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15.912 Technology Strategy
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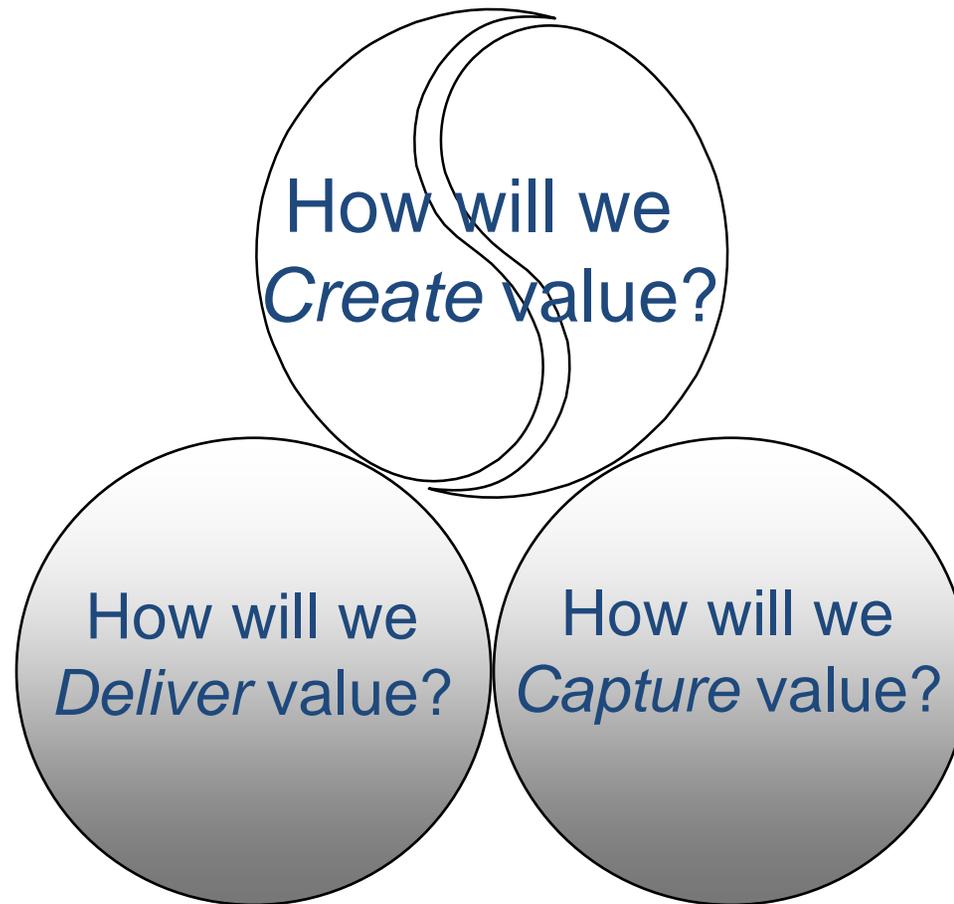
Novartis: An Introduction to Organization Structure

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Value Creation brings new technologies to new markets with effective organization



Which organization structure?

- How to coordinate innovation and share knowledge?
 - Do individuals have the right incentives?
 - Are individuals able to carry out organizational objectives?
- Should firms centralize activities or use a more distributed approach?
- How to balance the tension between too much and too little structure?
 - Does this depend on the industry firms are in?

Decision to Centralize Activities Depends Upon Multiple Dimensions



Technology

Sources of technological advances are led by industry. Products are generally integrated. Step changes in technology drive market. Product lines and platforms are interrelated.



Market and Strategy

Company X must simultaneously exploit the existing market and be able to invent the next generation products.



