



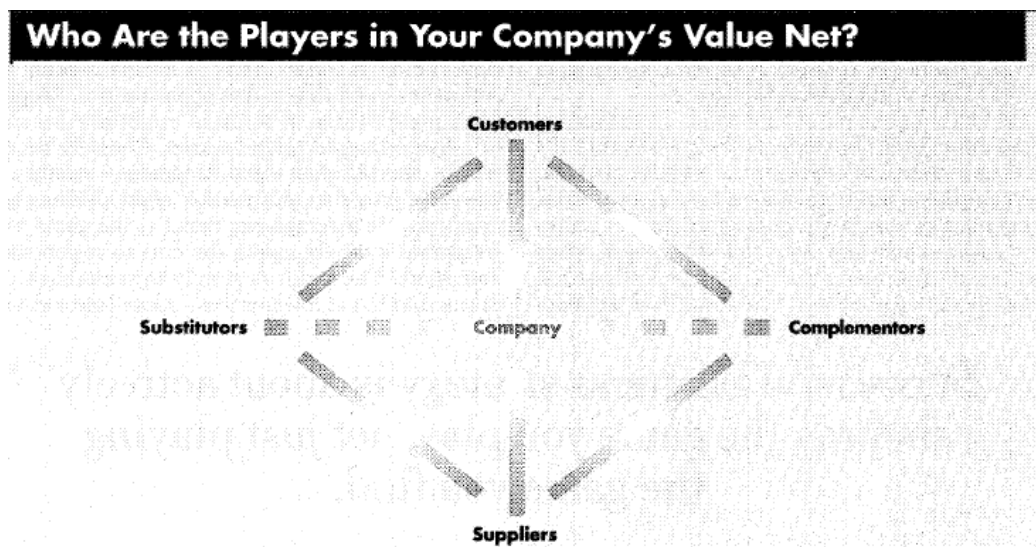
Summary - Articles

Technology, Strategy and Entrepreneurship (Technische Universiteit Delft)

W3 – The Right Game: Use Game Theory to Shape Strategy

Brandenburger and Nalebuff (1995)

- Business is a mix of Rule-based games (players interact according to specified “rules of engagement”) and Freewheeling games (players interact without any external constraints).
- Game Theory for Rule-based games → To every action, there is a reaction.
- Game Theory for Freewheeling games → You cannot take away from the game more than you bring to it.
- The primary insight from game theory is the importance of focusing on others – namely, allocentrism.
- Successful business strategy is about actively shaping the game you play, not just playing the game you find.
- Win-Win strategies
 - The approach is relatively unexplored, there is greater potential for finding new opportunities.
 - Because others are not being forced to give up ground, they may offer less resistance to win-win moves, making them easier to implement.
 - Because win-win moves don’t force other players to retaliate, the new game is more sustainable
 - Imitation of a win-win move is beneficial, not harmful.
- *Coopetition*: Looking for win-win as well as win-lose opportunities, keeping both possibilities in mind is important because win-lose strategies often backfire.
- Value Net – Schematic map to represent all the players in the game and the interdependencies among them. There can be a cooperative element to interactions with substitutors and a competitive element to interactions with complementors. Along the vertical axis, there is also a mixture of cooperation and competition.



- Changing the game. Identify all elements of the game: PARTS.
 - Players: You can whether add or remove players to create win-lose or win-win situations.
 - Added values: Raise your own added value or lower that of others.
 - Rules: The simplest rule is *one price to all* (prices are not negotiated individually with each customer. So a company can profitably enter a market even when it has no added value). But there are other strategies such as *judo economics* (By staying small, the newcomer turns the incumbent's larger size to its own benefit. The newcomer's commitment to limit its capacity must be both clear and credible).
 - Tactics: Some tactics work by reducing misperceptions – lifting the fog. Others work by creating or maintaining uncertainty – thickening the fog.
 - Scope: You can expand the game by creating linkages to other games or you can shrink it by severing linkages.
- The traps of strategy
 - Think you have to accept the game you find yourself in. Just realizing that you can change the game is crucial.
 - Think that changing the game must come at expense of others. The coopetition mindset – looking for both win-win and win-lose strategies – is far more rewarding.
 - Believe that you have to find something to do that others can't. But being unique is not a prerequisite for success.
 - Failing to see the whole game. Draw the Value Net for your business, it will double the repertoire of strategies for changing the game
 - Failing to think methodically about changing the game. You need to go beyond your own perspective. Be allocentric, not egocentric.

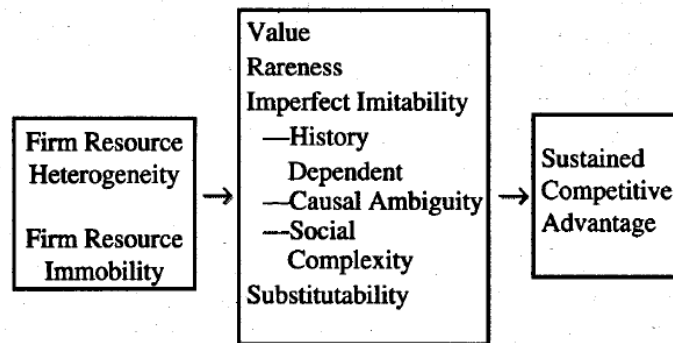
W3 – Firm Resources and Sustained Competitive Advantage

Barney (1991)

Understanding sources of sustained competitive advantage has become a major area of research in strategic management. Building on the assumptions that strategic resources are heterogeneously distributed across firms and that these differences are stable over time, this article examines the link between firm resources and sustained competitive advantage. Four empirical indicators of the potential of firm resources to generate sustained competitive advantage—value, rareness, imitability, and substitutability—are discussed. The model is applied by analyzing the potential of several firm resources for generating sustained competitive advantages. The article concludes by examining implications of this firm resource model of sustained competitive advantage for other business disciplines.

- Firm Resources: All assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness. [Physical capital, human capital and organizational capital resources]
- Competitive Advantage: When a firm is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors.
- Sustained Competitive Advantage: Competitive Advantage + when these other firms are unable to duplicate the benefits of this strategy.
 - Sustained does not depend upon the period of calendar time. It depends upon the possibility of competitive duplication. It is sustained only if it continues to exist after efforts to duplicate that advantage have ceased → it's an equilibrium definition.
 - It doesn't mean it will last forever, only that it will not be competed away through the duplication efforts of other firms.
 - It is not nullified through competing firms duplicating the benefits of that competitive advantage.
- The search for sources of sustained competitive advantage must focus on firm resource heterogeneity and immobility. To the conclusion "in homogeneous, mobile industries, it is not possible for firms to have sustained competitive advantage", there are some objections:
 - What about First-Mover Advantages? No! In order for there to be a first-mover advantage, firms in an industry must be heterogeneous in terms of the resources they control. To be a first mover by implementing an strategy before any competing firms, a particular firm must have insights about the opportunities associated with implementing an strategy that are not possessed by other firms.
 - What about Entry/Mobility Barriers? No! For a barrier to exist, firms protected by these barriers must be implementing different strategies than firms seeking to enter these protected areas (heterogeneity). And also if firm resources are perfectly mobile, they could be easily acquired by firms seeking entry and they could implement the strategy in question. So resources should also be immobile for barriers to exist.
- Resource Attributes for sustained competitive advantage

- Valuable – it exploits opportunities and/or neutralizes threats in a firm’s environment.
- Rare – among current and potential competition
- Imperfectly Imitable. They can be inimitable for one or a combination of 3 reasons:
 - Ability of a firm to obtain a resource is dependent upon *unique historical conditions*.
 - The link between the resources possessed by a firm and a firm’s sustained competitive advantage is *causally ambiguous* (when that link is not understood or understood only very imperfectly).
 - The resource generating a firm’s advantage is *socially complex* (they may be very complex social phenomena, beyond the ability to systematically manage and influence, such as interpersonal relations between managers).
- Not substitutable. Substitutability can take 2 forms:
 - Though it may not be possible for a firm to imitate another firm’s resources exactly, it may be able to substitute a *similar* resource that enables it to conceive and implement the same strategies.
 - Very *different* firm resources can also be strategic substitutes.



Lavie (2006)

I extend the resource-based view to incorporate the network resources of interconnected firms. My model distinguishes shared resources from nonshared resources; identifies new types of rent; and illustrates how firm-, relation-, and partner-specific factors determine the contribution of network resources to the rents extracted from alliance networks. After reassessing the heterogeneity, imperfect mobility, imitability, and substitutability conditions, I conclude that the nature of relationships may matter more than the nature of resources in networked environments.

