

6 The Changing Role of Entrepreneur and Entrepreneurship in Network Organisations

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6.1 Introduction

Over the last two decades, entrepreneurship has been amongst the fastest growing area of economic and business interest and research all over the world. If entrepreneurship is defined as a process of creating new and valuable things (Hisrich and Peters 1989) and if entrepreneur is someone who perceives and exploits opportunities (Drucker 1985) then entrepreneurial process is a major factor of economic development and the entrepreneur is the key figure of economic growth in the sense of Schumpeter.

The growing interest in the area of entrepreneurship has developed alongside interest in the changing role of small businesses. Statistical data and analyses of several countries show that small ventures grow faster than large firms (Evans 1987), and over the last decades large firms lost jobs while small firms created new workplaces (Drucker 1985). In addition, small firms are found to be the major source of new innovations (Ács and Audretsch 1987, Drucker 1985).

This increasing importance is also due to some major changes in the business environment such as harsh global as well as local competition, sudden and unexpected alteration of the demand, the acceleration of the technological development, and consequently, the increase of risk. Innovation, immediate adoption and reply to changes, and entrepreneurial behaviour have become vital not only for development but also for survival of the businesses.

Besides the increased importance of the market forces, co-operation between firms, collaboration for research and development, subcontracting, outsourcing, and strategic alliances have been emerging as new phenomena. The phrase, network summarises these terms and networking refers to various forms of business co-operation in recent literature (Aldrich and Zimmer 1986, Aldrich et al 1997, Birley and Crimie 1991, Snow et al 1992, Szarka 1990, Tjosvold and Weicker 1993).

In association with networking, new managerial tasks and roles are identified by a large number of literatures (Ghoshal and Barlett 1995, Merz et al 1994, Merz and Sauber 1995, Miles and Snow 1992, Paché 1989, Toni et al 1995). In this context,

the meaning and content of entrepreneurship, in the sense of the creation of something new have also changed. Intrapreneuring, making and developing entrepreneurship within organisations is viewed as one of the key strategic tools of large companies to meet today's challenges (Carrier 1994, Kuratko 1995).

However, entrepreneurship in the case of networks means quite a different thing than classical entrepreneurship and intrapreneurship. My view, that is the main topic of this paper, is that networking has changed the nature of entrepreneurship. I define entrepreneurship in the case of network interpreneurship and interpreneuring means making and developing entrepreneurship in network organisations. There is a question, however, do we need another or one more definition to describe already known phenomena? I would like to prove that interpreneurship is quite different from other concepts and definitions and has important methodological as well as practical and even political implications.

In the following, I discuss entrepreneurship and the entrepreneurial process, then I analyse networks and networking phenomena. In the following, new managerial and entrepreneurial roles are identified, then the concept of interpreneurship is developed. Finally, some practical as well as political consequences are investigated.

6.2 Entrepreneurship and entrepreneurial theories

Talking or writing about entrepreneurs and entrepreneurship is not easy because even the definition of the entrepreneur and entrepreneurship are highly debated (Chell et al 1991). The most important characteristics of a successful entrepreneur are questioned. It is not clear how the entrepreneur can be distinguished from successful managers, other small business owners, and innovators (Amit et al 1993, Birley 1989, Gibb 1996, Kuratko and Hodgets 1992). Generally, entrepreneurs are identified as profit and growth oriented persons who have innovative vein and can bear calculated risk. Small business owners' primary aim is just to provide income for themselves and their family and/or to fulfil personal goals (Birley 1989). So, small business owners are not growth and profit maximisation oriented people. Managers do not bear own risk and just look for recognition for managerial excellence (Stanworth and Curran 1976). Innovation is vital for the entrepreneurial process, but, an innovator becomes entrepreneur only if the innovation is carried into production to sell in the market (Siropolis 1994).

Although, the above distinction raises several practical problems. First, what do we mean under *innovative behaviour* or what should be considered as *innovation*? While very profitable businesses such as McDonald's, Federal Express, Apple Computers, Dell Computers, etc. were based on very simple ideas, original innovations such as the steam engine, telephone, radio etc. yield much less money for the creators (Hisrich and Peters 1991). Opening a new restaurant or a barber

shop does not mean innovation, but it may involve new concept. So, where is the border line?