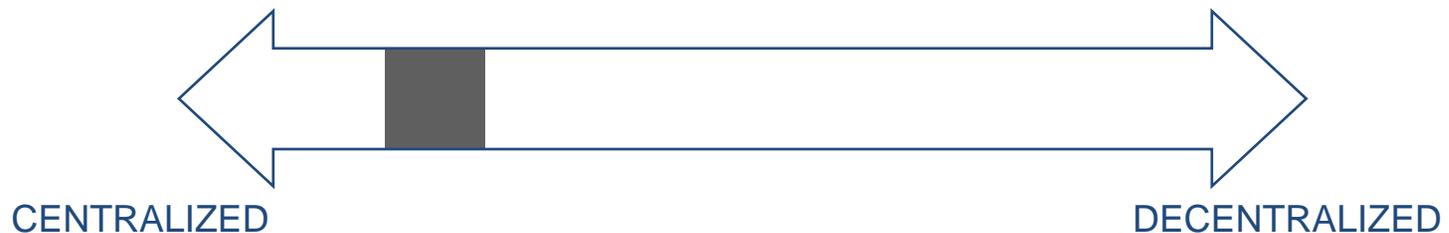
organizational context

Company X grows by a combination of internal product development and acquisition. Diversifying businesses want to move resources from Research to businesses to address increasingly product-line specific needs. Historically advances have been central.



Leadership

The central management sets the technology vision.



CENTRALIZED

DECENTRALIZED

Novartis Pharmaceuticals: Organizational design reflects research topic synergies

– centralized R&D with distributed BUs

Summary

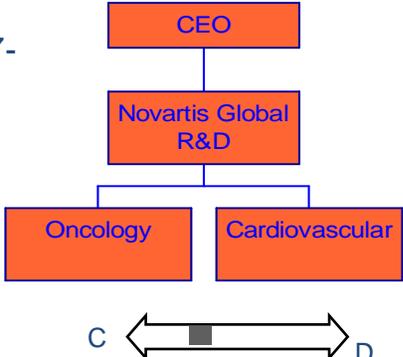
Centralizing R&D permits Novartis to focus resources on common, underlying research topics. The Novartis corporate senior leadership has traditionally been very technologically oriented (PhD/MD) and drives the company to develop new blockbusters. Novartis acquires product rights from biotech firms to plug gaps in their offering.

Situation

Technology 	<ul style="list-style-type: none"> • Academia leads fundamental research in understanding disease mechanism • Industry labs identify therapeutic targets based on basic science of disease mechanism • Patents of composition provide strong competitive insulation for a single molecule product
Market and Strategy 	<ul style="list-style-type: none"> • Range of easily exploitable business opportunities is narrowing while the range of radical new approaches (e.g. genomics) is expanding rapidly • Pharma industry is driven by blockbuster products anticipated by street visibility through a 10 year pipeline • Novartis portfolio decision-making bodies include business unit representation
Organizational Context 	<ul style="list-style-type: none"> • Need high critical mass of researchers to advance the common scientific platforms supporting multiple product categories ▪ Early stage product development teams are highly cross-functional
Leadership 	<ul style="list-style-type: none"> • Corporate leadership is highly technical and closely involved with the research programs and development projects.

Structure

- Fully centralized research that supports 7-10 therapeutic area businesses
- Scientific platforms support multiple therapeutic areas (e.g. immunology)



Relevance

- Novartis and other major pharma companies spend 15-20% of sales on R&D to discover and develop “blockbuster” products
- Centralized R&D provides critical mass of specialized expertise and facilities to leverage science across multiple product categories
- To offset the potential disconnect between R&D and business, Novartis deploys research review including senior business, development and manufacturing representatives.

Organizational Structure in Multi-Business Firms: Capturing Cross Business Synergies

- Cross-Business Synergies (Eisenhardt & Galunic article)
 - Incentives for Individual Business Unit Managers NOT Collaboration itself
 - Strategy the responsibility not of CEO, but of the Multi-Business Team (set of 4-8 SVPs with P&L responsibility + CTO, COO & CFO)
 - Manage number of BU linkages not just content of linkages
 - Business units co-evolve along technology trajectories
 - Example: HP (1990s): printer, scanner, and fax business units use underlying technology and create joint products – e.g., all-in-one printer/scanner/fax products.

Strategic Challenge: Changing Environments are Unpredictable and Ambiguous!

