disruption
Summary of dilemmas



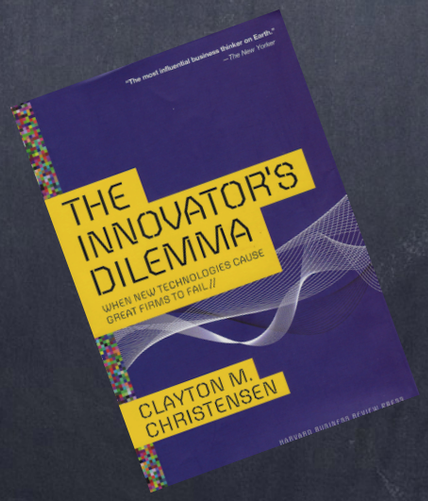
Principle #5: Mismatch between technology supply and market demand

Pace of techn progress often exceed the rate of performance improvement that the customers demand or can absorb ->
(a) Companies overshoot the market need of tomorrow
(b) underperforming products may become directly competitive tomorrow
(c) product choice evolves from functionality—> reliability —> convenience —> ultimately price



Disruption

Industries that are changing . . .



Established Technology	Disruptive Technology
Silver halide photographic film	Digital photography
Wireline telephony	Mobile telephony
Circuit-switched telecommunications networks	Packet-switched communications networks
Notebook computers	Hand-held digital appliances
Desktop personal computers	Sony Playstation II, Internet appliances
Full-service stock brokerage	On-line stock brokerage
New York & NASDAQ stock exchanges	Electronic Communications Networks (ECNs)
Full-fee underwriting of new equity and debt issues	Dutch auctions of new equity and debt issues, conducted on the Internet
Credit decisions based upon the personal judgment of bank lending officers	Automated lending decisions based upon credit scoring systems
Bricks & mortar retailing	On-line retailing
Industrial materials distributors	Internet-based sites such as Chemdex and E-steel
Printed greeting cards	Free greeting cards, downloadable over the Internet
Electric utility companies	Distributed power generation (gas turbines, micro-turbines, fuel cells)
Graduate schools of management	Corporate universities and in-house management training programs
Classroom and campus-based instruction	Distance education, typically enabled by the Internet
Standard textbooks	Custom-assembled, modular digital textbooks
Offset printing	Digital printing
Manned fighter and bomber aircraft	Unmanned aircraft
Microsoft Windows operating systems and applications software written in C++.	Internet Protocols (IP), and Java software protocols
Medical doctors	Nurse practitioners
General hospitals	Outpatient clinics and in-home patient care
Open surgery	Arthroscopic and endoscopic surgery
Cardiac bypass surgery	Angioplasty
Magnetic resonance imaging (MRI) and Computer Tomography (CT) Scanning	Ultrasound—initially floor-standing machines, ultimately portable machines

Disruption

Lots of dilemmas!

What can we do?

Disruption Solution 1

. . . to Principle #1:

Embedding projects within an organization whose customers need them

#1: Companies depend on customers and investors for resources

Disruption Solution 2

. . . to Principle #2:

Embedding projects within an organization small enough to get excited about small opportunities and small wins

#2: Small markets don’t solve the growth needs of large companies

Disruption
Solution 3

. . . to Principle #3:

They plan to fail early and inexpensively in search of markets for disruptive technologies (trial -> error/learning -> trial, etc.)

#3: Markets that don't exist cannot be analyzed

Disruption Solution 4

. . . to Principle #4:

Use resources of the main corporation to address disruption with leveraging its processes and values

#4: The capabilities of an organization defines its disabilities

Disruption

... the story of
Chr. Hansen's Bio Systems

Chr. Hansen's Laboratory: world leader
in
- enzymes (rennet)
- bacteria

for the dairy and food industry

Disruption

- Philosophies:

If something goes wrong, fix it! To hell with Murphy.

When given a choice, take both!

