

**Corporate Venturing  
- Recognition and Discovery of  
Investment Opportunities**

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**WP 3/2004**

**MPP Working Paper No. 3/2004 ©**  
**March 2004**  
**ISBN: 87-91181-72-0**  
**ISSN: 1396-2817**

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# CORPORATE VENTURING – RECOGNITION AND DISCOVERY OF INVESTMENT OPPORTUNITIES

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(MPP – WORKING PAPER 3 – 2004)

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## **ABSTRACT**

From the perspective of Austrian economics, this paper develops a conceptual understanding of how corporate venture managers recognize and discover opportunities in a network environment. In an effort to create a better understanding of who is involved in process, this paper reports on the development path of an entrepreneurial opportunity of the Danish corporate venture capitalist, Danfoss A/S. This paper distinguishes itself from previous research done on entrepreneurial opportunities by creating a holistic and conceptual framework, which broadens and expands the perception of the market participants involved in recognition and discovery. Consequently the paper offers insight to a diversified group of actors who mix and match technological and market capabilities in a constant process of recognition and discovery.

**Key words:** *Corporate venturing, entrepreneurship, discovery, networks, opportunities, recognition.*

## 1. INTRODUCTION

From Austrian economics we know that entrepreneurial opportunities rarely appear prepackaged and are ready to be served. As information on the market and technology is unevenly distributed, the process of recognizing and discovering entrepreneurial opportunities becomes a collective act involving many actors (Soh, 2003; Hayek, 1945). This makes searches for new investment opportunities a key challenge for corporate venture capitalists, a process which demands interaction with other market participants. In entrepreneurial research, opportunities often refer to entrepreneurs bridging technological innovations with potential commercial markets, suggesting the connection of means and ends (Sarasvathy, Dew, Velamuri and Venkatarman, 2003; Venkatarman, 1997; Shane, 2000). Divergent to this research, others have focused on opportunity recognition and discovery within established firms (Leifer et. al., 2000). In light of Austrian economics, this paper builds upon these strands, by presenting a coherent framework of the passageway opportunities travels, and consequently the actors which are involved in this process. To frame the analysis, corporate venture capitalists serve as the center of analysis, however surrounded by many other actors. This strategy has proven successful for many organizations over a broad industry spectrum with e.g. 3M and The Raychem Corporation as notable success stories (Block and MacMillan 1993).

Conventional companies often experience significant difficulties in managing entrepreneurial opportunities and ideas compared to individual entrepreneurs (King et al., 2003). Some authors have claimed that the best strategy for profitable growth is to develop new ventures (Burgelman, 1984). Correspondingly, technological innovations have been seen to emerge when the resources of small firms are combined with those of large ones (King et. al, 2003). The business development strategy of corporate venturing has helped many companies to manage

entrepreneurial opportunities. 3M still represent one of the best know examples innovation created within large corporations (Block and MacMillan, 1993). However NMP which is part of the Nokia Group, headquartered in Finland represent a good example of a corporate venture search for technological innovation outside (Keil and Vilkamo, 2003). NMP engage in close corporation with leading companies within narrow technological areas, and hence strive to integrate innovation.

Corporate venturing is a business development strategy by which established companies invest in the creation of innovative ventures to create financial as well as strategic returns (Burgelman, 1983, 1984). Corporate venturing is predominantly seen as a way for large, established companies to seek new ways to be innovative and flexible (Kanter et. al. 1991). It is however, not the only motivation - in fact, there exists a multitude of related motives for launching a corporate venture, such as securing growth and responding to competitive pressure (Block and MacMillan, 1993), improving corporate profitability (Zahra and Coving, 1995; McGrath, Venkataraman, and MacMillan 1994; Zahra, 1991), generating strategic renewal (Guth and Ginsberg, 1990) Above all, corporate venturing is seen as a significant strategy to identify new business ideas (Block and McMillan, 1993; Burgelman, 1983; Husted and Vintergaard, 2004).

Companies pursuing a corporate venturing strategy often possess a combination of strong technological and market knowledge as they scrutinize for new entrepreneurial opportunities. This contrasts with traditional venture capitalists who have less market knowledge. Due to corporate venture capitalists' access to information and knowledge, their strategy makes a significant case for analyzing entrepreneurial opportunities, as it helps to develop a broader understanding of recognition and discovery (Soh, 2003). In coherence with Austrian economics, this paper explicate that different actors perceive opportunities differently depending on time,

with whom they interact etc. Divergent to the traditional perception of opportunities, which focuses on the entrepreneur, this paper equally includes other actor groups in the process of discovery and recognition.