- Network resources: external resources embedded in the firm's alliance network that provide strategic opportunities and affect firm behavior and value.
- Interfirm alliance: voluntary arrangement among firms that exchange or share resources and that engage in the co-development or provision of products, services or technologies.

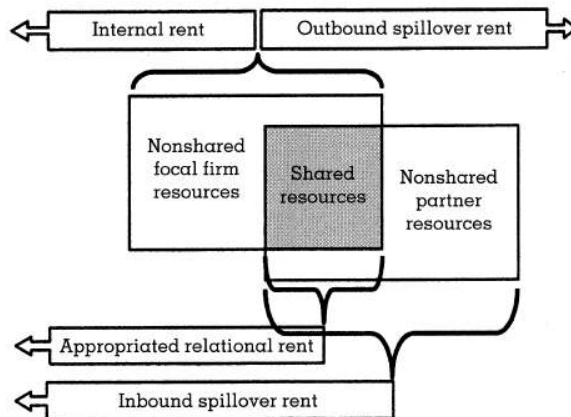
Traditional Resource-based view (RBV)

- In order to gain competitive advantage, a firm needs:
 - Value rarity
 - Imperfect inimitability
 - Imperfect substitutability
- Conditions for sustainable competitive advantage
 - Resource heterogeneity – Not all firms possess the same amount and kinds of resources
 - Ex post limits to competition (Imperfect inimitability and Imperfect substitutability)
 - Imperfect resource mobility – it entails resources that are non-tradable or less valuable to users other than the firm that owns them
 - Ex ante limits to competition.
- In conventional RBV studies, scholars have assumed that value-creating resources are owned and controlled by the focal firm.
- But in this paper they argue that firm valuation should be based not only on the resources of the firm in question but also on the resource endowments of its alliance partners.
 - This relational view draws not only from the RBV but also from transaction cost economics.

Reformulation of the RBV for the interconnected firm

- Do conditions still hold in networked environments?
 - Heterogeneity remains critical, although alliances may contribute to resource homogeneity by facilitating asset flows among interconnected firms.
 - Imperfect mobility is also relevant for interconnected firms. Under perfect mobility, resources can be traded and accessed without forming alliances. However alliances can serve as the means for mobilizing resources that have traditionally been considered immobile.

Composition of Rents Extracted by the Focal Firm in an Alliance



Pooling alliances (shared resources set is substantial): Partners pool their resources to achieve a greater scale and enhanced competitive position in their industry.

Complementary alliance (shared resources is diminutive): firms seek to achieve synergies by employing distinct resources that are difficult to accumulate in combination by any given firm.

Proposition 1: Internal rent derived from the focal firm's own resources will depend on positive and negative complementarities with the shared and nonshared resources of its alliance partners.

Proposition 2: At the time of alliance formation, the more favorable the contractual agreement, the smaller the relative scale and scope of resources, the more attenuated the relative opportunistic behavior, and the stronger the bargaining power of the focal firm

relative to its alliance partners, the greater the firm's ex ante appropriated relational rent will be.

Proposition 3: After an alliance is formed, the stronger the relative absorptive capacity, the more salient the relative opportunistic behavior, and the stronger the bargaining power of the focal firm relative to its alliance partners, the greater the firm's ex post appropriated relational rent will be.

Proposition 4: The more salient the focal firm's opportunistic behavior and the stronger its bargaining power and absorptive capacity, the greater the inbound spillover rent the firm will derive from both the shared and nonshared resources of its alliance partners.

Proposition 5: The stronger the isolating mechanisms used by the focal firm's alliance partners, the smaller the inbound spillover rent the firm will derive from the nonshared resources of its alliance partners.

Proposition 6: The more salient the opportunistic behavior of the focal firm's alliance partners and the stronger their bargaining power and absorptive capacity, the greater the firm's loss of outbound spillover rent derived from both its shared and nonshared resources will be.

Proposition 7: The stronger the isolating mechanisms used by the focal firm, the smaller the loss of outbound spillover rent derived from its nonshared resources will be.

Proposition 8: Use of stronger isolating mechanisms by the focal firm will enhance its competitive advantage by inducing internal rent and reducing outbound spillover rent.

Proposition 9: Use of stronger isolating mechanisms by the focal firm's alliance partners will impair the competitive advantage of the firm by reducing internal rent and inbound spillover rent.

Proposition 10: The greater the overall relational rent shared by the focal firm and its alliance partners, the higher the potential for accrual of inbound and outbound spillover rents will be.

W4 – Frugal Innovation in Emerging Markets

Zeschky, Widenmayer and Gassman (2011)

OVERVIEW: The quality and number of innovations developed by multinational companies from emerging countries is increasing dramatically. In particular, frugal innovations—“good-enough,” affordable products that meet the needs of resource-constrained consumers—have created tremendous demand in emerging markets. While the development of such products has largely been the domain of local corporations in emerging countries, Western corporations have recently started to engage in frugal innovation as well. This is a difficult task for Western firms, however, because their business models and organizational structures are traditionally designed for the development of advanced products for the affluent few at the top of the economic pyramid. Using Swiss weighing-instrument manufacturer Mettler Toledo as a case example, this article suggests that frugal innovations are largely developed by local R&D subsidiaries of Western firms in emerging countries. A substantial degree of autonomy for those local R&D subsidiaries, including product-portfolio responsibilities, can facilitate the development of frugal innovation.

- Disruptive Innovation: Product that offer superior customer value and low costs.
- “Good-enough” products that meet basic needs at low cost and thus provide high value → Low-end disruptive innovation = “resource-constrained innovations” = “cost innovations” = “frugal innovations”.
- Frugal innovations often look inferior to existing solutions because they provide limited functionality and are often made of simpler, cheaper materials. They are initially developed to meet the needs of resource-constrained consumers in emerging markets. Nevertheless, these products are increasingly finding their way to markets in developed countries.
- The growing market for frugal innovation brings two main challenges for Western corporations:
 - They must rethink their established business models. The strategy of earning margins of few affluent consumers is increasingly in question: (1) frugal innovations will over time also attract affluent customers who may decide to go for less expensive products that still meet their needs and (2) the growing middle class is becoming an increasingly interesting market that offers great business potential.
 - Western companies must build organizational structures and capabilities to enable the development of frugal products. A more prominent local presence and fundamental new-product development effort may be necessary to develop a truly effective frugal innovation process.

Implications

Strategic and organizational lessons for Western companies pursuing frugal innovation:

- Frugal innovations are homegrown products that cannot be easily derived from existing Western products. They are the result of a unique value architecture that is grounded in the drive to meet basic requirements at the lowest possible cost.
 - Developing frugal innovations requires local organizational structures and resources to help develop an understanding of the needs of the resource-constrained consumers who are the target market for frugal innovations.
1. Understand the value architecture of frugal innovation. Western companies must change their mindset and see low-income populations as potential markets that offer great business opportunities for the right products. Key to success will be the attitude of the development team, which must be oriented toward meeting a radical cost goal. Three vital factors: low-cost manufacturing; simple, low-cost materials and design; focus on basic functionality and minimal feature sets.
 2. Establish local organizational structures to enable frugal innovation. Empower local R&D subsidiaries to access the power of local knowledge. They should have autonomy from central R&D headquarters and also be able to understand local needs and translate those into appropriate product solutions. Successful frugal innovation is facilitated by having on the R&D team local people who bring personal experience with the environment in which the product will be used.

Conclusions

- Although frugal innovations might compete against existing products in both emerging and developed markets, the potential for massive low-end profits may well outweigh losses in higher-end product lines.
- Successful frugal innovation begins in the mind.
- Central R&D headquarters are likely to take on the role of network coordinators, bundling individual competencies in the network to initiate new development activities anywhere in the world.

W4 – Diagnosing the decline in pharmaceutical R&D efficiency

Scannell, Blackley, Boldon and Warrington (2012)

Abstract | The past 60 years have seen huge advances in many of the scientific, technological and managerial factors that should tend to raise the efficiency of commercial drug research and development (R&D). Yet the number of new drugs approved per billion US dollars spent on R&D has halved roughly every 9 years since 1950, falling around 80-fold in inflation-adjusted terms. There have been many proposed solutions to the problem of declining R&D efficiency. However, their apparent lack of impact so far and the contrast between improving inputs and declining output in terms of the number of new drugs make it sensible to ask whether the underlying problems have been correctly diagnosed. Here, we discuss four factors that we consider to be primary causes, which we call the 'better than the Beatles' problem; the 'cautious regulator' problem; the 'throw money at it' tendency; and the 'basic research-brute force' bias. Our aim is to provoke a more systematic analysis of the causes of the decline in R&D efficiency.