Start at the top - then work your way up

If you can't win, change the rules -
if you can't change the rules, ignore them!

The best way to predict the future is to invent it yourself

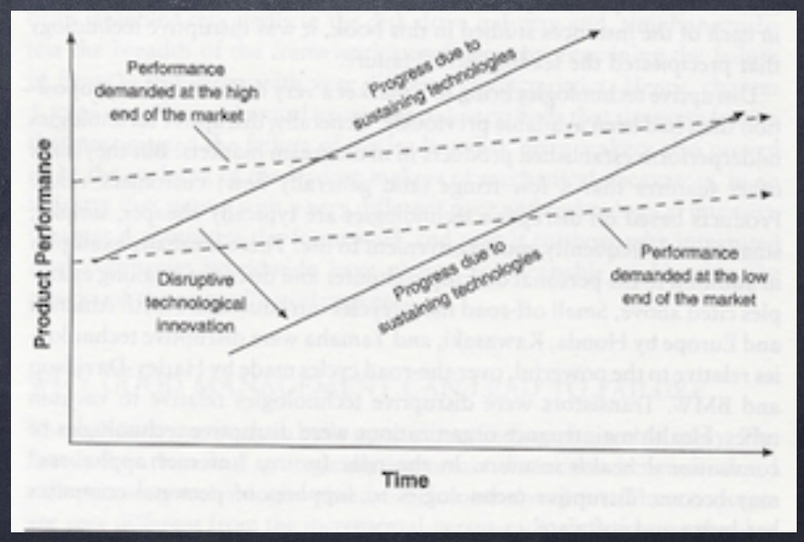
Peter Diamandis

Disruption Solution 5

. . . to Principle #5:

Developing new markets that value the attributes of disruptive technology

#5: Mismatch between technology supply and market demand



Disruption
How can we do that?

- identify potentially disruptive technologies (entrepreneural opportunities)?

Ears to the ground!

Disruption

How can we do that?

- find out if my business a target of disruptive technology and then defend against it? But HOW?

. . . by avoiding correct answers to the wrong questions!

Disruption

Electric cars

The logical but WRONG question:
Will electric cars outperform combustion engine cars?

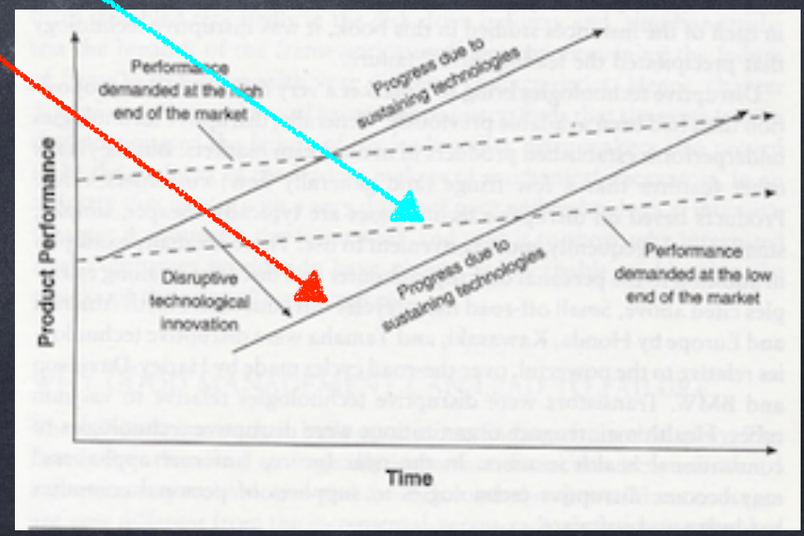
Correct Answer:
No!

