

# Technological Innovation – A risky business

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## Risk management

- Corporate governance and management responsibility
  - Risk register
  - Audit committee
- What sort of risks ?
  - Financial
    - Usually probability of financial loss

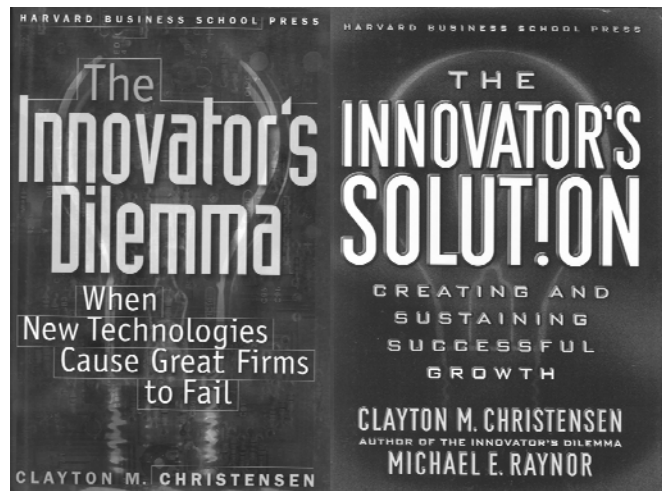
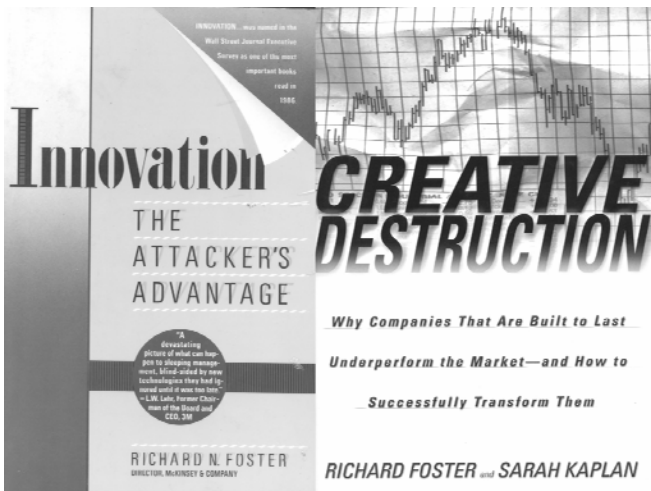
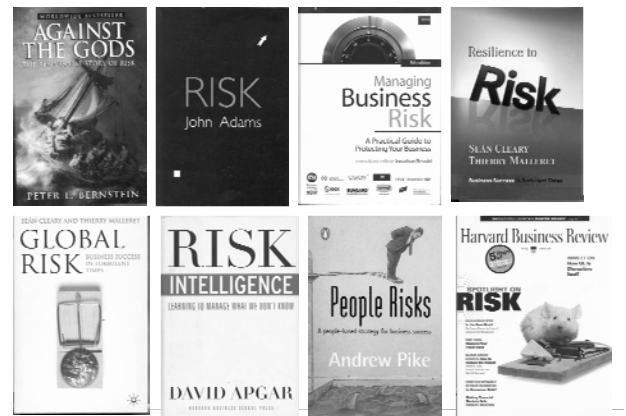


Calie Pistorius  
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## A broader view...

- A broader view of *risk*
  - Probability of 'something bad happening, or the probability of not profiting from an opportunity'
- Other types of risk/audits
  - Reputational risks
  - Environmental risks
  - People risks
  - Health and Safety
- Strategic planning
  - Scanning the environment...