- R&D efficiency: number of new drugs brought to market by the global biotechnology and pharmaceutical industries per billion US dollars of R&D spending. → It has declined steadily: Eroom's Law
- Eroom's Law indicates that powerful forces have outweighed scientific, technical and managerial improvements over the past 60 years and/or that some of the improvements have been less 'improving' than commonly thought.
- There's the impression that Eroom's Law can simply be reversed by strategies such as greater management attention to factors such as project costs and speed of implementation, by reorganizing R&D structures into smaller focused units in some cases or larger units with superior economies of scale in others, by outsourcing to lower-cost countries, by adjusting management metrics and introducing R&D 'performance scorecards' or by somehow making scientists more 'entrepreneurial' → These changes might help at the margins but it feels as though most are not addressing the core of the productivity problem.
- To explain Eroom's law, we should try to address two things: (1) the progressive nature of the decline in the number of new drugs per billion US dollars of R&D spending and (2) the scale (~80-fold) of the decline.

Primary Causes

- The 'better than the Beatles' problem. Yesterday's blockbuster is today's generic. An ever-improving back catalogue of approved medicines increases the complexity of the development process for new drugs and raises the evidential hurdles for approval, adoption and reimbursement.
 - Another potential related cause of Eroom's law is the 'Low-hanging' fruit, which results from the progressive exploitation of drug targets that are more technically tractable. The 'low-hanging' fruit explanation is sometimes tautological as 'technically easy' tends to be equated with 'already discovered'.
- The 'cautious regulator' problem. Progressive lowering of the risk tolerance of drug regulatory agencies obviously raises the bar for the introduction of new drugs and could substantially

increase the associated costs of R&D. Concern that drug companies could cheat the system in some way has led the cautious regulator to apply an audit-based approach to regulatory documentation. Although the 'cautious regulator' problem is tractable in principle, it is hard to see the regulatory environment relaxing to any great extent. Society might be right to prefer a tougher regulator, even if it means more costly R&D.

- The 'throw money at it' tendency. Tendency to add human and other resources to R&D, which has generally led to a rise in R&D spending. Probably due to factors including good returns on investment in R&D for most of the past 60 years, as well as a poorly understood and stochastic innovation process that has long pay-off periods. There may be also a bias in large companies to equate professional success with the size of one's budget.
- The 'basic research brute-force' bias. Tendency to overestimate the ability of advances in basic research and brute force screening methods to increase the probability that a molecule will be safe and effective in clinical trials. Reasons why this bias has come to dominate drug research:

Secondary Symptoms

- The narrow clinical search problem. Shift from an approach that looked broadly for therapeutic potential in biologically active agents to one that seeks precise effects from molecules designed with a single drug target in mind.
- The big clinical trial problem.
- The multiple clinical trial problem.
- The long cycle time problem.

Ideas

- We suggest that all large companies introduce a new board level role, which we call the Chief Dead Drug Officer (CDDO). This role would be focused on drug failure at all stages of R&D and the CDDO would have a fixed time from appointment to compose a detailed report that aims to explain the causes of Eroom's law. The remuneration of the role would be structured in such a way as to provide an accurate forecast of the future R&D productivity of the company and the industry overall.

Prognosis for Eroom's Law

- We would be surprised if Eroom's Law holds at an industry level over the next 5-7 years.
 - The amount spent on R&D is not going to increase. The 'throw money at it' tendency is being tackled by most companies with varying degrees of intensity.
 - The cumbersome biosimilar approval pathway that is emerging in the US.
 - The signal-to-noise ratio may be improving among the compounds being developed for oncology indications.

W4 – Serving the World's Poor, Profitably

Prahalad and Hammond (2002)

- Prosperity can come to the poorest regions only through the direct and sustained involvement of multinational companies. And it's equally clear that the multinationals can enhance their own prosperity in the process.
- In poor regions, while individuals incomes may be low, the aggregate buying power of poor communities is actually quite large. It's also incorrect to assume that the poor are too concerned with fulfilling their basic needs to "waste" money on nonessential goods. In fact the poor often do buy "luxury" items.
- Consumers at the bottom of the pyramid pay much higher prices for most things than middle-class consumers do, which means there's a real opportunity for companies, particularly big corporations with economies of scale and efficient supply chains to capture market share by offering higher quality goods at lower prices while maintaining attractive margins.
- It can be also surprisingly cheap to market and deliver products and services to the world's poor. That's because many of them live in cities that are densely populated today and will be even more so in the years to come.
- Conventional wisdom says that people in BOP markets cannot use advanced technologies but that's just another misconception.
- A final misconception concerns the highly charged issue of exploitation of the poor by MNCs. We argue that when MNCs provide basic goods and services that reduce costs to the poor and help improve their standard of living – while generating an acceptable return on investment – the results benefit everyone.

The Business Case

There are three important advantages to serving the poor: a new source of revenue growth, greater efficiency and access to innovation.

- **Top-Line Growth.** BOP markets are fundamentally new sources of growth. And because these markets are in the earliest stages of economic development, growth can be extremely rapid. It's true that some services cannot be offered at a low enough cost to be profitable, at least not with traditional technologies or business models. → One answer is to find alternative technology. Another answer is to aggregate demand, making the community – not the individual – the network customer.
- **Reduced Costs.** Outsourcing operations to low-cost labor markets represents cost-saving opportunities. Besides this, it can also enhance growth, since job creation ultimately increases local consumers' purchasing power. The competitive necessity of maintaining a low cost structure in these areas can push companies to discover creative ways to configure their products, finances, and supply chains to enhance productivity. And these discoveries can often be incorporated back into their existing operations in developed markets.
- **Innovation.** BOP markets are hotbeds of commercial and technological experimentation.

Strategies for serving BOP markets

- Attitudes and practices of executives. The traditional workforce is so rigidly conditioned to operate in higher-margin markets that without formal training, it is unlikely to see the vast potential for the BOP market – the most pressing need is education.
- Companies will also need to make structural changes. Set up R&D units in developing countries that are specifically focused on local opportunities. Create venture groups and internal investment funds aimed at seeding entrepreneurial efforts in BOP markets. Create a business development force aimed at these markets.
- Reaching out to external partners. Joining with businesses that are already established in these markets can be an effective strategy, since these companies will naturally understand the market dynamics better. Entrepreneurs will be also critical partners (But MNCs might need to take on mentoring roles or partner with local business development organizations that can help these entrepreneurs).
- Other strategies: women play a significant role in the economic development of these regions. Partnerships can limit risk. Another option is to enter consortia. Also investing where powerful synergies exist mitigate risk.
- All of these strategies will be of little use unless the external barriers (poor infrastructure, inadequate connectivity, corrupt intermediaries and the like) are removed.

Cheah (1990)

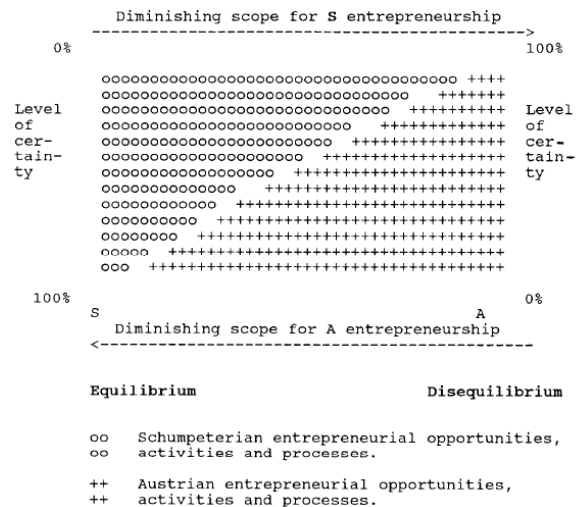
- Schumpeter → He perceived the entrepreneur to be an extraordinary person who promotes “new combinations” or innovations.

the function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way by opening up a new source of supply of materials or a new outlet for products, or by reorganizing an industry and so on . . . This kind of activity is primarily responsible for the recurrent “prosperities”

- Such innovative efforts, which revolutionize the existing situation, are for Schumpeter an aspect of the process of “creative destruction” in capitalism.
- Austrian critique of Schumpeter → For Kirzner, the entrepreneur profits from his alertness to opportunities that exist in uncertain, nonequilibrium situation. Yjos alertness enables the entrepreneur to perceive such opportunities before others do.
“Schumpeter’s entrepreneur acts to disturb an existing equilibrium situation... By contrast, my own treatment of the entrepreneur emphasized the equilibrating aspects of his role”
“Entrepreneurship is manifested in short-run movements as much as in long-run developmental changes and is exercised by imitators fully as much as by the innovators themselves”.