Building on the research on opportunities provided by Sarasvathy, Dew, Velamuri, and Venkataraman (2003), this paper entails a theoretical understanding of how corporate venture capitalists recognize and discover entrepreneurial opportunities<sup>1</sup>. Opportunity recognition refers to the process of combining existing technologies and markets, whereas discovery describes the process where only one of the variables exists. Recognition and discovery refers to processes, which will be referred to as passageways in this paper. Understanding these concepts will enhance our understanding of the progressive development of the opportunity, as it is being shaped in a network environment. Passageways describe the development process that an opportunity takes, as it is being recognized and discovered by different actors. The passageways are formed by exchange of information and resources between key actors of which corporate venture capitalists, only constitute one group. This paper therefore describe the passageways at it has proved powerful for analyzing actors.

Initially a review of exciting research on entrepreneurial opportunities will be provided. This will be followed by an examination of corporate venturing as a significant strategy designed for recognizing and discovering opportunities. The contribution of the paper is presented in a conceptual framework, describing processes and actors. The dynamics and theoretical arguments behind the framework will be illustrated by a case study of the passageways that the

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<sup>1</sup> This paper recognizes the concept of “opportunity creation” (Sarasvathy, Dew, Velamuri and Venkataraman, 2003) as one including creation of both means and ends. The concept will however be imbedded into opportunity recognition and discovery.

entrepreneurial opportunity PMC Porous Media Combustion GmbH has traveled on its way to the corporate venture capitalist, Danfoss A/S.

## **2. CONCEPTUAL BACKGROUND**

A review of the perceptions of entrepreneurial opportunities and a theoretical appreciation of the strategy of corporate venturing will demonstrate why this framework is particularly good for revealing insight on the passageway for recognition and discovery.

### ***2.1. ENTREPRENEURIAL OPPORTUNITIES***

An entrepreneurial opportunity is often used to describe the business idea that the venture initially possesses (Long and McMullan, 1984; Bhave, 1994; Hills et al., 1997). In more recent literature, opportunities have also been studied within existing firms (Stevenson and Jarillo, 1990; Venkataraman, 1997). When reviewing the entrepreneurship and general innovation literature, it becomes evident that the definition of opportunities reveals large deviations (Sane and Venkataraman, 2001; Singh, 2001).

Entrepreneurial opportunities differ from the larger set of other opportunities for profit because the former requires the discovery of new means and ends relationships, whereas the latter also involves optimization within existing means/ends relationships (Kirzner, 1997). One opportunity may however imply several different modes of exploitation (Shane and Venkataraman, 2000), be a behavioral phenomenon and an approach to management involving a process (Stevenson and Jarillo, 1990).

Christensen, Madsen and Peterson (1994) offer a definition of opportunities in the business context, where they define an opportunity as a new profit potential through (a) the founding and formation of a new venture, or (b) the significant improvement of an existing venture. This turns

profitability and commercial issues into key parameters. Others have argued that while an opportunity to create value is a necessary part of the entrepreneurial process, it is not sufficient to generate wealth for the entrepreneur (Casson, 1982). The entrepreneur also needs to acquire control over the relevant resources before any profits can be realized.

Casson's (1982) definition elaborates on the possibility for new profit potential by defining opportunities as situations in which new goods, services, raw materials and organizing methods can be introduced and sold with a profit (Casson, 1982). Shane and Venkataraman (2000) prescribe to Casson's (1982) definition of entrepreneurial opportunities, but extend it to a conceptual element of entrepreneurship. In response to the definition by Shane and Venkataraman (2000), Singh (2001) argues that many opportunities would be jeopardized when analyzed from the perspective of profitability. He argues for the possibility that technological advances and ventures lose their "status" as opportunities if they later turn unprofitable. In this vein, Singh (2001) proposes: "that an entrepreneurial opportunity should be defined as a feasible, profit-seeking, potential venture that provides an innovative new product or service to the market, improves on an existing product/service, or imitates a profitable product/service in a less-than-saturated market (Singh, 2000)". He further argues that by focusing feasibility and profit seeking, an opportunity can be defined prior to venture founding and profitability (Singh, 2001).

From a corporate venture capitalists perspective, opportunities need to hold a specific technological advancement and a significant future commercial upside to earn Schumpeterian rents (Shane and Cable, 2002; Schumpeter, 1950, 1934). This originality and uniqueness is many times found in radical innovations i.e.: "discontinuous events unattainable through incremental adjustments of the pre-existing state of affairs" (Lundgren, 1995:17). An opportunity in this paper therefore requires the possibility of: a) Offering new technological advancement (product or services), and b) a significant future commercial upside. Based on the review, it becomes evident

that opportunities are seen in the light of the entrepreneur as a single individual. This view is particularly evident in neoclassical research on entrepreneurship (Kirzner, 1997), leaving little room for understanding how larger organizations manage this task.