Disruption

Electric cars

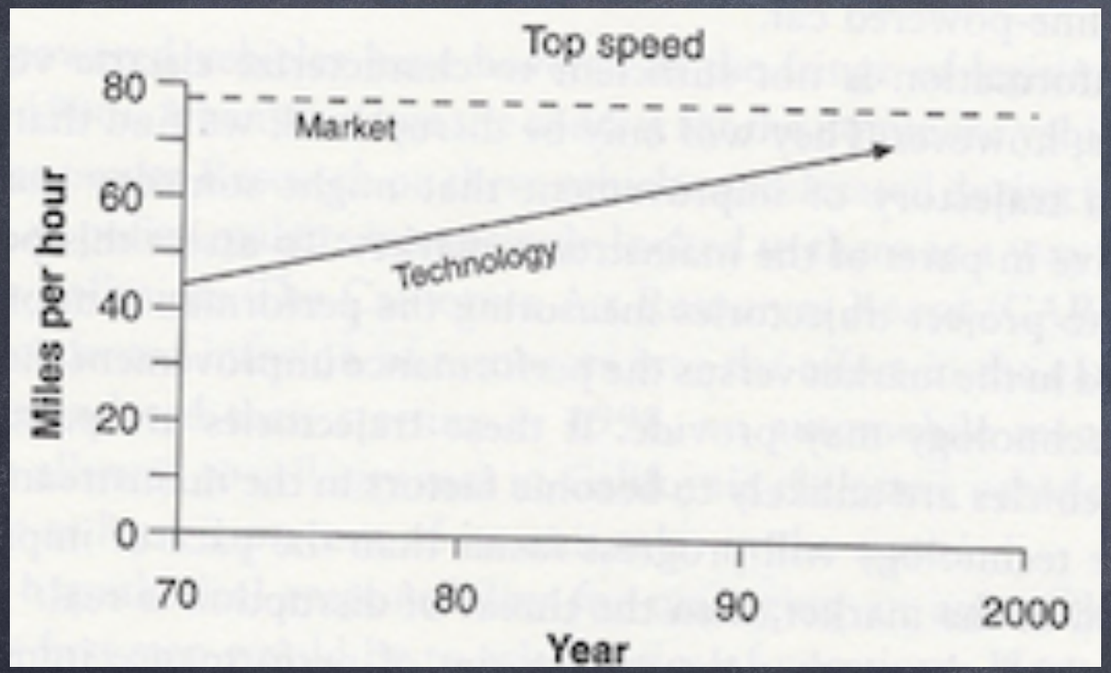
Correct question(s):
How will electric car technology develop?

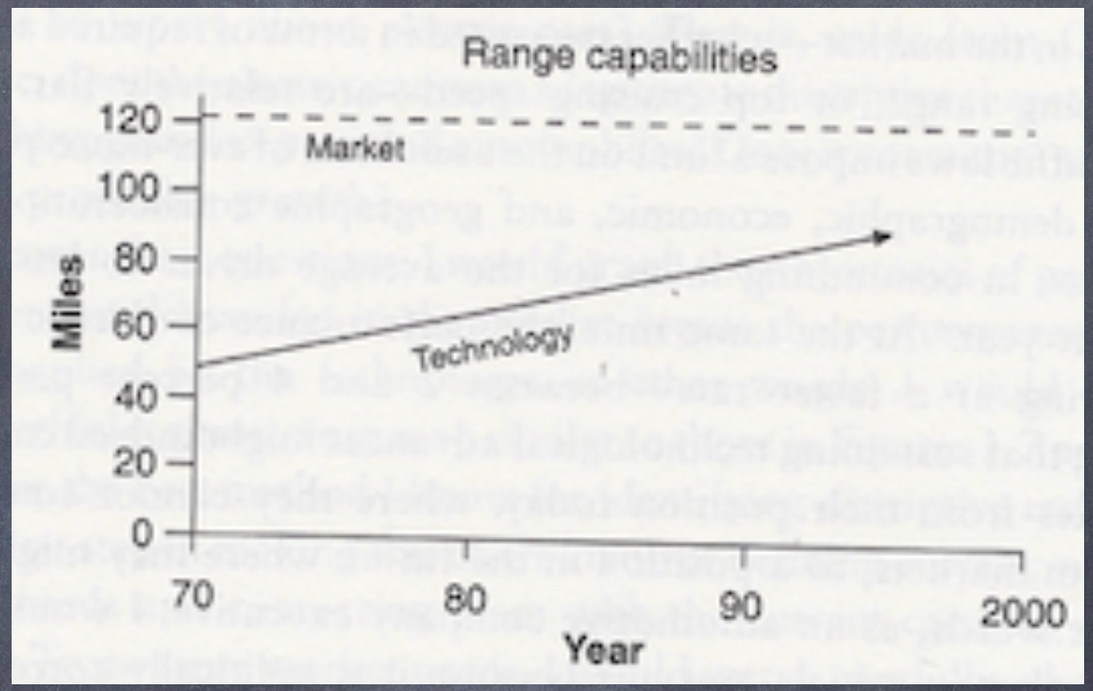
And how does that match with what do customers want?

