Disruptive Technologies

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2.1 Definition

Latin: “*disrumpere*” → to break apart 

- Transforms markets
- Destroys existing strucutres
- Creates new business models

“The electric light did not come from improving candles”

Why is Disruption Important?

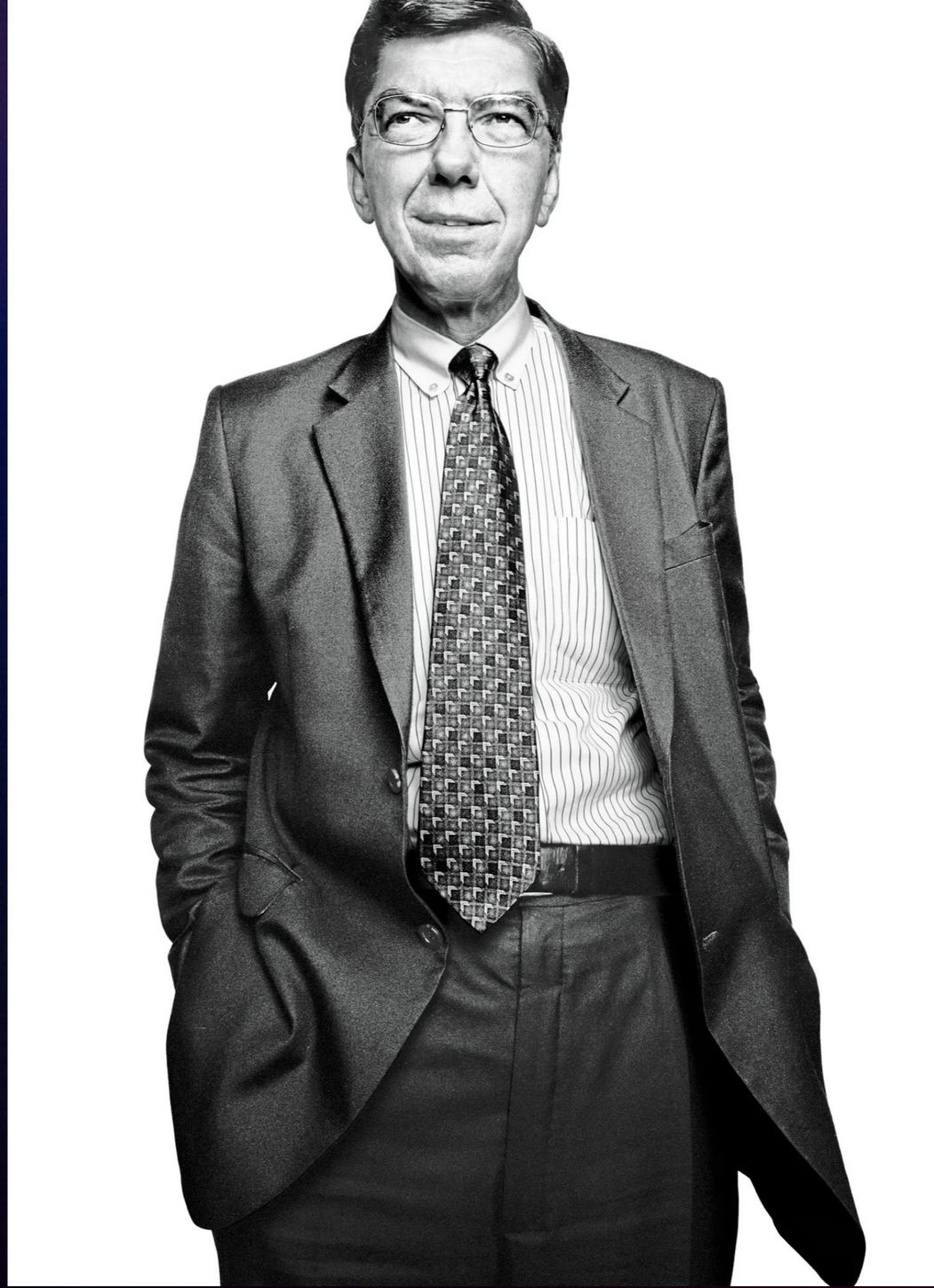
“Disruption” = Business Word of the Year (2015)

