

# **Wither Core Competencies in an Open Innovation World?**

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# Dominant Logics of Corporate Strategy

1960s-70's:

Portfolio-based perspective (unrelated diversification)

1980s:

Porterian positioning

Late 1980s/90s:

(Core) competency perspective

# The Core Competency View prevalent in early 90s

Large innovative companies should...

- Stick to a limited set of distinctive technological capabilities
- Pursue competence-based (related) diversification
- Assure significant centralized authority in the corporate organization
- Control innovation processes both the systemic/architectural level and the (critical) component level

Introvert and proprietary focus:

YOU should be the best in what YOU do - NIH syndrome

# Absorptive Capacity was acknowledged

but viewed from an internal competence position:

- A byproduct of internal R&D
- Limited to knowledge in related areas
- Bringing in external spillovers

(Cohen and Levinthal, 90; Rosenberg, 90)

# Competency Literature in early 1990s

- Prahalad and Hamel (1990)
- Henderson and Clark (1990)
- Cohen and Levinthal (1990)
- Rosenberg (1990)
- Chandler (1991)
- Grant (1991)
- Pavitt (1991)
- Leonard-Barton (1992)
- Markides and Williamson (1994)

# Ideal companies then

- Canon
- Casio
- Ericsson
- Honda
- IBM (prior to crisis and turnaround)
- Intel
- Lucent
- Matsushita
- NEC
- Texas Instruments
- Philips
- Sharp
- Siemens
- 3M
- Sony

# The ambiguity of the notion of core competency

- Sometimes: Deep and narrowly specialized technological capabilities for developing core components
- Sometimes: Company-wide, integrative competencies needed for developing radical/architectural innovations

# The changing context for technological Innovation

- The dynamics of de-verticalization
- The changing profiles of corporate technology base
- The changing requirements for systemic competencies in large firms



# The de-verticalization dynamics

- global extension of markets
- improved market institutions (IPR, VC, standards)
- technical change reduce minimum scale

## Implication:

Improved markets for specialized technology: Small technology firms increasingly pioneer the development of new specialized technologies and components

# The Changing Profiles of the Corporate Technology Bases

- Expanding diversity of technology base
- Significant/increasing competencies outside core technologies
- Increasing similarity in technology profile among firms in same industries

Not compatible with the traditional core competency perspective

## Similar technology profiles?

- Yes – when measured in terms of “bodies of understanding” (abstract knowledge leading to patents and publications)
- Not in terms of “bodies of practice” (application-specific knowledge)

(Nesta and Dibiaggio, 2003)

## Competencies of large firms increasingly reflect capacities...

- for Systems Integration (diverse set of background competencies)
- For reconfiguring knowledge assets (dynamic capabilities)
- for coordinating and creating markets/networks of increasingly distributed and disintegrated supply chains...

rather than distinctive technological competencies

# Differences between "old" core and "new" integrative competencies

	Old core competence	New integrative competence
Nature of technology	Associated with deep technical/scientific knowledge in distinctive fields	Application-specific knowledge for system integration (need for broad background competencies)
Organizational dynamics	Cumulative/path-dependent according to technological trajectories - introvert	Responsive/adaptive – path-creating dynamics – (more) open