Second, while the entrepreneur launches the venture and it starts growing, the business idea loses its originality and the innovator-entrepreneur becomes a manager and bureaucrat. The question is the same: where is *the border line between an entrepreneur and a manager* and where is the point or growth rate when the venture is just viewed as a non-entrepreneurial business?

Third, what are the distinctive characteristics of an entrepreneur? The social development and the entrepreneurial trait theories examine the main characteristics of the entrepreneur. The major focus of the entrepreneurial trait theory is to identify the distinguished attributes of the entrepreneur. The successful entrepreneur possesses *entrepreneurial skills* – innovativeness, risk taking, commitment, self-confidence, goal setting, decision making etc., and *business* – operational, managerial, organisational, financial, etc. - *skills* (Bygrave 1997, Gnyawali and Fogel 1994, Timmons 1985). However, as Chell et al (1991) indicate, these characteristics are applicable to an ideal rather than to a real person. Moreover, as de Vries (1977) writes in a seminal paper, entrepreneurs are not necessarily positive innovators or pioneers, they can be troublesome, deviant persons whose managerial style is autocratic, impulsive, egocentric and essentially unpredictable.

Fourth, are *entrepreneurs born or made*? There is a general agreement that business skills can be learned and developed, but no agreement on entrepreneurial skills (Chell et. al1991). If entrepreneurs can be made then the question continues: what environmental, conditions, political steps help to increase the number of successful entrepreneurs? The social development theory focuses on the external social factors of entrepreneurship such as family, local community, enterprise culture (Gibb 1987). The main statement of this theory is that entrepreneurs are mainly made, not born and almost everyone can run a small business. Amongst others, Casson (1995) and Gnyawali and Fogel (1994) claim that favourable environmental factors such as culture, family and social networks can foster entrepreneurial activity. The policy implication of this statement is that should the government engage in educating and training potential entrepreneurs? Then the question goes back how to select the participants for this kind of government sponsored programmes.

The major problem with the social development and entrepreneurial trait theories are that they focus on the establishment of the business and neglect other major factors of the entrepreneurial process. The entrepreneurial process, by definition, includes all the functions, activities and actions associated with perceiving opportunities and creating organisations to pursue them (Bygrave 1997). Not only the internal, but also external, environmental factors play a determinant role in the process of entrepreneurship. The environment of the firm includes socioeconomic conditions, entrepreneurial skills, government policies and procedures, financial assistance, and nonfinancial assistance (Gnyawaly and Fogel 1994). Today, one of

the most examined topic in the entrepreneurship literature is the investigation of the combination of the external factors, i.e. networking. There is disagreement, however, which are the most important elements of this process and what are the major factors that determine the success of the business.

The recently developed *Global Entrepreneurship Monitor (GEM)* conceptual model views new business creation and growth as a process that is influenced by entrepreneurial opportunities and entrepreneurial capacities (skills and motivation). These two factors are affected by the so-called entrepreneurial framework conditions, namely financial opportunities, government policies, government programs, education and training, R&D transfer, commercial infrastructure, internal market openness, access to physical infrastructure, and cultural and social norms (Reynold et al 2002). Therefore, the GEM model aims to synthesize the internal factors of entrepreneurship – including some entrepreneurial traits – with the external factors, but pays relatively less attention to network formulation.

These points are just examples of a long list about the debated topics in the area of entrepreneurship. My view is that behind the veil of disagreements and debates there has been the *historically changing nature of the entrepreneur and entrepreneurial process*. Launching business a hundred years ago was a completely different task than today. Now, starting a successful new venture needs much more knowledge about market conditions, rules, regulations, rights, finance and management. Probably everybody can show some entrepreneurs who initiated successful business without possessing these characteristics. Although the entrepreneurial team together with outsourcing the missing features must have these features to be prosperous. A successful entrepreneur a hundred years back possessed different skills than today. He was probably a low educated technical innovator with a very limited knowledge about the management of the business contrasted the today's generally highly educated entrepreneur with much better managerial and cooperative characteristics.