Schumpeterian vs. Austrian. Opposites or Complements?

- Schumpeterian entrepreneurship promotes disequilibrium. It promotes the change of an existing situation. Their activities result in major innovations and even systematic changes, generating new development processes that create and/or widen the gap between leaders and followers.
- Austrian entrepreneurship promotes equilibrium, changes within an existing situation. It stems from the discovery of the existence of profitable discrepancies, gaps, and mismatches in knowledge and information that others have not yet perceived and exploited, and the entrepreneur acts to capitalize upon the opportunity for gain or advantage which that discovery presents. These activities increase knowledge about the situation, reduce the general level of uncertainty over time and promote market processes that help to reduce or eliminate the gap between leaders and followers.
- In the figure we can see the manner in which each force rises gradually to a peak then “gives away” to its opposite (complementary) force. It reveals the manner in which each mode is related to the other in different (changing) situations.



This relationship is illustrated in Figure 2, where the point *S* represents an ideal situation characterized by complete certainty. In this situation, there are no longer any “scraps of existing information that are present in scattered form throughout society” (Kirzner 1985, p. 162) that remain to be exploited by an alert Austrian entrepreneur. This situation presents the greatest scope for the disequilibrium-generating activities of the “long-run” Schumpeterian entrepreneurs. Their innovative activities lead to the discovery of “an intertemporal opportunity that cannot, even in principle, be said actually to exist before the innovation has been created,” (Kirzner 1985, p. 85), and this causes disruption and transformation of the preexisting equilibrium situation.

As the level of uncertainty rises, as a consequence of Schumpeterian activities and processes, the scope for “short run” Austrian entrepreneurs grows. The short-run process,

In Figure 2, the point *A* represents an ideal disequilibrium situation. It is a situation characterized by complete uncertainty. This situation presents the greatest scope for the equilibrium-promoting activities of the Austrian entrepreneur. Such activities as arbitrage, speculation, nonradical or adaptive innovation, and imitation, as well as planning and management efforts in response to market signals and other indicators of market opportunity, led to a progressive increase in knowledge and understanding of the situation and, consequently, a higher level of certainty. They are “responsible for a continuous tendency toward economic balance and internal economic consistency” (Kirzner 1985, p. 68). The result is a reduction of disequilibrium and a tendency towards increasing equilibrium. As the level of certainty rises, as a consequence of Austrian activities and processes, the scope for Schumpeterian entrepreneurs grows.

Figure 2 also depicts that at almost every point between *S* (Schumpeterian opportunities) and *A* (Austrian opportunities), both Schumpeterian and Austrian activities, opportunities, and processes can occur. However, from the viewpoint of the overall entrepreneurial process,

- We could even argue that Australian and Schumpeterian entrepreneurship are interdependent in the overall evolutionary development process. Specifically the activities and processes generated by Schumpeterian entrepreneurs increase the scope for Austrian entrepreneurs over time and vice versa.

Some Implications and Qualifications: Either Schumpeterian or Austrian entrepreneurs, not all persons can be so neatly classified. Entrepreneurship is a form of behavior rather than a personality trait. Behavior can be learned, and thus, changed. In many cases, real individuals could manifest some combination of the qualities of these 2 entrepreneurial modes.

This paper reports the results of a study designed to investigate the effective strategic responses to environmental hostility among small manufacturing firms. Data on environmental hostility, organization structure, strategic posture, competitive tactics, and financial performance were collected from 161 small manufacturers. Findings indicate that performance among small firms in hostile environments was positively related to an organic structure, an entrepreneurial strategic posture, and a competitive profile characterized by a long-term orientation, high product prices, and a concern for predicting industry trends. In benign environments, on the other hand, performance was positively related to a mechanistic structure, a conservative strategic posture, and a competitive profile characterized by conservative financial management and a short-term financial orientation, an emphasis on product refinement, and a willingness to rely heavily on single customers.

- An environmental dimension which, by definition, serves as a threat to small firm viability and performance is hostility. Hostile environments are characterized by precarious industry settings, intense competition, harsh, overwhelming business climates and the relative lack of exploitable opportunities. Non-hostile or benign environments on the other hand, provide a safe setting for business operations due to their overall level of munificence and richness in investment and marketing opportunities.

Hypotheses

Organization structure and environmental hostility

H1: An organic structure will be more positively related to firm performance for small firms in hostile environments than small firms in benign environments.

Strategic Posture and Environmental Hostility

- Strategic posture: Firm's overall competitive orientation. A firm's entrepreneurial-conservation orientation is indicative of its strategic posture. This orientation is demonstrated by the extent to which the top managers are inclined to take business related risks, to favor change and innovation in order to obtain a competitive advantage for their firm, and to compete aggressively with other firms.

H2: An entrepreneurial strategic posture will be more positively related to firm performance for small firms in hostile environments than small firms in benign environments.

Results

- Small firms with high organicity indices generally perform best in hostile environments, whereas small firms with low organicity indices generally perform best in more benign environments.
- Small firms with high strategic posture indices generally perform best in hostile environments, whereas small firms with low strategic posture indices generally perform best in more benign environments.
- Neither organization structure nor strategic posture are significant predictors of firm performance. Environmental hostility, on the other hand, is a highly significant predictor of performance.
- While organization structure and strategic posture may not have strong independent effects on performance, the fit between these variables and the level of hostility in the environment may contribute to the performance differences of higher- and lower-performing firms.

Discussion and Conclusion

- The attributes which appear to contribute to high performance among small firms in hostile environments are an organic structure, an entrepreneurial strategic posture, and a competitive profile characterized by a long-term, goal-oriented approach of industry trends.
- In benign environments, on the other hand, the attributes which appear to promote performance include a more mechanistic structure, a more conservative strategic posture, and a competitive profile characterized by conservative, risk-averse financial management, an emphasis on immediate profitability and the development and refinement of existing products and services, and a strong dependence, if necessary, on individual customers for the firm's sales revenues.

W5 – Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency

Sarasvathy (2001)

In economics and management theories, scholars have traditionally assumed the existence of artifacts such as firms/organizations and markets. I argue that an explanation for the *creation* of such artifacts requires the notion of effectuation. Causation rests on a logic of prediction, effectuation on the logic of control. I illustrate effectuation through business examples and realistic thought experiments, examine its connections with existing theories and empirical evidence, and offer a list of testable propositions for future empirical work.

- Decisions in economics and management may be discussed at several levels: individual, firm, industry/market, and economy. But underlying almost every one of these decisions is the *assumed existence* of the central artifacts and contexts of business within which the decisions take place. In other words, none of these decisions involves the *creation* of artifacts such as firms, markets and economies.
- Goal of this paper: Identifying and developing a decision model that involves processes of effectuation rather than causation and showing its use in the creation of new firms.

Process of Causation and Effectuation

- Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means.
- The distinguishing characteristic between causation and effectuation is in the set of choices: choosing between means to create a particular effect, versus choosing between many possible effects using a particular set of means. Whereas causation models consist of many-to-one mappings, effectuation models involve one-to-many mappings.

A rudimentary theory of effectuation processes in business

- Under what circumstances which types of processes provide particular advantages and disadvantages is an issue to be resolved through future empirical studies. Summarizing from the literature on decision making, the anatomy of a decision involves:
 - A given goal to be achieved or a decision to be made
 - A set of alternative means or causes
 - Constraints on possible means
 - Criteria for selecting between the means.
- A decision involving effectuation, however, consists of,
 - A given set of means
 - A set of effects or possible operationalization of generalized aspirations
 - Constraints on possible effects
 - Criteria for selecting between effects
- Entrepreneurs begin with three categories of “means”: they know who they are, what they know and whom they know. At the level of the firm, the corresponding means are its physical resources, human resources and organizational resources. At the level of the economy, these means become demographics, current technology regimes and sociopolitical institutions.