- Frequently misunderstood
- Not every innovation is disruptive
- Critical for long-term business success

2.2 Christensen Model

Clayton Christensen

- Harvard Business School Professor
- “The Innovator´s Dilemma” (1997)
- Founder of Disruptive Innovation Theory
- Explains why successful companies fail



Types of Innovation

Sustaining Innovation

Disruptive Innovation

Sustaining Innovation

- Improves existing products
- Serves high-end customers
- Follows existing trajectory
- Low risk for incumbents

Disruptive Innovation

Low-End Disruption

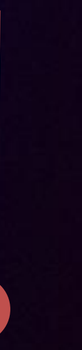
- Enters at low-end market
- Lower performance
- Lower price
- Gradually improves
- Moves into mainstream

TARGETS
OVERSERVED
CONSUMERS

Disruptive Innovation

New-Market Disruption

- Creates new market
- Makes product accessible
- Initially inferior



TARGETS NON-CONSUMERS

Why Incumbents Fail

- Focus in best customers
- Ignore small markets
- Resource allocation problem
- React too late

Disruptive Innovation

Examples of Disruptive Innovations

Digital cameras

- Kodak: 4th most valuable brand worldwide in 1996
- Focus on **analog cameras** (core business)
- First digital camera was developed by Kodak in 1975 but no further investments into digital technology
- Digital cameras initially had **lower performance**
- Competitors invested in digital photography
- **Market share:**
  - 2000: approx. 12%
  - 2010: 99%
- Massive decline in Kodak’s sales

  → Bankruptcy in 2012
- Restart in 2013 in the printing business but never regained former market position

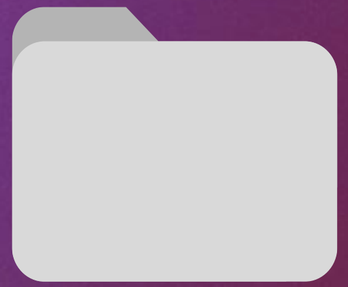
Examples of Disruptive Innovations

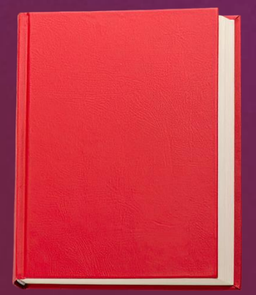
Drones

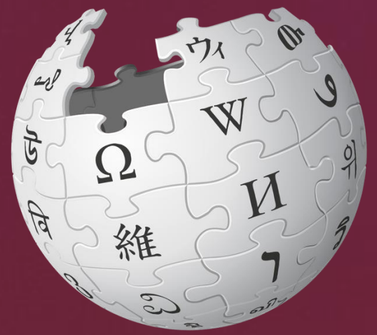
- Example for a new-market disruption
- Initially developed for military usa (USA 1960's)
- continuos technological improvements
- Development of small, powerful, low-cost drones
  → Entry into the mass market
- Wide range of applications today
- Amazon plans drone delivery “Prime Air”
- potential thread to traditional shipping companies like DHL, DPD,...

Amazon Prime Air’s First Customer Delivery

Examples of Disruptive Innovations







Disruptive vs. Sustaining Innovations

- Not all innovations are disruptive (e.g. Uber and AirBnB)
- Do not meet criteria of:
  - **Low-end disruption**
  - **New-market disruption**
- still highly innovative companies

Sustaining Innovation

- Improves existing products/services
- optimizes current business models
- Uses excisting resources differently

Disruptive vs. Sustaining Innovations

Uber — no own cars or drivers → platform model

airbnb — no own hotels or staff → sharing model

→ **Focus on efficiency, not market creation**

(3288) Sustaining vs. Disruptive Innovation - YouTube

Dealing with Disruptive Technologies

- Many established companies fail after disruption → major risk
- no perfect protection strategy exists
- companies need proactive approaches