The traditional idea of entrepreneurship concerns on launching new ventures. Most of the newly founded firms however, even if they survive the first critical years, do not innovate more and after the product reaches maturity and often disappear from the market. Large firms with bureaucratic organisational structures also struggle to renew themselves and to improve competitiveness. One way of bringing entrepreneurship in already existing business is acquisition that is buying another businesses that have good growth potential. Another way is to create a specific environment and/or groups, units within the corporation, for developing entrepreneurial ideas to exploit new business opportunities. The literature refers to the entrepreneurial process within existing corporations as intrapreneurship (Kuratko 1995, Pinchot 1985).

In this case of intrapreneurship organisation of the company remains basically unchanged and the intrapreneurial unit works as a separated independent business. The success depends largely on the creation of freedom and independence of the

group of intrapreneurs from the other parts of the company. Managers of large companies, however, tend to emphasise stability and efficiency rather than risky innovations (Carrier 1994). Intrepeneurs frequently have to fight for resources within the company and even their existence can be questioned if the business or innovation fails to work. It is also very difficult to give enough independence and create individual responsibility and proper reward systems at the same time. This is the main reason why some companies like ABB, GE, Toyota and others changed their whole organisational structure and formed new strategic business units where the main responsibility lies with the front line entrepreneurs who have a very high level of freedom and independence (Ghoshal and Bartlett 1995). These types of network entrepreneurship are completely different processes and require other entrepreneurial skills than intrapreneurship.

6.3 Networking and network organisations

Over the last two decades, networking has become widespread phenomena all around the world. Similar to the problems of entrepreneurship, defining networks and network types is not an easy task. Szarka (1990) views networks as a specific type of relation linking a set of persons, objects or events. In the context of small business two other conditions have to be fulfilled namely membership and the rules and conventions that determine members' behaviour. Paché (1989) defines networks as specific long-lasting exchange relationship between two or more companies that is based on the mutual interest of the members.

According to Miles and Snow (1992) network organisations are different from other previous organisational forms. The distinctive characteristics are:

- Unlike other organisations that prefer to keep all the assets within the company, network firms use other assets and resources owned by other members of the network.
- The management of the resources is determined by market mechanisms and not by administrative processes.
- Besides of fulfilling contractual obligations network members frequently take a proactive role and voluntary contribution to improve the product or service.
- Networks tend to evolve similar to the Japanese *kerietsu* system where mutual shareholding amongst the members strengthens the network connection.

Birley et al (1991) think of networks as abstract concepts with fuzzy boundaries associated with the uniqueness and casualness of the interconnection, while Curran et al (1992) define networks as cultural phenomena, a set of meanings, norms and expectations linked with behavioural correlates. Borch and Arthur (1995) describe strategic networks as co-operative relations among firms in order to exchange or share information or resources.

Based on the above definitions, networks can be divided into two major groups. In one type of networks, partner and member connections are loose, sometimes it is even difficult to distinguish them from the environment. In the other type of networks that can be described by formal membership, long term, frequently strategic connections between the members that are based on market connections. The most developed network types are called strategic networks (Hinterhuber and Levin 1994). For our purpose, i.e. to develop the concept of entrepreneurship, the second definition is more applicable than the first. So I define networks as that they are characterised by long term relationships based on the market connections of the participants. Even if formal membership (contracts) does not exist, participants are in close connection to each other.