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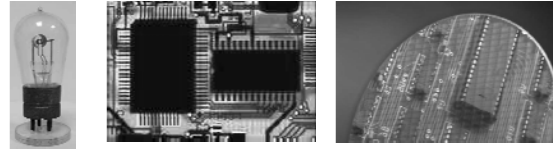
## Impact of technological innovations on industries and industry structures

- Technological innovations have the ability to not only give rise to new types of companies and entire new industries, but also to destroy the old ones in the process
- As such, it is a legitimate and necessary element of the corporate risk management portfolio
  - Threats and opportunities – all industries are targets
  - Industry shattering innovations typically come from other industries (...don't know where and don't know when)
  - ...and it happens to the best

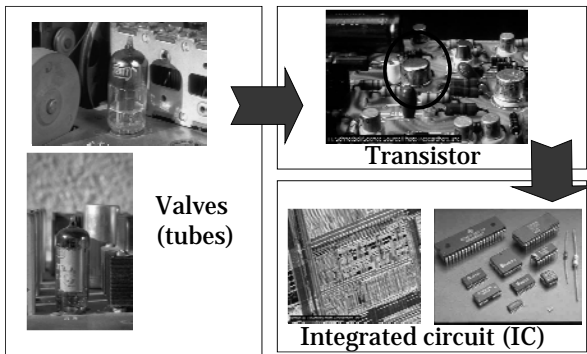


## Competitive impact of innovations

Consider now as an example the impact that various waves of technological innovation had on the structure of the entire active electronics industry...



## Shifts in industry leadership: Active electronics



## Shifts in industry leadership: Active electronics

1955	1955	1965	1975	1982	1995	
Vacuum tubes	Transistors	Semi-conductor	IC	VLSI	Submicron	
RCA	Hughes	Texas Instruments	Texas instruments	Motorola	Intel	
Sylvania	Transitron	Fairchild	Fairchild	Texas Instruments	NEC	
GE	Philco	Motorola	National	NEC	Toshiba	
Raytheon	Sylvania	GI	Intel	Hitachi	Hitachi	
Westinghouse	Texas Instruments	GE	Motorola	National	Motorola	
Amperex	GE	RCA	Rockwell	Toshiba	Samsung	
National Video	RCA	Sprague	GI	Intel	Texas Instruments	
Rawland	Westinghouse	Philco	RCA	Philips	Fujitsu	
Eimac	Motorola	Transitron	Philips	Fujitsu	Mitsubishi	
Lansdale	Clevite	Raytheon	AMD	Fairchild	Philips	



## Warning !!



“... the disturbing regularity with which industrial leaders follow their core technologies into obsolescence and obscurity” Utterback

- ♦ Just don't see the benefits
- ♦ Vested interests and investments
- ♦ Resistance to change
- ♦ Complacency

“ We should not be surprised then, that very often radical innovations come from 'outsiders'....  
..... and industry leadership changes hands”