Key Questions for Incumbents

- Does the innovation have low-end potential?
- Does it have new-market potential?
- Does it impact all incumbents?
- Early evaluation is crucial to help to identify real threads

Dealing with Disruptive Technologies

Product focus

"The products, not the profits, were the motivation" – Steve Jobs

- Companies often focus too much on Sales & Marketing
- Risk: neglecting innovation
- Strong product focus leeds to long-term success
- Innovation mindset is essential

Dealing with Disruptive Technologies

Possible Strategies

Acquisition

- Buy disruptive companies at an early stage
- Identify innovations quickly
- Requires strong financial resources
- Example: Alphabet Inc.

Spin-Offs

- Creat independent start-ups
- separate from core business
- faster and more flexible
- access to parent company resources
- funding and patents available

Alternative Model - S-Curve

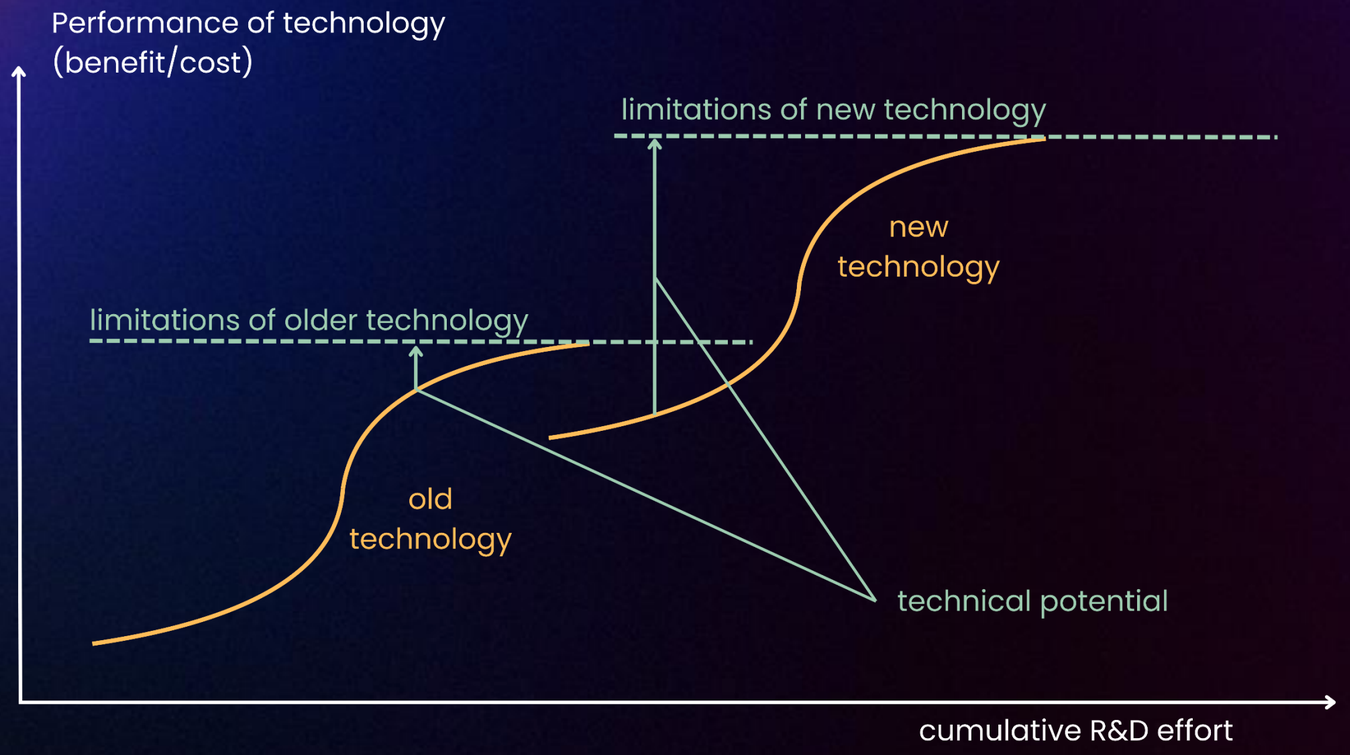
- Alternative to disruptive innovation theory developed by Richard Foster
- Focus on technological development over time
- Explains shifts from old to new technologies
- Similar idea: new tech replaces old tech