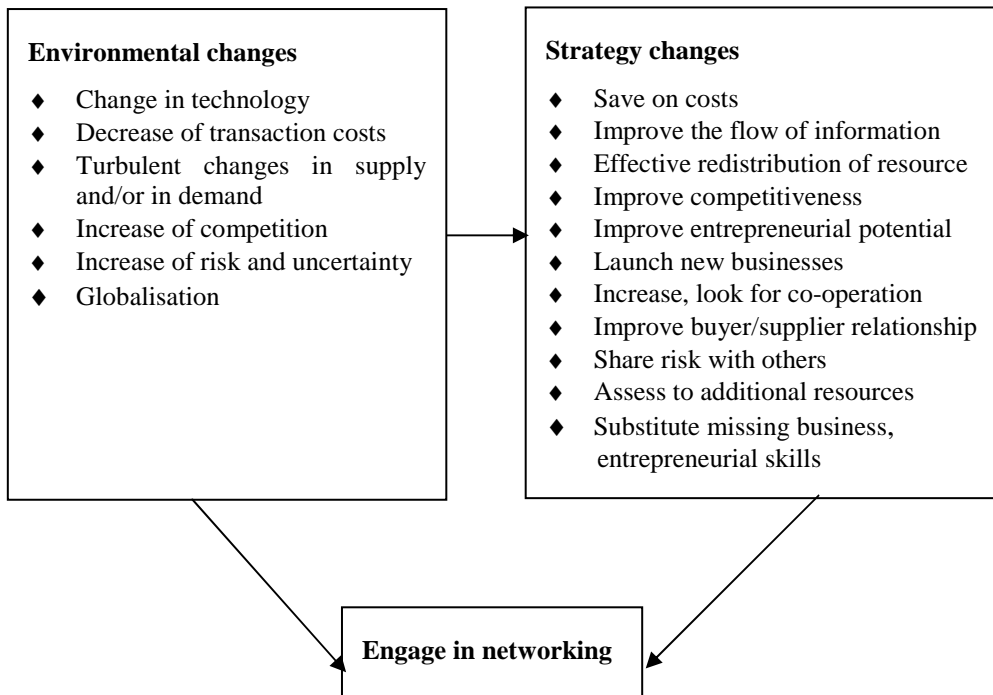
It is worth mentioning that the connection building among members is voluntary. The question is: why do they engage in a network type of relationship? As it has been noted earlier, various types of environmental, demand, supply, market and technological changes forced firms to form networks, namely:

- Accelerated change in technology: based on Ács and Audretsch (1987) we are on the upward part of the Kondratyev cycle. This part is characterised by rapid innovations and favours small size companies that are more innovative than bigger corporations. Consequently, larger organisations should be broken down to smaller, flexible units that are able to react to environmental changes.
- Due to other technical changes, especially the widespread use of computer technology, the cost of using the market system (transaction costs) decreased considerably. At the same time, internal organisational costs increased or remained unchanged. Therefore firms try to rely more on market connection by outsourcing or subcontracting. Along the vertical chain of production, the supplier-buyer connections changed (value-added chains).
- Competition, especially, in high technology sectors, but also in general increases. The world has become global, local and world market competition forced firms to look for strategic partners to be able to compete with rival firms.
- Over decades, the developed part of the world has become richer and wealthier. That changed the structure of the demand. Moreover, consumers' preferences also changed. That raised the element of risk. To decrease uncertainty, and to react to the changes on the demand side, co-operation with other firms is necessary.
- Other changes, such as changes in government policies, regulations, world economy events also increase uncertainty of businesses, so common actions and agreements are required to decrease this type of risk.

Up to now, the implication has been that networks are formed from and by large companies. However, it should be noted that there are several factors pushing smaller companies (SME) to take part in networking. Information gathering and the response from the external environment help the more vulnerable small firms to

respond to changes in the environment. It is very difficult to raise money for launching a new venture or growing even if the idea is brilliant and the market potential is high. Moreover, a general problem in small business is inadequate management. Entrepreneurs have a lack of knowledge of various types of business skills in the areas of regulation, organisation, accounting, finance, marketing, strategic thinking that increase the chance of failure and bankruptcy. SMEs are more vulnerable because most of the time they produce only one or a few products in low quantity. Via networking most, or some, of these problems can be diminished. Smaller companies tend to participate in less formalised network connections than larger firms. Socio-economic conditions, social and cultural background, interpersonal connections are also more important in the network formulation of small businesses than that of large firms.