## *2.2. CORPORATE VENTURING – STRATEGIZING FOR RECOGNITION AND DISCOVERY*

The majority of literature on corporate venturing stresses that this strategy is tailored for managing new investment opportunities (Rind, 1981). Without entrepreneurial opportunities, corporate venturing will not exist. Burgelman (1984) argues that firms “sooner or later, have to find and exploit opportunities in marginally related, even unrelated areas” (p. 154). Corporate ventures depend on ideas and opportunities as the main input for pursuing a strategy. However, not all ideas are entrepreneurial opportunities, and many opportunities do not fit in corporate venturing (Block and MacMillan, 1993). Hardyman, DeNino and Salter (1983) further claim that one of the key of success for venture capital investment is the simultaneous cultivation of a steady stream of attractive investment opportunities. Likewise, Winters and Murfin (1988) have found that one of the: “most important factors for the strategic success of a corporate program is [are] the creation of a high-quality deal stream.” (p. 208). They also argue that venture capital investment can give the corporation a unique view of development in technologies and businesses of strategic interest. This makes recognition and discovery of opportunities key activities for corporate venture managers (Sykes, 1986).

Corporate venturing literature has also pointed to directions where opportunities may be recognized and discovered. Block and MacMillan (1993) for instance, argue that opportunities “can be found within the firm itself, in the industries, in the markets that it serves, and in the external environment” (p. 99). Likewise, Block (1982) emphasizes the fact that corporate ventures have access to both internal and external opportunities. These opportunities are often

referred to as a “window to technology” (Winters and Murfin, 1988; Hardyman, DeNino and Salter, 1983). In fact, the discussion of internal- (e.g. Burgelman, 1983; Sweetig, 1981; von Hippel, 1977) and external- (e.g. Sharma & Chrisman, 1999) corporate venturing is very much grounded to where the entrepreneurial opportunities come from i.e. the beginning of their passageway. Previous venture capital literature has however focused on opportunities as sketched out business plans, and not on the early development processes as presented in the entrepreneurship literature. The venture capital literature from Burgelman (1983, 1986), Burgelman and Syles (1984) however let us know that opportunities are often recognized thorough a process. In line with Austrian economics, research has also proven that sharing information in a network is key for finding new investment opportunities (Bygrave, 1987, 1988; Dotzler, 2001). Who and how different actors are involved in this process however remains less examined in the literature.

In corporate venturing, three distinct elements make the strategy especially suited for recognizing and discovering opportunities. Firstly it is often argued that organizations cannot simultaneously create new and take care of what they already have without a change of strategy and organizational setup (Drucker, 1974). Perusing corporate venturing is often done with the intention to contain and maintain innovative internal and external processes (Chesbrough, 2000), by means of an organization that is more innovative and flexible than the firm itself (Greene, Brush and Hart, 1999). The semi-autonomous organizational structure, which is the nest for portfolio ventures, is often located within the established company providing the necessary flexibility for ventures to grow (Block and MacMillan, 1993).

Secondly, investing in new opportunities is a risky business. Both venture capitalists and corporate venture units invest risk-willing capital to create new businesses. They are interested in high risk/high reward investment opportunities (Rind, 1981). The process of recognizing and

discovering new opportunities and developing them into novel businesses involves a high level of uncertainty (Gompers and Lerner, 1999). Managing this risk forces venture managers to constantly focus on recognizing and discovering new opportunities.

Lastly the returns on investment in corporate venturing should be partly financial and strategic, contrary to the expected returns from pure venture capital investments (Burgelman, 1983). Hence, it is often an equally important goal to fulfill the strategic objectives of the parent corporation researchers (Leonard-Barton, 1992; Block & Subbanarasimha, 1989; Block, 1982). In 1989, Block and Subbanarasimha conducted a survey among forty-three US and 149 Japanese companies which concluded that the most important reasons for companies to initiate corporate venturing activities were of strategic origin (Block and MacMillan, 1993). Having a bilateral goal objective forces extraordinary attention to recognition and discovery, as they need to specify their search for new opportunities.

The literature provides rich evidence that opportunity recognition and discovery are central management issues in corporate venturing. While corporate venturing literature may be most strongly influenced by the need for managing investment opportunity, little covers how recognition and discovery unfolds and especially who is involved. Even though Winters and Murfin (1988) argue that a deeper involvement in the venture capital process may give corporate venture capitalists a better chance for recognition and discovery, it provides only limited knowledge about who it involves.