S-curves in Innovation

Alternative Model - S-Curve

How the S-Curve Model works

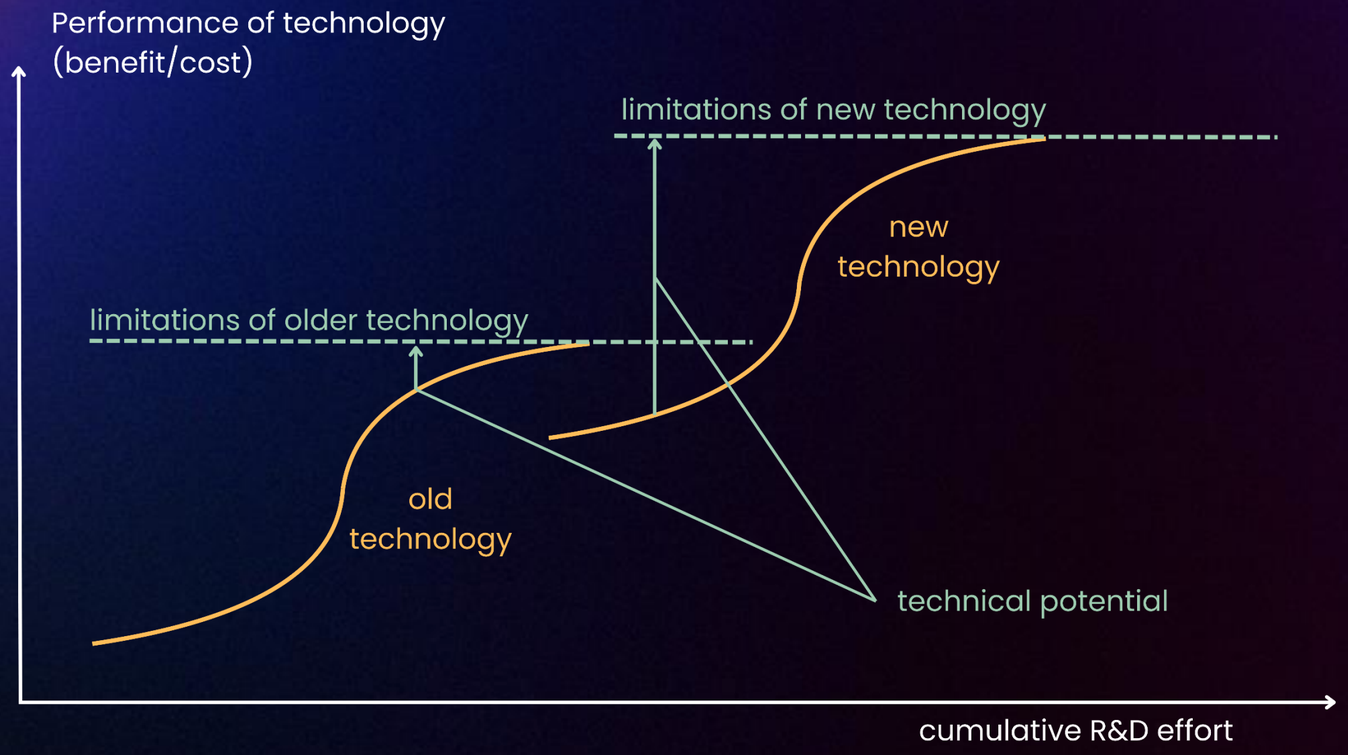
- Technologies develop in stages
- Performance increases over time
- Eventually reaches a limit
- After that: technological leap occurs
- New technology replaces old one