Contrasting Causation and Effectuation

Categories of Differentiation	Causation Processes	Effectuation Processes
Givens	Effect is given	Only some means or tools are given
Decision-making selection criteria	Help choose between means to achieve the given effect Selection criteria based on expected return Effect dependent: Choice of means is driven by characteristics of the effect the decision maker wants to create and his or her knowledge of possible means	Help choose between possible effects that can be created with given means Selection criteria based on affordable loss or acceptable risk Actor dependent: Given specific means, choice of effect is driven by characteristics of the actor and his or her ability to discover and use contingencies
Competencies employed	Excellent at exploiting knowledge	Excellent at exploiting contingencies
Context of relevance	More ubiquitous in nature More useful in static, linear, and independent environments	More ubiquitous in human action Explicit <i>assumption</i> of dynamic, nonlinear, and ecological environments
Nature of unknowns	Focus on the predictable aspects of an uncertain future	Focus on the controllable aspects of an unpredictable future
Underlying logic	To the extent we can predict future, we can control it	To the extent we can control future, we do not need to predict it
Outcomes	Market share in existent markets through competitive strategies	New markets created through alliances and other cooperative strategies

Four Principles that form the core of a rudimentary theory of effectuation

1. Affordable loss rather than expected returns. The effectuator prefers options that create more options in the future over those that maximize returns in the present.
2. Strategic alliances rather than competitive analyses. Effectuation emphasizes strategic alliances and pre-commitments from stakeholders as a way to reduce and/or eliminate uncertainty and to erect entry barriers.
3. Exploitation of contingencies rather than exploitation of preexisting knowledge. Effectuation is better for exploiting contingencies that arose unexpectedly over time.
4. Controlling unpredictable future rather than predicting an uncertain one. Effectuation focuses on the *controllable* aspects of an unpredictable future: *To the extent that we can control the future, we do not need to predict it.*

Propositions for the role of effectuation processes in businesses

Proposition 1: Prefirms or very early-stage firms created through processes of effectuation, if they fail, will fail early and/or at lower levels of investment than those created through processes of causation. Ergo, effectuation processes allow the economy to experiment with more numbers of new ideas at lower costs.

Proposition 2: Successful early entrants in a new industry are more likely to have used effectuation processes than causation processes. With later entrants, the trend could be reversed.

Proposition 3: Successful firms, in their early stages, are more likely to have focused on forming alliances and partnerships than on other types of competitive strategies, such as sophisticated market research and competitive analyses, long-term planning and forecasting, and formal management practices in recruitment and training of employees.

Conjecture 1: In marketing decisions, in contrast to traditional decision makers, effectuators are less likely to use traditional types of market research, such as carefully designed surveys and test marketing; instead, they are likely to dive straight into seat-of-the-pants marketing/selling activities and alliances.

Conjecture 2: In financial decisions, in contrast to traditional decision makers, effectuators are less likely to use long-term planning or net present value (NPV) analyses; instead, they are likely to be focused on the short term and, at most, to use informal versions of real options.

Conjecture 3: In organizational decisions, in contrast to traditional decision makers, effectuators are more likely to build strong participatory cultures, rather than hierarchical, procedures-based ones. In fact, in contrast to traditional decision makers, effectuators are likely to be less effective in running large organizations with well-oiled procedures.

Conjecture 4: Effectuators are more likely to fail more often but are also more likely to manage the failures more effectively and to create larger, more successful firms in the long run (although they may need to hire professional chief operating officers to actually run them!).

W5 – The heart of entrepreneurship

Stevenson and Gumpert (2001)

- What does entrepreneurial mean? Managers describe entrepreneurship with such terms as innovative, flexible, dynamic, risk taking, creative, and growth oriented. The popular press, on the other hand, often defines the term as starting and operating new ventures.

Manager's opportunity Matrix	Desired future state characterized by growth or change		
		Yes	No
Self-perceived power and ability to realize goals	Yes	Entrepreneur	Satisfied Manager
	No	Frustrated potential entrepreneur	Consummate bureaucratic functionary

- View managerial behavior in terms of extremes. At one extreme is what we might call the *promoter* type of manager, who feels confident of his or her ability to seize opportunity. At the other extreme is the *trustee* type, who feels threatened by change and the unknown and whose inclination is to rely on the status quo.
- As managers move closer to the promoter end of the scale, they become more entrepreneurial, and as they move toward the trustee end of the scale they become less so (or perhaps, more "administrative").
- A close relationship exists between opportunity and individual needs. To be an entrepreneurial opportunity, a prospect must meet two tests: it must represent a desirable future state, involving growth or at least change, and the individual must believe it is possible to reach that state. (This relationship often identifies 4 groups, as shown in the table).

Entrepreneurial Process

- The typical administrator asks: What resources do I control? What structure determines our organization's relationship to its market? How can I minimize the impact of others on my ability to perform? What opportunity is appropriate?
- The entrepreneur asks:

Where is the opportunity?

- The first step is to identify the opportunity, which entails an external (or market) orientation rather than an internal (or resource) orientation.
- Entrepreneurs are not just opportunistic; they are also creative and innovative. The entrepreneur does not necessarily want to break new ground but perhaps just remix old ideas.
- For the entrepreneurial mentality, external pressures stimulate opportunity recognition. These pressures include → Part A.
- Among the internal pressures that move companies toward the administrative end → Part A

How do I capitalize on it?

- Promoters, however, move quickly past the identification of opportunity to its pursuit. First entrepreneurs must know the territory they operate in, then they must be able to recognize patterns as they develop.

- The pressures pushing companies toward either the entrepreneurial or administrative end of the spectrum with regard to the timing and duration of their commitment are a mixture of personal, organizational and environmental forces → Part B

What resources do I need?

- Some institutions with vast resources are tempted to commit resources heavily, to “go first class” all the way. In this way, the rationale goes, you reduce your chances of failure and increase your eventual returns. However, success is unrelated to the size of the resource commitment. More important is the innovativeness with which the institution commits and deploys those resources.
- As necessity is proverbially the mother of invention, people who start businesses often make imaginative use of their limited resources.
- Most of the risk in entrepreneurial management lies in the effort to pursue opportunity with inappropriate resources – either too few or too many.
- The pressures toward the gradual commitment of resources – toward the entrepreneurial end of the scale – are mostly environmental → Part C

How do I control the resources?

- Two key factors are the ability to reduce overhead and the acumen to take advantage of cost-lowering technological changes.
- Promoter types think that all they need from a resource is the ability to use it; trustee types think that resources are inadequately controlled unless they are owned or on the payroll. Entrepreneurs learn to use other people’s resources well while keeping the option open on bringing them in-house.
- Pressures → Part D

What structure is best?

- When it comes to organizing business, the promoter tries to “feel” the way events are unfolding via contact with the principal actors. The trustee views the relationships more formally: rights, responsibilities, and authority are conferred on different people and segments of an organization.
- Also influencing the approach to business organization is the control of resources. Businesses that use and rent resources by necessity develop information networks both internally and externally. Organizations that own and employ resources are easily and naturally organized into hierarchies according to those resources.
- Pressures → Part E.

Stimulating Entrepreneurship

- A society can do much to stimulate or inhibit the development of entrepreneurship. Government policy can do much to create opportunity.
- The way our colleges and universities teach business management affects approaches to entrepreneurship.

- It's up to individual organizations to foster the conditions that allow it to flourish. That means encouraging the timely pursuit of opportunity, the most appropriate commitment and use of resources, and the breakdown of hierarchy.
- We can see in corporations the same type of opportunity matrix as we described for individual managers before.

Corporate opportunity Matrix	Desired future state characterized by growth or change		
		Yes	No
Belief capacity to influence the competitive environment	Yes	Adaptive, entrepreneurial organization	Complacent, though successful market leaders
	No	Reactive Planners	Bureaucratic and lethargic organization

- To move towards the bolded cell, the leadership of the organization can: (1) Determine its barriers to entrepreneurship, (2) Seek to minimize risks to the individual for being entrepreneurial, (3) Exploit any resource pool, (4) Tailor reward systems to the situation.