### **3. PASSAGEWAYS PAVED BY RECOGNITION AND DISCOVERY**

Venkataraman (1997) claims that one of the most neglected questions in entrepreneurship research is where opportunities come from: why, when and how certain individuals exploit

opportunities. This appears to be a function of joint characteristics of the opportunity and the nature of the individual (Shane and Venkataraman, 2000). However understanding these characteristics are of utmost importance if one is to ensure that corporate venture capitalists get more alert and exposed to opportunities (Kirzner, 1973). From Austrian economics we know that due to asymmetry in information, not every individual or company perceives the same opportunities (Hayek, 1945; Kirzner, 1997; Soh, 2003). Additionally due to their different cognitive schemes, the process of recognition and discovery will take different approaches and end up with different results (Kirzner, 1973, 1997). This changes the traditional process of recognition and discovery into a series of events, which includes a variety of actors.

Building on these arguments, this paper takes the problem to another level by arguing that opportunities are not a matter of “certain individuals” (the neoclassical interpretation of the entrepreneur), but a combination of individuals (Schumpeter, 1934). It has become known that recognizing and discovering opportunities demands a combination of scientific skills and intellectual capacity that surpasses the capabilities of one individual (Seufert, Krogh and Bach, 1999; Powell et al., 1996). In networks, discovery of the beholder of either the technical or the market side of the opportunities becomes a key challenge for corporate venture capitalists.

In 1997, McNally conducted a survey which indicates that companies should actively seek investment opportunities. He further argues “Potential investees are most commonly identified either through continual scanning for investment opportunities or via intermediaries” (McNally, 1997). Similarly, Burgelman (1987, 1988) argues that opportunities investments are found in business networks. This will lead us to focus on some of the key actors surrounding venture managers in corporate venturing, actors who are involved through iterative process of recognition and discovery of opportunities.

From the research of Singh, Hills and Lumpkin (1999), we know that an idea can develop into an opportunity. This process is inherently a process of creativity which involves different actors who engage in a series of recognitions and discoveries (Sarasvathy, Dew, Velamuri and Venkatarman, 2003). This harmonizes with the Austrian perception of an entrepreneur as an ever-changing actor in the market (Kirzner, 1997). As the idea about technology or markets are exchanged and negotiated between actors, it might become an entrepreneurial opportunity. The type of actors involved will however change, as well as the passageway of the idea and opportunity.

### ***3.1. METHOD AND CASE DATA***

An empirical case, describing the passageways of an entrepreneurial opportunity will provide the reader with a better understanding of how opportunities develop under a continuous process of recognition and discovery (Glaser and Strauss, 1967; Eisenhardt, 1999), and more specifically who is involved. The case company, PMC Porous Media Combustion GmbH (PMC), functions as a building block in this paper for developing a conceptual framework for recognition and discovery.

***Data collection:*** The case company, PMC, is one of Danfoss A/S Corporate Ventures seven investments. PMC has been followed over a five-year period providing the case with longitudinal characteristics (Bijleveld et al. 1998). The case description of PMC has been selected out of a sample of approximately 14 entrepreneurial opportunities, which Danfoss A/S has been involved in. The case has been selected based on: 1) its illustrative passageway, 2) the comprehensive types of actors involved, and 3) it's representation of the other investments (Yin, 1984). More than 100 hours of indebt interviews with top-level venture management provide the basis for the analysis (Eisenhardt, 1999; Glaser and Strauss, 1967). All interviews have been semi structured. They have been recorded and later transcribed in order to condense central issues of interest and

find correspondence to theory (Glaser and Strauss, 1967). In addition to the primary data, secondary sources such as peer review articles, newspaper article, web pages, internal newsletters, have been used. The author has also had the option to review confidential material, which has provided further knowledge about the development of Danfoss A/S.

**Data analysis and presentation:** In order to organize the case, PMC's development path is recorded starting at initial development. The central phases in the developments are registered according to its impact on the future development, as the key actors involved. Hence, the critical incidents in the development serve as a guideline for the case description. The case reports on the development path from even before venture management showed interest in the project. The passageway for PMC is illustrated in figure 1 of the case description.

Danfoss A/S was founded in 1933 by Mads Clausen, and it has since developed from a one-person firm to a global corporation with an annual sales turnover in 2001 of 1,930 billion EUR and about 16,600 employees. Danfoss A/S is today Denmark's largest industrial group and belongs to the leaders in research, development and production of mechanical and electronic components for several industrial branches. The first products manufactured by Mads Clausen were valves for refrigeration equipment. Danfoss A/S started manufacturing compressors and radiator thermostats in the 1950s, for which the markets were growing rapidly. In the 1960s and 1970s, Danfoss A/S introduced different types of hydraulic components, electronic frequency converters and flow meters. The increasing energy prices in the late 1970s made the radiator thermostat a significantly growing area. Today, Danfoss A/S is a global market-leader within radiator thermostats, accounting for about 10 % of Danfoss's A/S total turnover (Frøslev

Christensen, 2002). As a consequence for organizational restructuring and a genuine need for new innovations, Danfoss A/S Corporate Ventures was developed in 1999.