Alternative Model - S-Curve

Early Stage of new technology

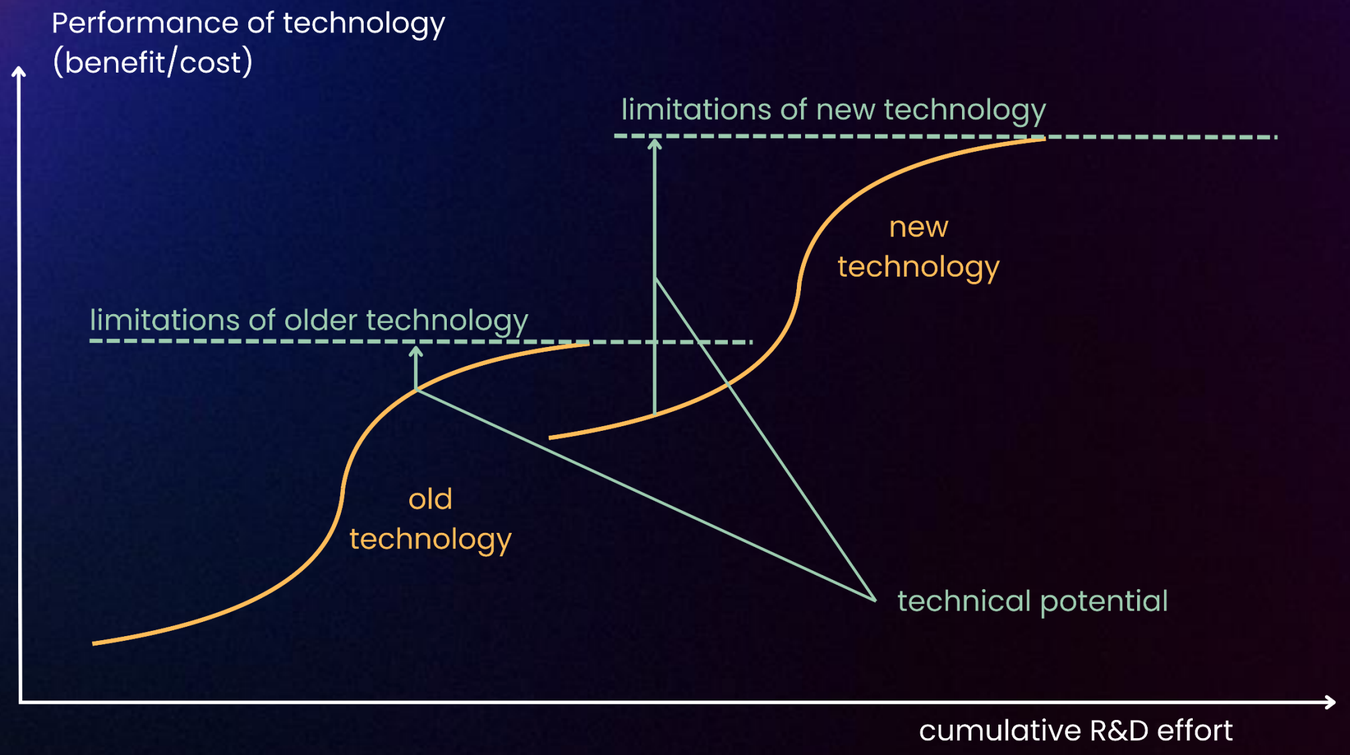
- Initially lower performance
- Not fully developed or tested
- Only part of potential is used
- continious improvement over time
- Performance increases rapidly



Alternative Model - S-Curve

Decline of old technology

- Only small improvements possible
- High R&D costs for minimal gains
- Technology becomes inefficient
- Gradually loses market relevance
- eventually becomes obsolete



Alternative Model - S-Curve

Example - Automotive Industry

- Combustion engine developed by Nicolaus Otto
- continuous improvements over 100+ years
- Market now saturated
- Little potential for further development

Technological Leap - Electric Vehicles

- Shift to electric engines
- still in early development stage
- rapid improvement potential
- Already competitice in efficiency