Figure 6.1 Environmental and strategy changes and their effect on network formulation



From the behalf of large companies there are requirements of the redistribution of the resources associated with the new conditions, the most effective use of existing resources especially in the case of research, the acceleration of the stream of information, and the decrease and share of the risk. From the behalf of the small

companies it is important to reach the optimum size of production, to have long term, reliable partners on the supply as well as on the demand side, to supply the missing functions and business skills, and to provide the capital necessary for development. In both cases, however, it is vital to bring entrepreneurship into existing businesses and to launch new ventures (Figure 6.1). Entrepreneurial networking is a core element of the long run existence of the independent business units (Birley et al 1991, Johannisson 1995).

6.4 New entrepreneurial and managerial tasks and roles in network organisations

Networking reforms the traditional entrepreneurial process, and requires different roles and tasks. The effective operation of the network, the success of ventures, and the personal achievement of the participants largely depend on how network members can reconcile their own interest with the needs of other partners and the network as a whole. Sometimes partners have to rely on each other without knowing the benefits and cost of exchange. Mutual trust, shared values, and respect are found to be the most important factors (Borch and Arthur 1995). In a paper, Tjosvold and Weicker (1993) consider that corporate goal setting is the key element in networking. If network participants believe that their goals are negatively related to others, then competition dominates and the network will not work properly.

Even successful networks are not exempt from problems that call for specific inter-firm reconciliation. The person who is engaged in making the network operate smoothly and enhancing efficiency and in maintaining trust between network members is called caretaker (Boyle 1994, Snow et al 1992). Caretakers are continuously looking for possible situations that might cause the network to break down. By informing others about new opportunities, successes or failures the caretaker helps the network to learn and avoid the same mistakes.

In general, managers who operate “across hierarchies” are called brokers. Besides the most challenging role of the caretaker, there are two other roles identified: the architect and the lead operator (Snow et al 1992). Architects “facilitate the emergence of specific operating networks”. The architect organises a grid of firms along the operation chain, helps to create new groups, or finds distributors, retailers. The lead operator brings new firms into the operating network. Looking for the proper partner and negotiating with them, fitting the new partner into the existing network are the basic roles of the lead operator. Frequently, the lead operator negotiates with subcontractors and helps to find partners in the case of outsourcing. It is very difficult to practice these brokerage roles without having control and ownership over the resources.

Besides the new roles, networking changes the nature of usual management. It is expected that classical managers and entrepreneurs should change their focus.

Besides the capabilities of leadership, quick decision making, strategy formulation, controlling and initiative behaviour, they have to be able to co-operate with other network members, to trust each other, to share valuable information and experience. It also means that network managers spend more time making and maintaining connections with others. In this respect, communicational and interpersonal skills are very important.

Networking also reshapes the entrepreneurial process and entrepreneurial roles. Bringing entrepreneurship into a large company changes the whole organisational structure and a network of entrepreneurs has to be created. As Ghoshal and Bartlett (1995) describe how the entrepreneurial process is broken down within large companies. The leaders of the strategic business units are the front line entrepreneurs whose basic role is to create and pursue new opportunities. These entrepreneurs act as heads of companies. The role of the senior level managers called coaches is to review, develop and support the front line initiatives. Top level corporate leaders focus on the overall strategic mission of the company and establish performance standards that initiatives have to meet.

Small business entrepreneurial networking raises controversial issues. Comparing independent entrepreneurs and entrepreneurs with co-operative goals, Tjosvold and Weicker (1993) reports that the latter proved to be more successful than egoistic, non-collaborating associates. On the contrary, Curran et al (1992) finds that small business entrepreneurs and owner-managers are strongly influenced by the need for independence and do not rely on network connections. However, Johannisson (1995) reinforces that growing, entrepreneurial firms and entrepreneurs distinguish themselves by building external personalised ties and networks. In order to be successful, network entrepreneurs must have different skills and abilities than classical individual entrepreneurs. Social and good communication skills, the ability to co-operate and deal with other network members are the most important factors of success.