PMC focuses on a specific burner technique, which can be used for central heating. The innovative media combustion technology makes it possible to launch a new class of burners for central heating. Danfoss A/S is currently producing components for central heating burners. One of the problems with the current burners in Danfoss A/S, is the very limited variation in temperature. The innovative burner is characterized by a compact combustion chamber with a homogeneous temperature distribution. Furthermore, the technology enables minimal emission of harmful substances, making it very compact and noiseless. The burner developed in PMC carries the advantages of easy temperature adjustments in comparison to traditional burners. Manager of the burner division in Danfoss A/S, Per Baslev, explains the disadvantages of traditional burners *“If the flame is too large it will burn uncontrolled and subsequently blow out. If it burns too low it will also die out”*. PMC has tried to solve this problem by developing a technology which can keep a constant flame while being turned down low and up high. Establishing combustion in a porous ceramic media provides these advantages. The media is shaped as a cylinder in which the combustion takes place: gas is blown under high pressure through the media. Due to the high pressure, one is able to turn the flame down low without shutting it off. An example of the temperature variations would be a heating unit for a single-family home where the new porous media combustion technology can be regulated proportionally to demand from 2 kW to 40 kW.

In order to illustrate the passageway of PMC from the initial patent to the final venture in Danfoss's A/S portfolio, twelve key steps combining recognition and discovery will serve as an illustration:

- 1) The patented technology for the PMC burner was initially developed at the Institute of Fluid Mechanics at the University of Erlangen, Germany (Lehrstuhl für Strömungsmechanik, Friedrich-Alexander-Universität, Erlangen). The research was a technology transfer project. The Institute of Fluid Mechanics carried a series of projects, under the name, Invent. This project roofed all the inventions and patents, which had been developed at this institute.
- 2) The University of Erlangen discovered that some of the innovation from Invent had commercial potential. The university intended to exploit this potential in a commercial manner, but had difficulties in recognizing the commercial value, due to their limited feel for the market.
- 3) During the process of commercial determination, it was the intention to spin the research from Invent out into a portfolio of ventures. Two professors and a PhD student could see the potential of one of these innovations (PMC), mostly driven by a technological affection. As a result of their investment in the project, they were provided with 49% ownership. At this time, the partners included APL GmbH (former owners of the basis patents on porous media combustion technology), Medutri GmbH (a pool of private persons, who have supported PMC GmbH since its establishment) and Business Angel Adolf Heeb. Through this first round of finance, the project was given life and was established as a separate entity.
- 4) Later in the development process, professional money was needed in order to bring the product to a different level. The entrepreneurs (researchers) initially started by approaching manufactures of burners, but they were not interested. An alternative attempt was made in selling PMC. However, the entrepreneurs were asking a substantial amount for their company. Even though much of the development in the project was more than eight years old, it was difficult for the inventors to put together a business plan for their project.

- 5) As part of the many research-oriented conferences in the field, scientists from Danfoss A/S knew about PMC, but did not believe in the product. A primary reason was a development horizon of PMC, which was too long, and the project was too risky. Director Hanne Arildsen concludes, "*being faced with this early stage technology at a conference couldn't tickle the R&D employees*". She believes that their short-term focus prevents them from acknowledging the potentials of the project. In this connection, Danfoss A/S was contacted by PMC in the beginning of December 2002, in connection to a new financing round. The contact was however made to the business divisions of Danfoss A/S and not the corporate venture unit.
- 6) As PMC was in need of further financing, a Danish venture capitalist was asked, he however did not have an initial interest, as he could not quite grasp the technology behind the idea.
- 7) The Danish venture capitalist that had been evaluating the project contacted the Danfoss A/S heating division, as he knew that they were specialized in burner technologies. At this time, a prototype had already been developed. During this evaluation phase, the venture managers and other resource persons from Danfoss A/S visited the company to see PMC's technology. The first reactions were that the technology was too close to the present core business of Danfoss A/S for it to become part of the corporate venture department, i.e. it should be included in the burner divisions of Danfoss A/S.
- 8) The project was later brought into the burner division of Danfoss A/S as a separate unit. However, it turned out that PMC belonged to a different time horizon, making it a project for the venture department.
- 9) Danfoss A/S is the biggest producer of components to burners in the world, making them a center for all the producers of burners and central heaters. The venture division in Danfoss A/S operated PMC with the intention to produce the components, which helps to regulate the

amount of gas, which is funneled into the combustion media. PMC would be responsible for production of the media.