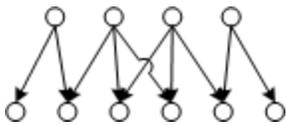
SOURCES

- Future S-curves and market evolution are hard to predict!
- Blurred timing and paths
- Shifting competitive basis, from products to business models
- Lack of control over key technology resources

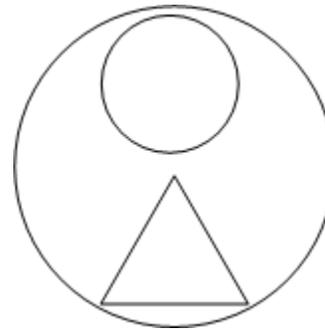
IMPLICATIONS

- Planning is limited
- Reacting is insufficient
- Traditional strategies of “defend a position” (5 Forces) and “leverage core competence” (RBV) are incomplete
- Shift from “closed” internal innovation to “open” innovation with partners

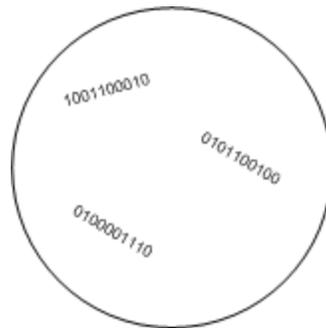
Potential Solution: Organizational Structures that respond to change