	Entrepreneurial focus		Administrative focus	
	Characteristics	Pressures	Characteristics	Pressures
A Strategic orientation	Driven by perception of opportunity	Diminishing opportunities Rapidly changing technology, consumer economics, social values, and political rules	Driven by controlled resources	Social contracts Performance measurement criteria Planning systems and cycles
B Commitment to seize opportunities	Revolutionary, with short duration	Action orientation Narrow decision windows Acceptance of reasonable risks Few decision constituencies	Evolutionary, with long duration	Acknowledgment of multiple constituencies Negotiation about strategic course Risk reduction Coordination with existing resource base
C Commitment of resources	Many stages, with minimal exposure at each stage	Lack of predictable resource needs Lack of control over the environment Social demands for appropriate use of resources Foreign competition Demands for more efficient resource use	A single stage, with complete commitment out of decision	Need to reduce risk Incentive compensation Turnover in managers Capital budgeting systems Formal planning systems

More info on each one check article

D Control of resources	Episodic use or rent of required resources	Increased resource specialization Long resource life compared with need Risk of obsolescence Risk inherent in the identified opportunity Inflexibility of permanent commitment to resources	Ownership or employment of required resources	Power, status, and financial rewards Coordination of activity Efficiency measures Inertia and cost of change Industry structures
E Management structure	Flat, with multiple informal networks	Coordination of key noncontrolled resources Challenge to hierarchy Employees' desire for independence	Hierarchy	Need for clearly defined authority and responsibility Organizational culture Reward systems Management theory

W5 – The Era of Open Innovation

Chesbrough (2003)

- New upstarts are conducting little research on their own, and instead getting new ideas to market through a different process.

From Closed to Open

- Fundamental shift in how companies generate new ideas and bring them to market. In the old model of *closed innovation*, firms adhered to the following philosophy: *Successful innovation requires control*. In other words, companies must generate their own ideas that they would then develop, manufacture, market, distribute and service themselves. This approach calls for self-reliance.
- Traditional *virtuous cycle of innovation*: Invest heavily in internal R&D, discover the best and greater number of ideas, come to market first, reap most of the benefits, protect them through IP, and reinvest profits in conducting more R&D, which led to additional breakthrough of discoveries.
- Due to factors such as the rise in the number and mobility of knowledge workers (making it difficult for companies to control their proprietary ideas and expertise) or the growing availability of venture capital (which helped finance new firms and their efforts to commercialize ideas that have spilled outside the silos of corporate research labs), the virtuous cycle was shattered.
- New model of *open innovation*: Firms commercialize external (as well as internal) ideas by deploying outside (as well as in-house) pathways to the market. Companies can commercialize internal ideas through channels outside of their current business. Some vehicles for accomplishing this include startup companies and licensing agreements. Ideas can also originate outside the firm's own labs and be brought inside for commercialization. The boundaries between a firm and its surrounding environment is more porous, enabling innovation to move easily between the two.
- Both the closed and open models are adept at weeding out "false positives" (bad ideas that initially look promising) but open innovation also incorporates the ability to rescue "false negatives" (projects that initially seem to lack promise but turn out to be valuable).

How prevalent is Open Innovation?

- Different businesses can be located on a continuum, from essentially closed to completely open.

Contrasting Principles of Closed and Open Innovation

Closed Innovation Principles

The smart people in our field work for us.

To profit from R&D, we must discover, develop and ship it ourselves.

If we discover it ourselves, we will get it to market first.

If we are the first to commercialize an innovation, we will win.

If we create the most and best ideas in the industry, we will win.

We should control our intellectual property (IP) so that our competitors don't profit from our ideas.

Open Innovation Principles

Not all of the smart people work for us* so we must find and tap into the knowledge and expertise of bright individuals outside our company.

External R&D can create significant value; internal R&D is needed to claim some portion of that value.

We don't have to originate the research in order to profit from it.

Building a better business model is better than getting to market first.

If we make the best use of internal *and* external ideas, we will win.

We should profit from others' use of our IP, and we should buy others' IP whenever it advances our own business model.

The Different Modes of Innovation

- **Funding Innovation.** Two types of organizations are focused primarily on supplying fuel for the innovation fire.
 - **Innovation Investor.** It was the original corporate R&D budget but now a wide range of other types has emerged, including venture capital (VC) firms, angel investors, corporate VC entities, private equity investors and the Small Business Investment Companies (SBICs), which provide VC to small, independent businesses.
 - **Innovation Benefactor.** They provide new sources of research funding. Unlike investors, they focus on the early stages of research discovery. By funding promising early-stage work, they get a first look at the ideas and can selectively fund those that seem favorable for their industry.
- **Generating Innovation.** Four types of organization that primarily generate innovation.
 - **Innovation Explorer.** They specialize in performing the discovery research function that previously took place primarily within corporate R&D laboratories.
 - **Innovation Merchants.** They must also explore but their activities are focused on a narrow set of technologies that are then codified into intellectual property and aggressively sold to (and brought to market by) others. They innovate but only with specific commercial goals in mind, whereas explorers tend to innovate for innovation's sake.
 - **Innovation Architects.** They provide a valuable service in complicated technology worlds. In order to create value for their customers, they develop architectures that partition this complexity, enabling numerous other companies to provide pieces of the system, all while ensuring that those parts fit together in a coherent way. They work in areas that are complex and fast moving, which disfavors the "do-it-yourself" approach.
 - **Innovation Missionaries.** They are people and organizations that create and advance technologies to serve a cause. Unlike the innovation merchants and architects, they do not seek financial profits from their work. Instead the mission is what motivates them.
- **Commercializing Innovation.** Two types of organization are focused on bringing innovations to the market.
 - **Innovation marketers.** Their defining attribute is their keen ability to profitably market ideas, both their own as well as others'. To do so, marketers focus on developing a deep understanding of the current and potential needs in the market and this helps them to identify which outside ideas to bring in-house.

- Innovation one-stop centers. They provide comprehensive products and services. They take the best ideas (from whatever source) and deliver those offerings to their customers at competitive process. Like innovation marketers, they thrive by selling others' ideas but are different in that they typically form unshakable connections to the end users, increasingly managing a customer's resources to his or her specifications.
- A company can deploy different modes of innovation in different markets. The role of R&D needs to extend far beyond the boundaries of the firm. Innovators must integrate their ideas, expertise and skills with those of others outside the organization to deliver the result to the marketplace, using the most effective means possible. In short, firms that can harness outside ideas to advance their own businesses while leveraging their internal ideas outside their current operations will likely thrive in this new era of open innovation.

W6 – Networks, Diversity, and Productivity: The Social Capital of Corporate R&D Teams

Reagans and Zuckerman (2001)

We argue that the debate regarding the performance implications of demographic diversity can be usefully reframed in terms of the network variables that reflect distinct forms of social capital. Scholars who are pessimistic about the performance of diverse teams base their view on the hypothesis that decreased network density—the average strength of the relationship among team members—lowers a team's capacity for coordination. The optimistic view is founded on the hypothesis that teams that are characterized by high network heterogeneity, whereby relationships on the team cut across salient demographic boundaries, enjoy an enhanced learning capability. We test each of these hypotheses directly and thereby avoid the problematic assumption that they contradict one another. Our analysis of data on the social networks, organizational tenure, and productivity of 224 corporate R&D teams indicates that both network variables help account for team productivity. These findings support a recasting of the diversity-performance debate in terms of the network processes that are more proximate to outcomes of interest.

- Research on how the demographic diversity of a team affects its performance is marked by a sharp debate between two views:
 - “Pessimistic View”: Demographic diversity is problematic because it introduces social divisions that hinder effective teamwork. Homogeneous groups are expected to perform at a higher level because they coordinate their actions more easily than diverse teams.
 - “Optimistic View”: Diverse membership actually improves a team's performance. Greater demographic diversity entails relationships among people with different sets of contacts, skills, information, and experiences. Heterogeneous teams enjoy an enhanced capacity for creative problem solving.
- ➔ Pessimist worry about the coordination problems introduced by demographic diversity and optimists focus on the learning benefits it provides.
- Primary basis for this disagreement lies in the typical research strategy in which demographic diversity is used as a proxy for network patterns on a team. Each side of the diversity debate involves a hypothesis about how one of two network variables affects performance.