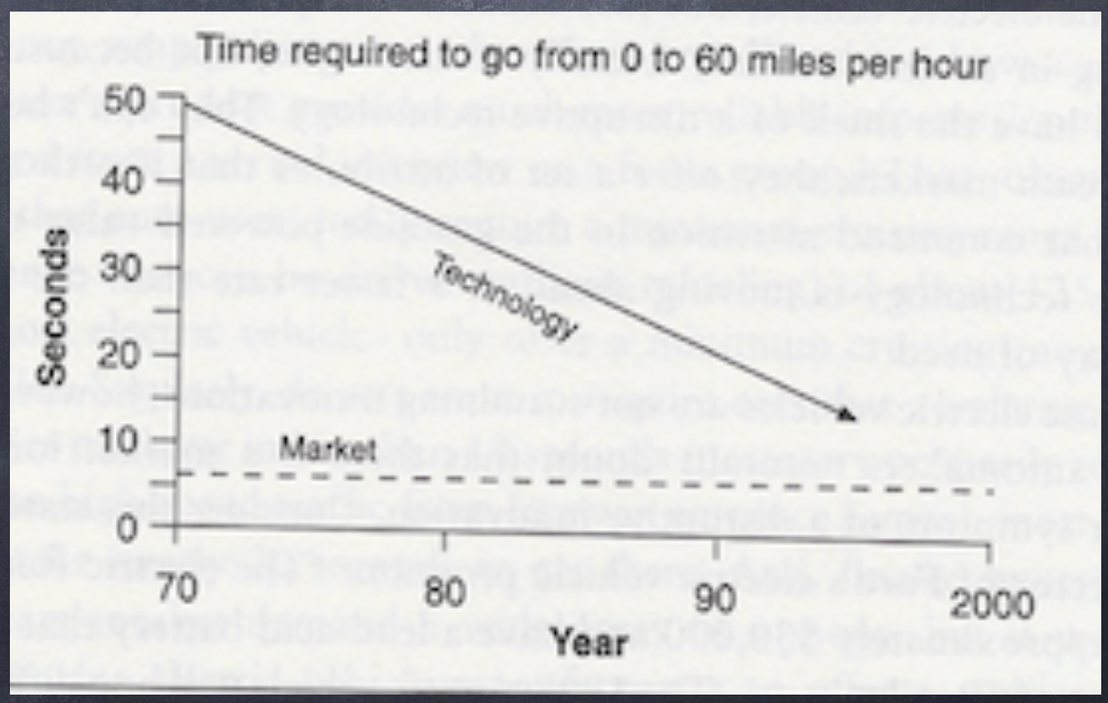


Disruption
Electric cars

Answers:







Disruption
Food for thought

As we approach the singularity,
25 years of experience really
is...
5 years of experience that is 20
years old!


The Future
Arrived Yesterday
Thank You
Very Much !
See you yesterday!!