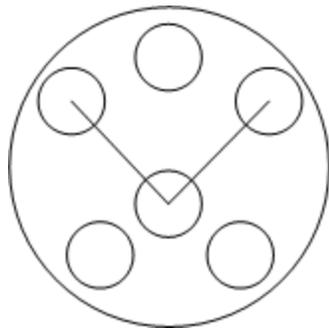
Hierarchy



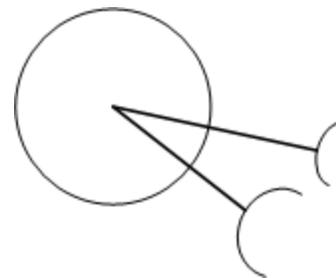
Roles



Rules



Unit Networks

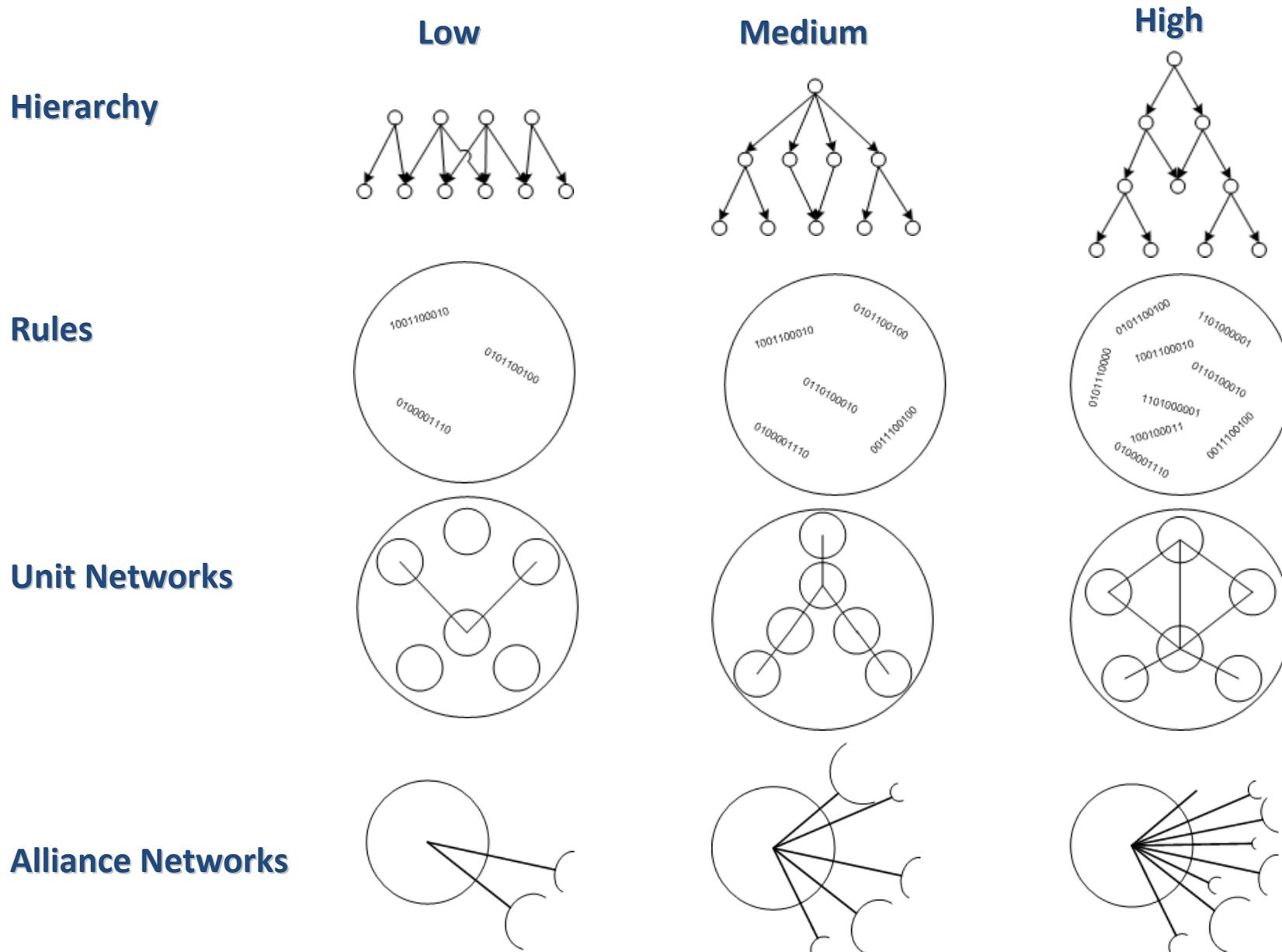


Alliance Networks

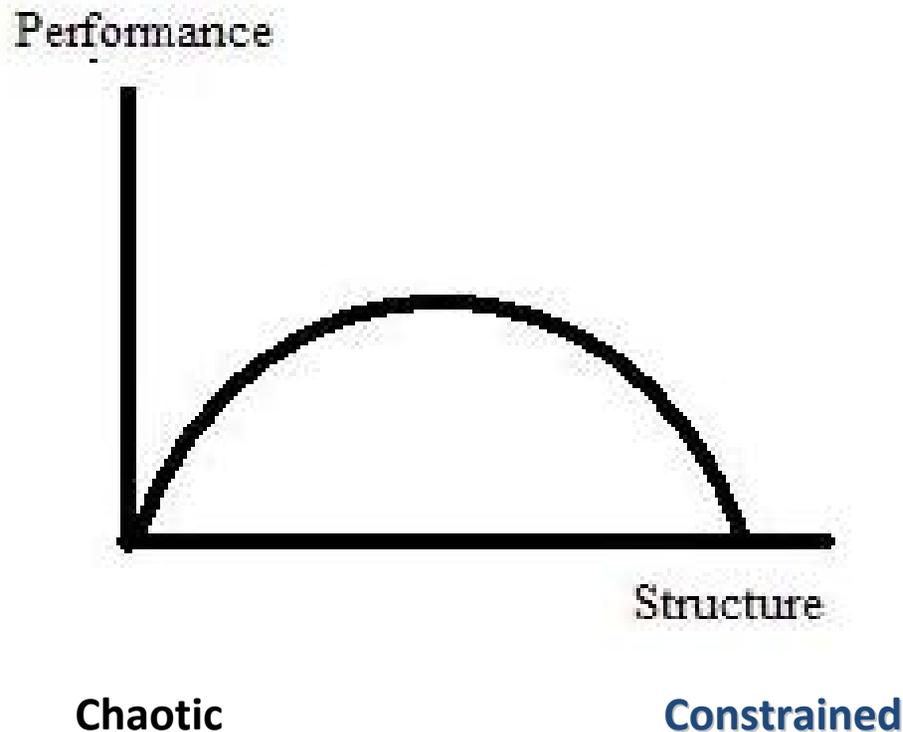


Organizational Structures enable coordinated responses to environmental change by shaping action in real-time

Amount of Organizational Structure can vary greatly!