It has to be emphasised that due to networking not just the entrepreneurial roles but also the entrepreneurial process is broken. Launching a new business is a collaborative work of various entrepreneurs and firms. No one can control the whole process, the expertise and resources that are necessary for success. On the one hand, network entrepreneurs lose independence but on the other hand they gain by specialising to a certain part of the entrepreneurial process, decrease risk and increase the probability of success. It is important for small business owners that they do not need to possess all of the required skills and abilities that are necessary for an independent entrepreneur, because they can rely on other network members who specialise in different tasks and have different skills. Other common problems of small businesses such as scarcity of the resources, the lack of money and proper business partners can also be eased, at least partially.

6.5 The characteristic of the intrapreneur and concept of interpreneurship

The type of entrepreneurship and entrepreneurial process described in the previous section is quite different from the classical entrepreneurship and even from intrapreneurship. I name the entrepreneurial process within the network interpreneurship, and the person who accomplishes entrepreneurship in a network organisation is called the interpreneur.

The intrapreneur possesses distinguished features as compared to classical entrepreneur and intrapreneur. The basic goal for all three types of entrepreneurs is the same to maximise profit, however the constraints are different. The intrapreneur has to consider the aims and goals of the company in which he works and the interpreneur should consider other network members' interest. All three types of entrepreneurs are closely associated in innovation, they want to create something new. While innovation can be occasional in the case of classical entrepreneur it is a continuous renewal in the case of interpreneur. The interpreneur is actively seeking of new opportunities together with other network participants. While the classical entrepreneur takes all risk by himself the interpreneur shares the risk but also the profit with others. Since the intrapreneur uses the company's resources does not bear financial risk but bears other risks like loosing it job (carrier risk).

The possession and control of the resources necessary to run the business can be vital for the classical entrepreneur but the interpreneur can control the resources of the network without owning them. In this respect, the intrapreneur is in difficult position since does not own and only partially controls the resources. Authority plays an important role in the classical entrepreneurial and intrapreneurial organisations, while collaboration and association is vital for the interpreneur. The same can be said about the personal attributes: classical entrepreneurs are frequently labelled as individualistic (sometimes troublesome) persons, intrapreneurs are more willing to work in teams, but interpreneurs inevitable has to be more socialised and collaborate with others in the network. Moreover, cooperation and collaboration requires excellent communicational skills. At the same time, interpreneurs probably possess less entrepreneurial and business skills than classical entrepreneurs. Most of the times, the classical entrepreneur is driven by the desire to internalise not only the necessary resources but also business and entrepreneurial skills. The classical entrepreneur is a generalist who knows at least a little about every aspect of the business. However, the interpreneur can be viewed as specialist who is more willing to outsource the missing skills than the classical entrepreneur. Of course, traditional entrepreneurial skills like opportunity recognition, creativity, risk taking capability, stress resistance etc. are also very important for all types of entrepreneurs (Table 6.1).

Table 6.1 The distinguished features of classical entrepreneur, intrapreneur and interpreneur

	Classical entrepreneur	Intrapreneur	Interpreneur
Basic role	To create something new and/or to make the business grow	To launch new business in an existing organisation	Continuous development and launch of new ventures, exploiting new opportunities
Basic goal	Own profit maximisation	Profit maximisation, other goals of the company should also be considered	Profit maximisation but considering other network member goals
Nature of risk and responsibility	Takes own risk, bears all consequences	The risk lies on the owner of the company, responsibility is limited	Shared risk and responsibility amongst network members
Ownership and control of resources	Owens or rents and controls all the resources necessary for the business	Does not own the resources for the business just uses them, partial control	Owens and controls only partially the resources necessary for the business
Connection within the organisation/network	Frequently informal and vague, authority based	Authority based, formal, largely independent from other organisational units	Mixed, within the business hierarchical, amongst the network members associative
Personal attribute	An individual person works alone	A team person, works in a small group within a large company	A network person, works in collaboration with other network members
Entrepreneurial and business skills possession	Should possess all entrepreneurial and business skills	Possesses basically entrepreneurial skills, should be able to fight for resources within the company	Specialised, possesses only part of the entrepreneurial and business skills, strong emphasis on social and communication skills, the ability to co-operate with other network members