## Warning !!

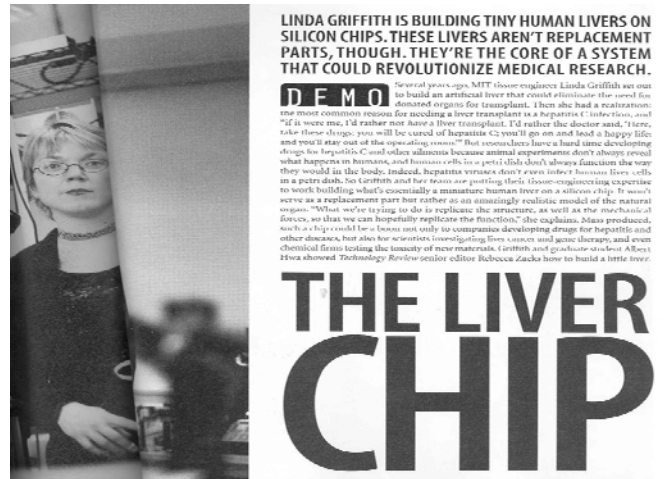
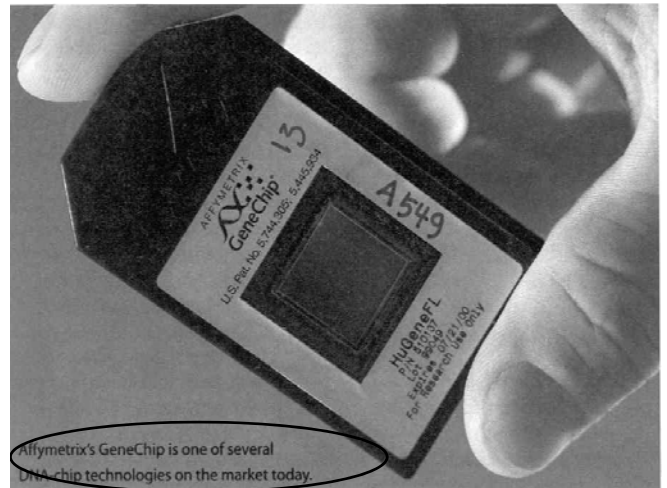
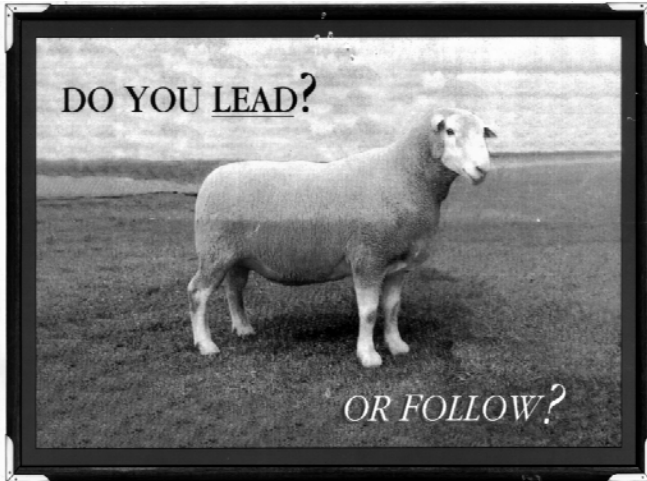


- “One common theme to all these failures, however, is that the decisions that led to failure were made when the leaders in question were widely regarded as among the best companies in the world
- ...these failed firms were as well-run as one could expect a firm managed by mortals to be - but that there is something about the way decisions get made in successful organizations that sows the seeds of eventual failure
- In well-managed firms, good management was the major reason why they lost their position of leadership”

Christensen

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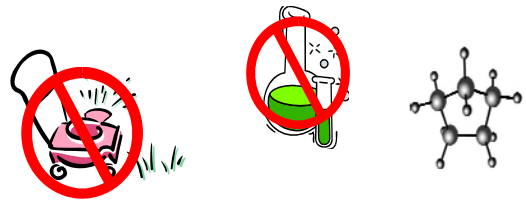


## Shifts in industry leadership: Active electronics

1955	1955	1965	1975	1982	1995	2015
Vacuum tubes	Transistors	Semi-conductor	IC	VLSA	Submicro n	Biochip
RCA	Hughes	Texas Instruments	Texas instruments	Motorola	Intel	Biotech?
Sylvania	Transitron	Fairchild	Fairchild	Texas Instruments	NEC	Biocomp ?
GE	Philco	Motorola	National	NEC	Toshiba	Lifecomp ?
Raytheon	Sylvania	GI	Intel	Hitachi	Hitachi	
Westinghouse	Texas Instruments	GE	Motorola	National	Motorola	
Amperex	GE	RCA	Rockwell	Toshiba	Samsung	
National Video	RCA	Sprague	GI	Intel	Texas Instruments	
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## A complicated business...

- Which competitors do firms monitor? Usually the ones that are in the same business. However, the most threatening may very well be one with a totally new concept...



## Innovation...a source of strategic threats and opportunities

“Wave of creative destruction”

- Some innovations have industry shattering characteristics
- Generically, innovations pose strategic risks to every company in every industry
  - Threats and opportunities
  - Uncertainty: what, when, where



Schumpeter

A risky business indeed...

## Conclusions...



HOW CONCEPTS, THEN IGNORED, THE FIRST PERSONAL COMPUTER  
Douglas K. Smith and Robert C. Alexander