# Division of Innovative Knowledge between small and large Firms

Nature of technological knowledge

Scope of technical know-how

Deep, narrowly specialized capabilities

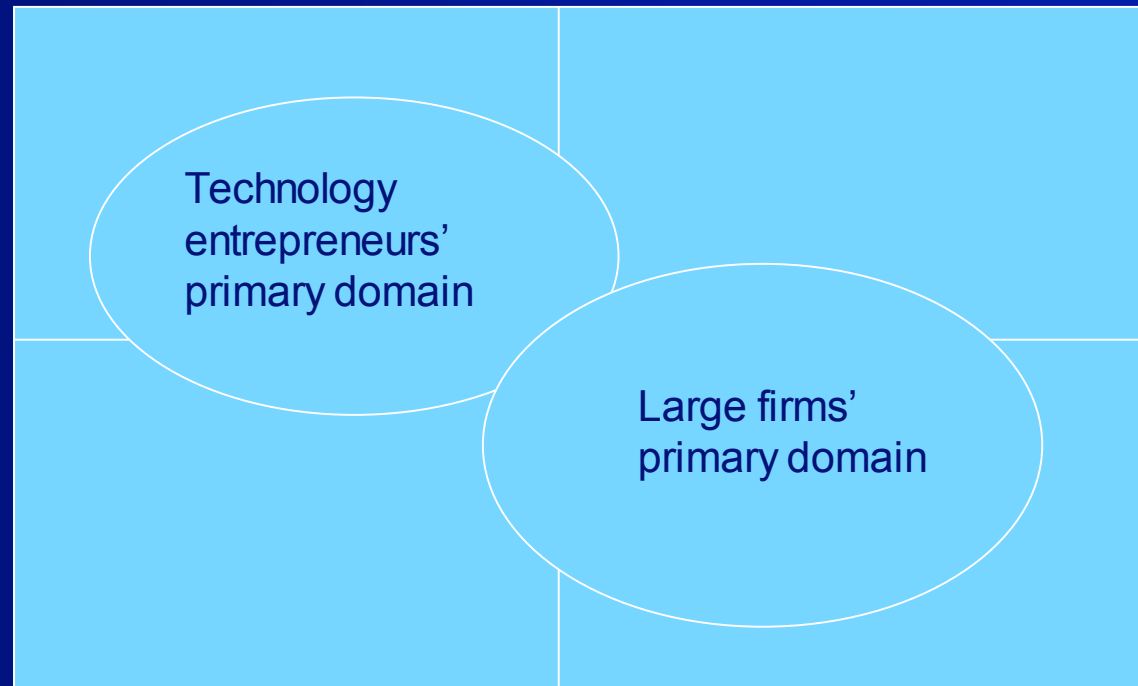
Integrative/ Systemic competencies

Bodies of understanding

Bodies of practice

Technology entrepreneurs' primary domain

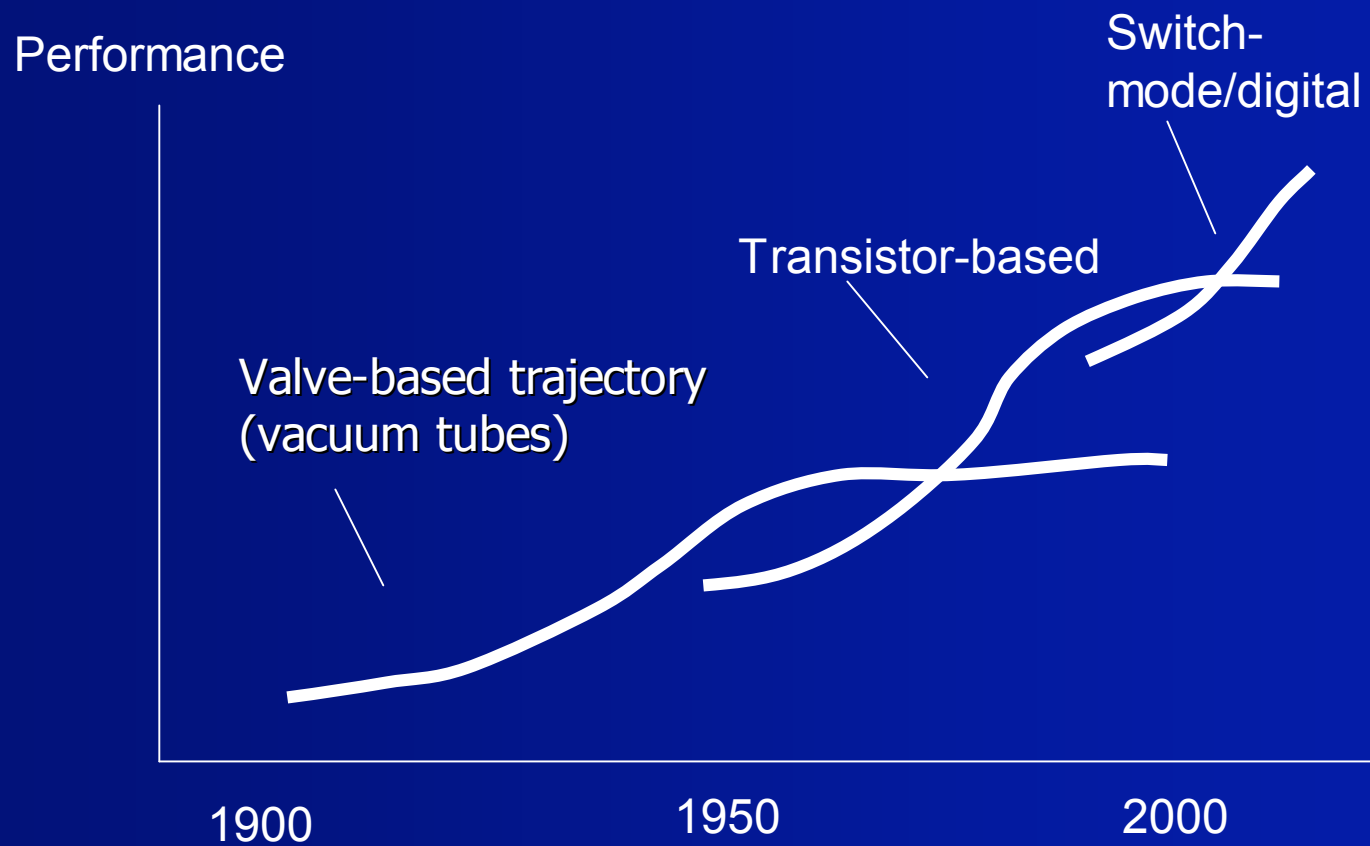
Large firms' primary domain



# **Dynamics of innovation in a world of distributed knowledge**

- **Narrowly specialized suppliers increasingly take control over component level, while large companies dominate systemic level**
- **Small high-tech startups launch early versions of radical innovations – large companies take them to the big markets**
- **Large companies increasingly become multi-technology companies**
- **Large companies increasingly experiment with modes of absorbing unrelated external technologies (often with modest success).**