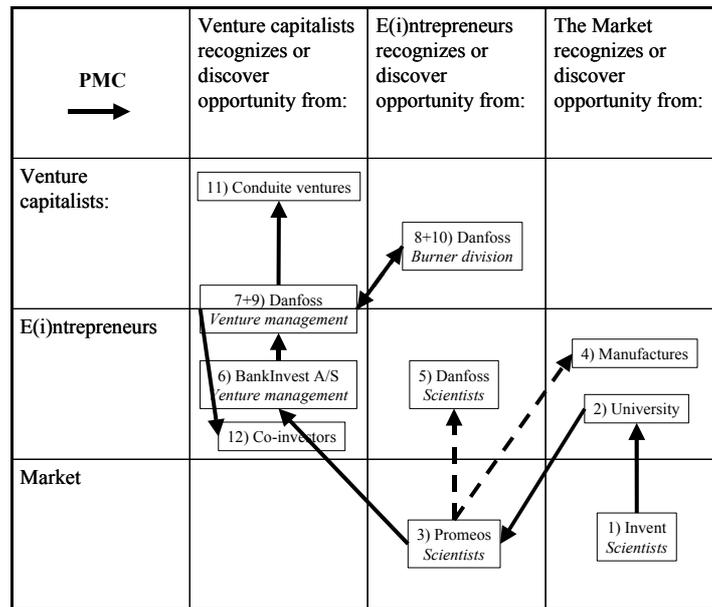
10) Approximately a year after the investment was made, PMC was placed in the burning division for a second time in order to exploit synergies. Hanne Arildsen argues, *“A technology [PMC] which is brought into Danfoss A/S might become interesting in 10 years from now– and that’s the reason why the venture division exists ... We need to make sure that we can later include the investments in the divisions”*. Trying to integrate the projects into the divisions is the new approach. *“Keeping them as separate entities is no longer the way”* argues Hanne Arildsen. The PMC project is today an integrated part of the heating division. However, *“At this point in the development PMC is still something which gets developed separately – something perceived as blue-sky research”* says Per Baslev. He stresses that *“its very difficult to compare the importance of day to day operations and the very longer term and risky projects like PMC”*.

11) It has later turned out that there could be a possible technological fit between the burner technology and the technologies for fuel cells. Danfoss A/S had previously made an investment in a venture capital firm who focused on fuel cells: Conduit Ventures. The link between PMC and Conduite is the development hydrogen, which is needed for running the fuel cells. Helium does not occur alone in the natural environment, but is tied to other atoms. Some of the places where hydrogen occurs is in natural gas and in fluent petrol. It has been proven that this reformation (separation of hydrogen) can be applied in the same media as the one produced by PMC. The technology can be used for preparation of the fuel. In the media the reformation process can happen in a more controllable environment.

12) Danfoss A/S presently owns 12% of stock, whereas previous owners and other venture capital companies own the rest. All the other venture capitalists were brought in, during the same

round as Danfoss A/S, through which Danfoss A/S was able to find one investor. *“It’s very important that the right people are brought in,”* argues Hanne Arildsen. She further states, *“We know one another from our network... however a funding process is a chain of many actions, and takes at least a year to settle”*. In addition she argues *“getting access to the best venture demands that you use your network, network, network.... And this network can only be exploited if you are clear about your business objectives. This is a necessity.... it is important to be included in the international corporate venture networks. This keeps us up to date – and indicates new interment proposals”*.

As the case shows, corporate venture capitalists play a central role in recognition and discovery of new investments opportunities. As it was the case for PMC, many opportunities come from entrepreneurs or present employees (intrepreneurs) (von Hippel, 1977; Sweetig, 1981; Burgelman, 1983; Sharma & Chrisman, 1999). In other situations, opportunities are recognized and discovered directly from other venture mangers through networks (McNally, 1997; Bygrave, 1987, 1988; Dotzler, 2001). Yet supplementary, opportunities can also be based on a broader set of market-based developments, such as university research (Etzkowitz and Leydesdorff, 1997), macro economical tendencies (Block and McMillan, 1993), corporate spinouts (Nicolaou and Birley, 2003), lawyers etc. While acknowledging the wide range of different organizations and actors, which can potentially be involved in recognition and discovery, this paper categories these in 3 distinct group of actors: venture managers, e(i)ntrepreneurs and actors in the market.



**Figure 1: The passageway for recognitions and discoveries in PMC**

Even though this paper evolves around corporate venture capitalists, one needs to be aware that e(i)ntrepreneurs and other actors in the market many times are the ones who initially recognize and discover opportunities. From Austrian economics, we know that the opportunities will be shaped and developed in between different actors (Kirzner, 1997) i.e. Venture capitalists can therefore discover and recognize opportunities from other venture capitalists, individual entrepreneurs and other actors in the market. Likewise, the market may well discover an unexploited technology from an e(i)ntrepreneur which can be enriched into a commercial product that a venture capitalist might later recognize. Figure 1. illustrates the passageway for PMC as it includes the 3 actor groups. This process often consists of mix-and-match of technological and commercial capabilities including a series of recognitions and discoveries.