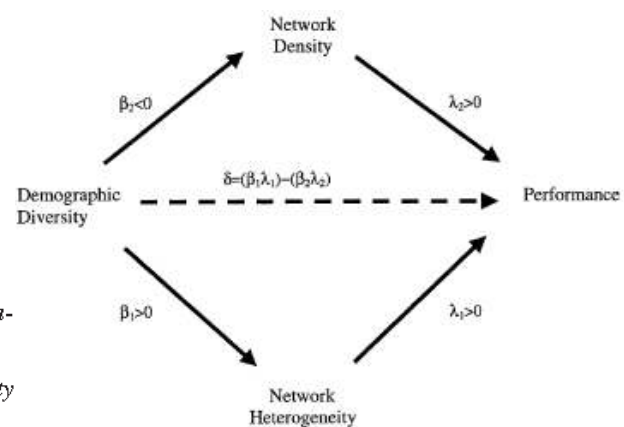
Pessimists: Homogeneous Teams = Higher Level of Network Density → Enhanced Performance → Higher Performance

Optimists: Heterogeneous Teams = More links that cut across demographic categories → Enhanced Learning and Creativity → Higher Performance.

- Objective of this research: To move beyond the debate regarding the overall effect of demographic diversity by directly analyzing how the two network variables which underlie this debate affect team performance.

Theory

- Most relevant to the diversity-performance debate are the two conceptions of social capital that emerge from social-network theory. Thinking consistent with the “closure” perspective underlies the pessimistic view and the “structural holes” approach is the basis for the optimistic view.
 - Network Density or social “closure” inside a group indicates the likely absence of “structural holes” and is thought to foster identification with the group and a level of mutual trust, which facilitates collective exchange and collective action.
 - “Structural holes” or gaps between nodes in a social network. Such boundary spanning generates “information benefits”. Actors who develop ties with disconnected groups gain access to a broader array of ideas and opportunities.
- These two perspectives on social capital do not conflict with one another. While the closure perspective focuses on the presence or absence of relations in *local* interaction, the structural holes responsible for information benefits are those that divide a social system *globally*.
- Pessimists focus internally and examine how demographic diversity affects local interactions. Optimists focus externally and examine how demographic diversity on a team provides the team with an opportunity to act as a bridge between groups generally disconnected from each other. Optimists focus on global structural holes and the information benefits that bridging such holes provide.



HYPOTHESIS 1. *The greater the density of a team's internal network, the higher its productivity.*

HYPOTHESIS 2. *The greater the network heterogeneity of a team, the higher its productivity.*

- In sum the stark opposition in the diversity-performance debate has been based on two problematic assumptions: (1) It has been presumed that network density and heterogeneity are opposed network principles and (2) In the absence of direct measures of network density and heterogeneity, researches have assumed that one of the two variables will have a stronger effect. The framing of the debate has helped obscure the fact that the two views agree that both dense and heterogeneous networks may improve team performance.

Discussion

- R&D teams that have more dense networks of interaction achieve a higher level of productivity than do those with sparse networks. However, we also find that teams that display greater levels of contact between individuals of the same organizational tenure are less productive than do teams that are characterized by links between members who entered the organization at different points in time.
- That we find some support for both network perspectives on social capital should not be surprising. One focuses on dense patterns of local interaction as the basis for coordination and collective action, and the other focuses on bridges across global divisions as the basis for information transfer and learning. A team that does not develop the connections among their members, which enable it to coordinate effectively, faces an uphill battle. However, when such networks remain concentrated among homogeneous sets of individuals, the team fails to generate the learning that can only come from interaction among different individuals.

We develop a contingency view of process management's influence on both technological innovation and organizational adaptation. We argue that while process management activities are beneficial for organizations in stable contexts, they are fundamentally inconsistent with all but incremental innovation and change. But dynamic capabilities are rooted in both exploitative and exploratory activities. We argue that process management activities must be buffered from exploratory activities and that ambidextrous organizational forms provide the complex contexts for these inconsistent activities to coexist.

- A firm's ability to compete over time may lie in its ability both to integrate and build upon its current competencies while simultaneously developing fundamentally new capabilities.
- Process management, based on a view of an organization as a system of interlinked processes, involves concerted efforts to map, improve and adhere to organizational processes.
- Process management's contribution to improving manufacturing efficiency has led to its migration beyond operations to other parts of organizations – for instance, to adjacent processes for selecting and developing technological innovations.
- Processes are collections of activities that taken together produce outputs for customers. Process management entails three main practices: mapping processes, improving processes, and adhering to systems of improved processes.

Process Management and Technological Innovation

- Technological innovation is a central engine of organizational adaptation. An organization's dynamic capabilities depend on simultaneously exploiting current technologies and resources to secure efficiency and benefits and creating variation through exploratory innovation.
- As process management techniques focus on continuous improvement in routines and variation reduction, their increased use in an organization affects the balance between exploratory and exploitative innovation.
- Process management influences technological innovation: (1) process-focused activities stabilize the resource allocation and decision processes that determine which technological projects will be supported. (2) They also tighten internal communication linkages and affect the types of technological changes that are recognized and addressed. We argue that process management activities will facilitate some innovation types but dampen others.
- Types of Innovation. We can classify them along two dimensions: (1) their proximity to the current technological trajectory and (2) their proximity to the existing customer/market segment.
 - Incremental and Radical
 - Modular and Architectural
 - Whether they address the needs of existing customers or new markets
- Incremental technological innovations and innovations designed to meet the needs of existing customers are *exploitative*. In contrast radical innovations or those for emergent customers or markets are *exploratory*.

Process Management's Effects on Innovation

Proposition 1: Increases in process management practices promote incremental innovation.

Proposition 2: Increases in process management practices promote innovation for existing customer sets.

Proposition 3: Increases in process management practices decrease architectural innovation. Proposition 4: Increases in process management practices decrease radical innovation. Proposition 5: Increases in process management practices decrease innovation for new customer sets.

Exploration, Exploitation and Ambidextrous Organizations

- How can organizations balance exploration and exploitation? (1) Engage in multiple forms of learning by alternating between different organizational designs and by being both consistent and inconsistent in your actions. (2) Rhythmically switch between more organic and more mechanistic structures. (3) Create loosely coupled organizations, where the experimenting units are highly buffered from the exploiting units.
- Ambidextrous or dual organizational forms are organizational architectures that build in both tight and loose coupling simultaneously.
- Their design is composed of highly differentiated but weakly integrated subunits. While the exploratory units are small and decentralized with loose cultures and processes, the exploitation units are larger and more centralized with tight cultures and processes.
- These contrasting, inconsistent units must be physically and culturally separated from one another, have different measurement and incentives and have distinct managerial teams. To create dual organizational structures, senior teams must develop techniques that permit them to be consistently inconsistent.

Proposition 6: In the context of an ambidextrous organizational form, increases in process management practices increase exploitative innovation but do not dampen exploratory innovation.

Process Management and Organizational Adaptation

Proposition 7: Increases in process management practices will improve performance in eras of incremental technological change. Proposition 8: Increases in process management practices will speed organizational responsiveness during eras of incremental technological change. Proposition 9: Increases in process management practices will decrease performance in eras of technological ferment.

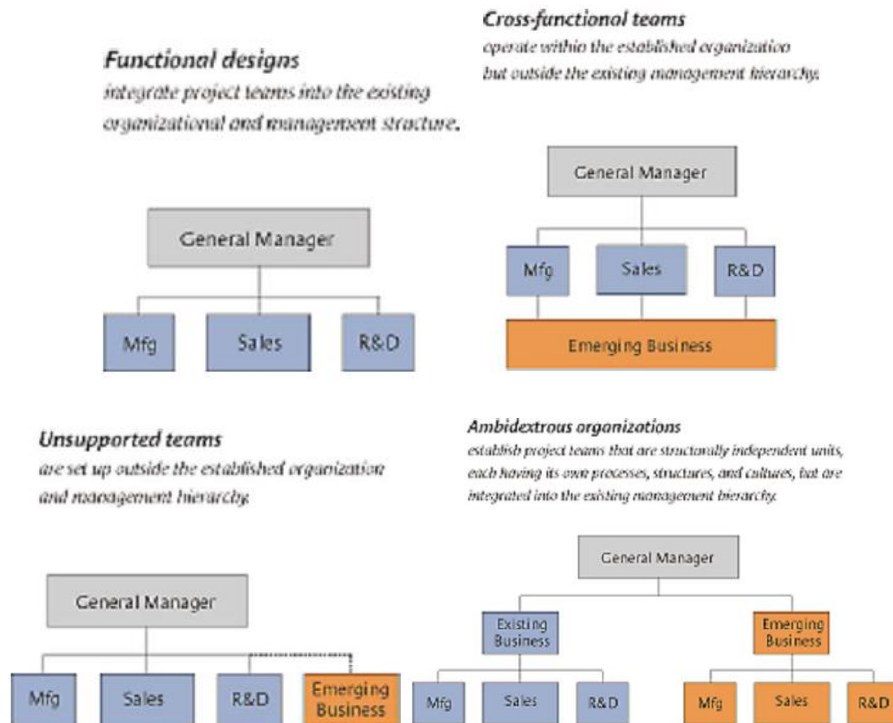
Proposition 10: Increases in process management practices will slow organizational responsiveness in eras of technological ferment. Proposition 11: In the context of an ambidextrous organizational form, increases in process management practices will enhance responsiveness and performance during eras of incremental technological change but will have no effect on responsiveness or performance during eras of technological ferment.