# Amplifier trajectories

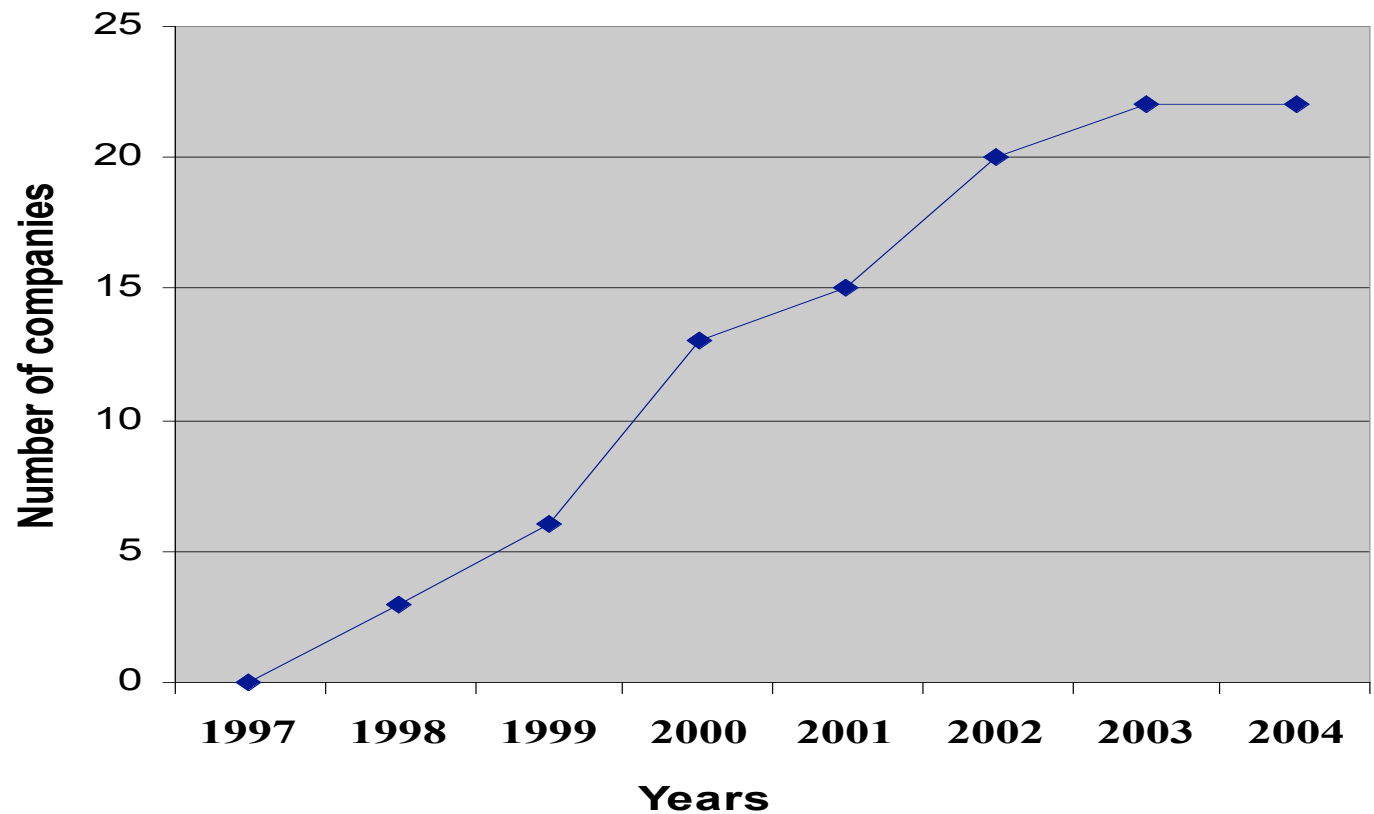




## From invention to innovation

- Mid 1990s: break-through in university research (first Class D amplifier)
- 1997-99: venture-based radical innovation in high-end markets
- 1999 -: strategizing, maturing, market penetration
- 2000- Large incumbents take the innovation to the mass market

# Accumulated number of companies offering digital amplification technology



# The Response of categories of incumbents to the challenge of switched amplification technology

Category of firms	Firms	Response to Class D amplification technology
Semiconductor companies with a strong position in AB amplifier technology	National Semiconductor	Limited response – few products
	STMicroelectronics	Strong position with Apogee and Tripath in chip-based amplifiers
	Texas Instruments	Strong position in chip-based amplifiers
AV OEMs with a strong position in AB amplifier technology	Philips	Internal technology – few products
	Sanyo	Slow response/partnership with ICEpower
	Toshiba	No digital amplification technology
Large AV OEMs without a strong position in AB amplifier technology	LG Electronics	External technology – e.g. Pulsus
	Matsushita	External technology – e.g. Tripath
	Samsung	External technology – e.g. NeoFidelity
	Sharp	Limited response - 1-bit technology
	Sony	Internal module – external chips

# Innovation strategies of incumbents engaging in class D development.

Timing	External Focus		Internal Focus	
	Acquisition-based	Partnership/ Licensing-based	Tight system Integration	Closed style
Early/dedicated movers	Texas Instruments	STMicroelectronics/ Apogee	Sony	
Early/slow mover				Philips
Late mover		Sanyo		

## Still many questions remain insufficiently researched

- To what extent can large innovative companies leave deep competencies to specialized suppliers?
- Can the new forms of "core competencies" provide sustainable competitive advantage?
- Are more open versus more closed modes of innovation alternating in a non-regular cyclical way?

## Core competencies of small firms reflect ...

- Specialized and deep technological knowhow,
- Ability to demonstrate its commercial potentials
- Ability to protect (e.g. through patents, lead time) the knowhow from quick imitation
- Ability to align with (large) complementers

# Division of labour in radical innovation

Performance/  
Market volume