### **3.2. PASSAGEWAYS AND ACTORS**

Soh, (2003), Kirzner (1997), Hayek (1945) and others in the Austrian tradition, claim that different people perceive and respond to information differently according to time and place.

From the case of PMC and Figure 1, it becomes seemingly evident that the passageways of opportunities is the product of 3 different actors groups who recognize and identify opportunities in different ways depending on the situation. While the model is a simplification of the types of actors involved, it does create a conceptual understanding of the complex process. More importantly, when framing the passageways valuable insight is given to the relations between actors. In some incidences, venture capitalists obtain information from entrepreneurs in other cases it from the market etc. Consequently, the three by three matrix presents nine different situations for information and resources exchange. Each square represents a unique situation for recognition and discoveries.

|                      | Venture capitalists recognizes or discover opportunity from: | E(i)ntrepreneurs recognizes or discover opportunity from: | The Market recognizes or discover opportunity from: |
|----------------------|--|---|---|
| Venture capitalists: | <i>1) Alliance partner</i>                                   | <i>4) Gap seekers</i>                                     | <i>7) Gain seeker</i>                               |
| E(i)ntrepreneurs:    | <i>2) Traditionalists</i>                                    | <i>5) Techno seekers</i>                                  | <i>8) Success spotter</i>                           |
| Market:              | <i>3) Trend analysis's</i>                                   | <i>6) Trend seekers</i>                                   | <i>9) Combiners</i>                                 |

**Figure 2: Recognitions and discoveries of opportunities between venture managers, e(i)ntrepreneurs and the market**

Based on a description of the matrix the reader will also become aware of the different dynamics, which are imbedded in recognition and discovery. Additionally, we find supporting evidence from Austrian economies that actors do in fact perceive opportunities differently depending on with whom they interact –nine different scenarios.

- 1) **Alliance partner:** An alliance partner network is important, especially for established corporations that wish to work with new and untried markets (Albrinck et al. 2000). McNally (1997) argued, “Co-investments with venture capitalists (parallel investments) are a potentially beneficial way of identifying investment opportunities and also accessing the

investment expertise of the venture capitalist” (p. 111). This relationship often constitutes a syndicate investment situation between two or more venture capitalists in a network (Bygrave, 1987). In order for venture managers to gain access to an opportunity from other venture managers, there is a reversible commitment to provide these managers with other venture opportunities. A common characteristic of this type of opportunity is that they are presented as venture proposals/ business plans and sometimes even established ventures. Selling an investment to another venture capitalist is also a variant of a fellowship.

**2) Traditionalists:** Opportunity recognition and discovery by venture managers from e(i)ntrepreneurs is the most common perceived way in literature. Separation between intreneurship and entrepreneurship determines whether it is an internal or external corporate venture. The opportunity is a result of entrepreneurial action, which has materialized into a business idea or business plan. As early as 1934 Schumpeter recognized the added value of entrepreneurship for society (Schumpeter, 1934). Peter Drucker summarizes it with the following words: “Entrepreneurs see change as the norm and as healthy. Usually they do not bring about the change themselves. But – and this defines entrepreneur and entrepreneurship – the entrepreneur always searches for change, responds to it, and exploits it as an opportunity” (Drucker, 1995). It is often proposed that the venture manager will never experience opportunities if an entrepreneur hadn’t already been faced with the opportunity.

**3) Trend analysts:** It is a necessity for venture capitalists to be receptive to new developments and impressions in the surrounding market. Many venture capitalists also have extended networks bridging organizations with highly diversified backgrounds to secure innovation (Bygrave, 1987; Husted and Vintergaard, 2004). For trend analysts, the market

also constitutes actors differently from entrepreneurs. Some venture managers have become skilled in identifying opportunities from basic research at universities (Etzkowitz and Leydesdorff, 1997). Many universities carry great entrepreneurial potentials, which can be exploited in a commercial manner (Etzkowitz, 2003).