Discussion

- Process management capabilities speed exploitation and efficiency, and while they may allow organizations to survive in the short run, they simultaneously dampen the exploration required for longer-term adaptation. Ambidextrous organizational forms reconcile these paradoxical demands by building internally inconsistent architectures within a single organization.
- These tightly coupled, internally inconsistent architectures must be tactically uncoupled. However, to drive streams of innovation, these inconsistent units must be strategically integrated by the senior team.

W6 – The Ambidextrous Organization O'Reilly and Tushman (2010)

- Companies tend to structure their breakthrough projects in one of four basic ways.



- Ambidextrous organizations encompass two profoundly different types of businesses – those focused on exploiting existing capabilities for profit and those focused on exploring new opportunities for growth. As this table indicates, the two require very different strategies, structures, processes and cultures.

Alignment of:	Exploitative Business	Exploratory Business
Strategic intent	cost, profit	innovation, growth
Critical tasks	operations, efficiency, incremental innovation	adaptability, new products, breakthrough innovation
Competencies	operational	entrepreneurial
Structure	formal, mechanistic	adaptive, loose
Controls, rewards	margins, productivity	milestones, growth
Culture	efficiency, low risk, quality, customers	risk taking, speed, flexibility, experimentation
Leadership role	authoritative, top down	visionary, involved


Ambidextrous Leadership
 Different alignments held together through senior-team integration, common vision and values, and common senior-team rewards.

W6 – Structural Holes and Good Ideas Burt (2004)

This article outlines the mechanism by which brokerage provides social capital. Opinion and behavior are more homogeneous within than between groups, so people connected across groups are more familiar with alternative ways of thinking and behaving. Brokerage across the structural holes between groups provides a vision of options otherwise unseen, which is the mechanism by which brokerage becomes social capital. I review evidence consistent with the hypothesis, then look at the networks around managers in a large American electronics company. The organization is rife with structural holes, and brokerage has its expected correlates. Compensation, positive performance evaluations, promotions, and good ideas are disproportionately in the hands of people whose networks span structural holes. The between-group brokers are more likely to express ideas, less likely to have ideas dismissed, and more likely to have ideas evaluated as valuable. I close with implications for creativity and structural change.

- Hypothesis: People who stand near the holes in a social structure are at higher risk of having good ideas.
- New ideas emerge from selection and synthesis across the structural holes between groups.
- The link between good ideas and structural holes is key to the social capital of brokerage.

Small Worlds, Brokerage and the Vision Advantage

- Social capital exists where people have an advantage because of their location in a social structure.
- A theme in this work is that behavior, opinion, and information, broadly conceived are more homogeneous within than between groups. People focus on activities inside their own group, which creates holes in the information flow between groups or more simply, structural holes.
- Given greater homogeneity within than between groups, people whose networks bridge the structural holes between groups have earlier access to a broader diversity of information and have experience in translating information across groups. This is the social capital of brokerage. People whose networks bridge the structural holes between groups have an advantage in detecting and developing rewarding opportunities. Information arbitrage is their advantage. They are able to see early, see more broadly, and translate information across groups.
- Four levels of brokerage through which a person could create value:
 - Make people on both sides of a structural hole aware of interests and difficulties in the other group.
 - Transferring best practice is a higher level of brokerage.
 - Draw analogies between groups ostensibly irrelevant to one another.
 - Synthesis. People familiar with activities in two groups are more likely to see new beliefs or behaviors that combine elements from both groups.
- People whose networks span structural holes have early access to diverse, often contradictory, information and interpretations, which gives them a competitive advantage in seeing good ideas.

W6 – Building Ambidexterity into an Organization

Birkinshaw (2004)

- Adaptability – the ability to move quickly toward new opportunities, to adjust to volatile markets and to avoid complacency.
- Alignment – a clear sense of how value is being created in the short term and how activities should be coordinated and streamlined to deliver that value.
- For a company to succeed over the long term, it needs to master both adaptability and alignment – an attribute that is referred sometimes to as *ambidexterity*.

Two Forms of Ambidexterity

- Structural Ambidexterity (standard approach) – Create separate structures for different types of activities. For example, the core business units are given responsibility for creating alignment with the existing products and markets; and the R&D department and business development group are given the job of prospecting for new markets, developing new technologies and keeping track of emerging industry trends.
- But separation can also lead to isolation!
- Contextual Ambidexterity – It calls for individual employees to make choices between alignment-oriented and adaptation-oriented activities in the context of their day-to-day work.
- In a business unit that is ambidextrous, the systems and structures are more flexible, allowing employees to use their own judgement as to how they divide their time between adaptation-oriented and alignment-oriented activities.
- Contextual ambidexterity differs from structural ambidexterity in many important ways but the two approaches are best viewed as complementary.

	Structural Ambidexterity	Contextual Ambidexterity
How is ambidexterity achieved?	Alignment-focused and adaptability-focused activities are done in separate units or teams	Individual employees divide their time between alignment-focused and adaptability-focused activities
Where are decisions made about the split between alignment and adaptability?	At the top of the organization	On the front line — by salespeople, plant supervisors, office workers
Role of top management	To define the structure, to make trade-offs between alignment and adaptability	To develop the organizational context in which individuals act
Nature of roles	Relatively clearly defined	Relatively flexible
Skills of employees	More specialists	More generalists

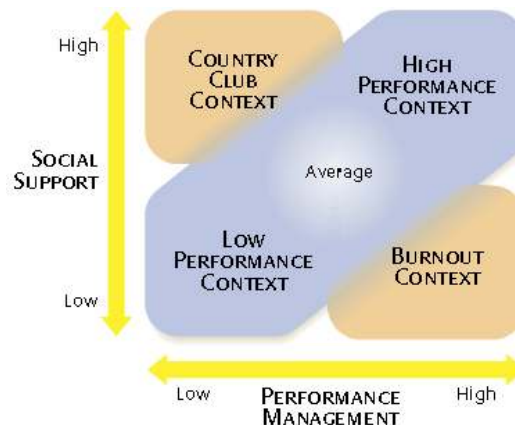
Contextual Ambidexterity

- 4 ambidextrous behaviors in individuals
 - Ambidextrous individuals take the initiative and are alert to opportunities beyond the confines of their own jobs.
 - Ambidextrous individuals are cooperative and seek out opportunities to combine their efforts with others.
 - Ambidextrous individuals are brokers, always looking to build internal linkages.

- Ambidextrous individuals are multitaskers who are comfortable wearing more than one hat.
- At the organizational level, contextual ambidexterity can be defined as the collective orientation of the employees toward the simultaneous pursuit of alignment and adaptability.

Building Contextual Ambidexterity

- Four sets of attributes (stretch, discipline, support and trust) interact to define an organization's context. In combination these attributes create two dimensions of organizational context.
 - Performance Management (stretch + discipline), which is concerned with stimulating people to deliver high-quality results and making them accountable for their actions.
 - Social Support (support + trust), which is concerned with providing people with the security and latitude they need to perform.
- The strong presence of each will create a *high-performance organizational context* that gives rise to a truly ambidextrous organization.



Pathways to Ambidexterity

Key five lessons:

- Diagnose your organizational context
- Focus on a few levers and employ them consistently (levers such as incentive compensation or risk management)
- Build understanding at all levels of the company
- View contextual ambidexterity and structural ambidexterity as complements. Contextual ambidexterity can enhance both the separation and reintegration processes.
- View contextual ambidexterity initiatives as “driving leadership” not as being “leadership driven”. Ambidexterity is achieved through the creation of a supportive context in which individuals make their own choices. Leadership becomes a characteristic displayed by everyone in the organization.