Now, the question who is more successful, the classical entrepreneur, the intrapreneur, or the interpreneur? As different types of network formulation becoming more and more widespread all around the world, interpreneurship is becoming dominant form of the entrepreneurial activities. The sectors of the so-called new economy are dominated by thousands of small and large business units. Biotechnology or information technology ventures can hardly survive without networking and interpreneurial activity. At the same time along with the development of new technologies and the Internet classical entrepreneurial ventures

are also changing. Outsourcing and the search for strategic partners are probably the first steps that entrepreneurs think of. As it is presented in the previous part of this paper, the change of intrapreneurship activities to interpreneurship has already started at large corporations like IBM and ABB.

However, networks can be fuzzy and vulnerable. The success of the interpreneur depends largely on partner communication and information sharing. If the trust among partners is broken then the network can collapse. In that respect, brokers who operate across hierarchies and help developing and maintaining partner connections play a crucial role.

There are some examples of the various types of intrapreneurial activities within networks. Firms, that formulate strategic business units (ABB, GE, Toyota) and delegate the main authority to front line managers are good examples. The aim of strategic alliances is frequently interpreneurship. Subcontracting is also a form of interpreneurship, if the basic aim is to launch new business or to make the firm grow. Franchising also meets the definitional requirements of interpreneurship. Technological, entrepreneurial, innovation parks, and incubators also serve to supply some missing elements of the entrepreneurial process, entrepreneurial and business skills. Small firms form frequently strategic alliances for organised common actions (resource provision at bulk prices, export, R&D etc) that can involve at least partially interpreneurial activities. Interpreneurship is an essential factor of larger but looser entrepreneurial or regional organisations like Silicon Valley or the Italian “Mezzoreggio”.

6.6 Summary and implications

Looking for entrepreneurial traits, analysing the entrepreneurial process, selecting the winners, and identifying key governmental policies to support entrepreneurship have been the major areas of the entrepreneurship research agenda. As it has been presented in the first part of this paper, disagreement exists between different scholars and schools. The reason of the debated points, at least partially, is due to the historically changing nature of entrepreneurship and the entrepreneurial process. This fact calls for definitional clarification in a historical perspective.

This paper has attempted to prove that launching new businesses and creating something new in networks, i.e. interpreneurship, are different from classical entrepreneurship and intrapreneurship. Interpreneurial roles and tasks are described along with the change of the classical managerial and entrepreneurial roles in a network organisation. In the last section, the main differences amongst entrepreneurship, intrapreneurship and interpreneurship have been discussed and presented in a table format.

If the phenomenon of interpreneurship can be accepted then it has some theoretical as well as political-practical consequences. It does not mean, however,

that classical entrepreneurs and intrepeneurs do not exist today, but I claim that today *interpreneurs are more successful persons than classical entrepreneurs*. Forming alliances or participating in network organisation is more effective than relying only on own resources and skills.

Moreover, the theory of entrepreneurial traits should to be rethought because the success of the new venture mostly depends on other than business or entrepreneurial skills. No one can possess all of the skills required for business creation, however, *interpreneurs can substitute missing characteristics by relying on other network members*. In addition, *interpreneurs have good communication, negotiation as well as co-operation skills* vital for the long run existence and efficient operation of the network.

Based on the theory of interpreneurship, the entrepreneurial process is broken down, and different ventures specialise on different part of the entrepreneurial process. Therefore I claim that *interpreneurs are more specialised persons than classical entrepreneurs*.

The concept of interpreneurship calls for reconsideration of certain political priorities. Helping the organisation of networks should be one of the priorities instead of supporting individuals and classical type of entrepreneurs. Developing networks, however, takes a long time, in the cases of entrepreneurial networks sometimes decades as examples show (Silicon Valley, Route 127 in Boston, the Italian “Mezzoreggio”). Other environmental factors such as socio-economic conditions, social and cultural background and infrastructure that affect the formulation of networks should also be supported.

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