- 4) **Gap seekers:** A gap seeker could be an entrepreneur discovering opportunities from a previous investment by a venture capitalist. In other cases the commercial experience of the venture capitalist might have a positive spillover on the entrepreneur. Wright and Ennew (1997) argue, “Venture capitalists making investments may invest both in entrepreneurs starting new ventures and those who purchase a venture through a management buy-out or buy-in” (p. 227). They further find that entrepreneurs exiting from one venture also are likely to make use of venture capital again (Wright and Ennew, 1997). These kinds of entrepreneurs (serial) can therefore later be a major asset for many venture capitalists.
- 5) **Techno seekers:** The perception of an opportunity differs depending on the particular entrepreneur (Kirzner, 1979). Some entrepreneurs have a strong technological focus where as others have a stronger focus on bringing the venture to market. Connecting entrepreneurs of heterogeneous character often leads to more original ideas (Husted and Vintergaard, 2004). It will also lead to opportunities not previously thought of. The pre-organization period as defined by Katz and Gartner (1988) as the stage where the nascent entrepreneur realizes or “sees” (to use Penrose’s (1959) word) a potential opportunity to be exploited. Stevenson, Roberts and Grousbeck (1989) define entrepreneurship as a process by which individuals either on their own or inside organizations pursue opportunities without regard of the resources they currently control.

- 6) **Trend seekers:** According to Cooper (1981), an entrepreneur informally and intuitively perceives an opportunity, based upon some feel for the market (in Teach, Schwartz and Tarpley, 1989). Kirzner (1979) labels this skill, “entrepreneurial alertness”. He defines this concept as “the ability to notice - without search - opportunities that have been hitherto overlooked” (p. 48). Kirzner (1979) stresses the element of surprise. An individual may discover a previously undiscovered opportunity in sheer ignorance (Kirzner, 1997). The initial resource configuration assembled by the entrepreneur will need constant adjustment to respond to new opportunities and threats as they arise in the market/ environment (Penrose, 1959; Teece, Pisano, and Shuen, 1997). While the venture remains young, the entrepreneur may be able to personally monitor environmental trends and developments. However, as the organization grows, opportunity discovery must be delegated to subordinates (Greiner, 1972). It is argued by Yeung (2002) that many entrepreneurs most often use his personal contacts to obtain particular information or knowledge about a potential market opportunity.
- 7) **Gain seekers:** One of the most obvious examples of gain seekers could be identified during the last venture capital boom. During this period, venture capitalists clearly indicated that they would focus their investments within specific technological areas. This made the market recognize and discover a multitude of opportunities i.e. a process of both recognition and discovery. During this boom many universities also started to streamline line their organizations better to meet commercialized standards for their research in, i.e. the entrepreneurial university (Etzkowitz, 2003; Etzkowitz, Schuler and Gulbrandsen, 2000).
- 8) **Success spotters:** In the case of success spotters, the market can recognize and discover opportunities from the few successful entrepreneurs. Acknowledging that some entrepreneurs have gained success from their innovation, often times drive others to pursue

similar actions. The Austrian view of entrepreneurship suggests that the heterogeneity of beliefs about asset values give rise to both entrepreneurial opportunity and the discovery of market prices (Casson, 1982, Kirzner, 1979, 1989).

**9) Combiners:** This type opportunity recognition and discovery is properly the most commonly known and the most frequently exercised. There is continual interaction in the market and different actors with numerous backgrounds, transfer opportunities. In the market, participants exchange both commercial and technical potential to shape opportunities.

#### **4. DISCUSSION AND FUTURE RESEARCH**

This paper has made the first attempt to develop a comprehensive framework for the actors involved in recognition and discovery of opportunities in corporate venturing. Corporate venturing has shown to be an interesting case for exploring entrepreneurial opportunities because of their unique investment strategy. Acknowledge the limitation of the framework; this paper provides the first insights to the passageways from which venture capitalists gain access to future ventures. These passageways are not carried by single firms or individuals, but through a symbiosis of actors such as venture capitalists, e(i)ntrepreneurs and the different actors in the market.

Future research on the link between corporate venture capitalists and their search for opportunities would provide valuable insights to opportunity recognition and discovery as well as to the managerial talent for mastering this. Both from a supply and a demand side of opportunities, this holistic framework broadens our understanding of who can recognize and discover from whom. Hence it changes the traditional Neoclassical (and to some extent the Austrian) understanding of the entrepreneur as the only initiator and executer of opportunities.

Understanding that the passageways of an opportunity can in fact be initiated by venture capitalists and not necessarily the traditional entrepreneur, does add to both venture capital and entrepreneurship research. Untangling the relationship between investor and invitee further challenges the traditional perception of the role of venture capitalists as pure financial resource provider (Munk and Vintergaard, 2004).

Hence from a managerial viewpoint, it would be highly valuable for venture capitalists to predict the development path of a potential opportunity, by acknowledging the previous actors who have made recognitions and discoveries. Corresponding to Austrian economics and from Figure 1 we see that some recognitions have successful outcome where as other does not. Forecasting the “blind allies” and the “highways” would prove very powerful for both venture capitalists and entrepreneurs. This would cause a more thorough understanding of the passageways – and a possibly a categorization of the different kinds. Such knowledge would enable venture capitalists to predict the passageway of an opportunity, and consequently when to invest.

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