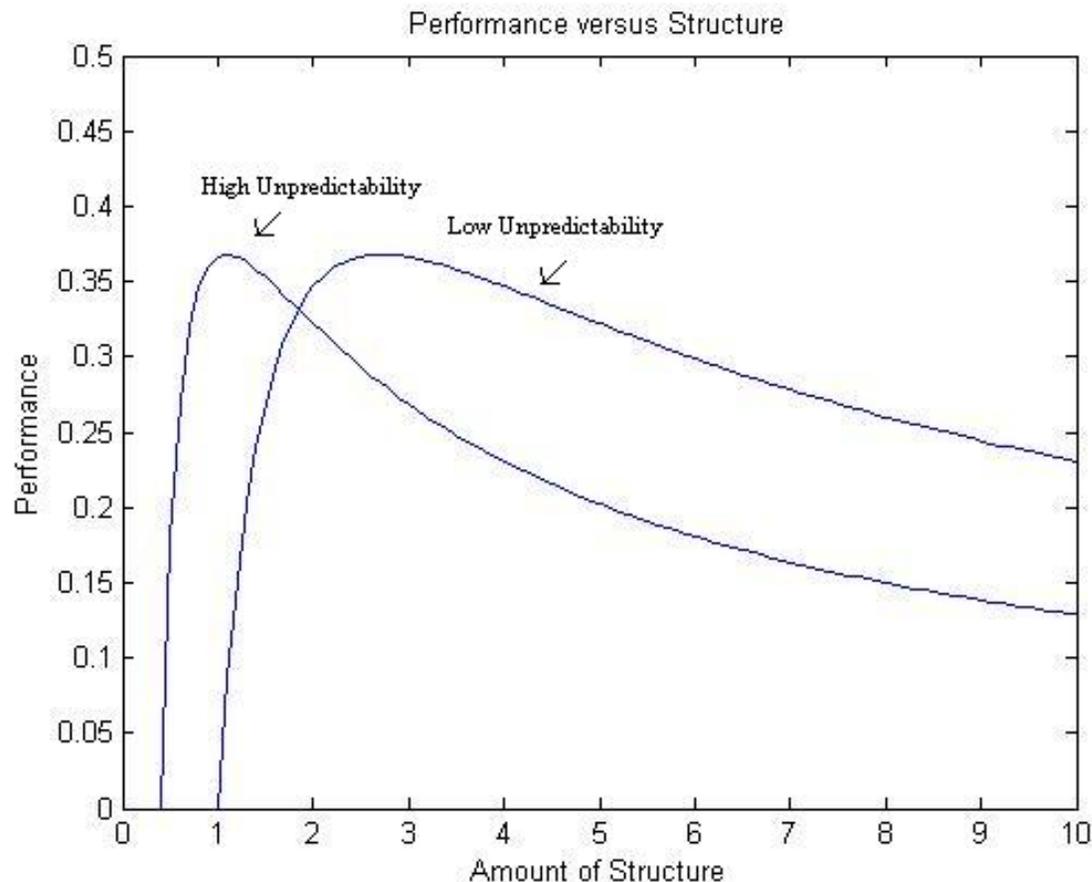


Inverted U-shaped Relationship btwn the Amount of Structure and Performance



- Fundamental Relationship illustrates the tension between efficiency and flexibility
- Observed in multiple industries and for multiple types of structure:
 - Hierarchy
 - Roles
 - Rules
 - Networks

New Modeling and Evidence suggests Asymmetry and Dependency on Market Dynamism



- Asymmetry: more forgiving with too much structure
- Optimum is less structured and more severe in less predictable environments
 - e.g., during discontinuities, better to use simple rules

Examples: Simple Rules in Dynamic Markets

Company	Simple rules
Intel®	<ul style="list-style-type: none">• Priority Rules helped Intel shift from DRAMs to Microprocessors• Simple Rules about minimum project size• Copy Exactly
Pfizer®	<ul style="list-style-type: none">• Clear ranking molecule types as research priorities• Maximum number of molecule types pursued at any one time• Projects “killed” according to step charts
Miramax Films®	<ul style="list-style-type: none">• Movies must<ul style="list-style-type: none">– Center on a basic human condition and flawed, but sympathetic character– Have a clear beginning, middle, and end• Disciplined financing (50% more efficient than industry standard)

The Crying Game
Pulp Fiction
The English Patient
Life is Beautiful
Shakespeare in Love

For Next Session:

- Intel Photolithography:
 - Examine partnerships as an organizational form for creating value
 - Which option should Intel pursue for organizing R&D?
- 2nd Memo due Session 6