

Open Innovation Meets Innovation Media

**Concepts, Aspects and Future Trends of
Creative Processes and Innovation Ecosystems**

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Many key concepts are interrelated in the recent innovation discourse: creative economy, network society, the information age, innovation (eco)systems, innovation environments, innovation journalism, innovation media, innovation communications, social technologies, web 2.0, web 3.0, everywhere, ubiquitous computing, etc. This conference paper discusses key concepts, aspects and future trends of creative processes and innovation ecosystems.

1 Introduction

A creative economy is the fuel of magnificence.

– Essayist and philosopher Ralph Waldo Emerson (1803–82)

The future cannot be predicted, but futures can be invented. It was man's ability to invent which has made human society what it is.

– Nobel Laureate in Physics, Dennis Gabor (1900–79)

In recent years, *innovation media* and *innovation journalism* have been introduced as new theoretical concepts which challenge the “old school” media thinking and practices. Major attempts to define the notion and the theoretical framework of *innovation journalism* and *innovation media* have already been made. Prof. David Nordfors has presented seminal ideas in his writings. In the Finnish context and discussion, the views of Dr. Erkki Kauhanen have been influential. *Innovaatiomedia. Journalismi tulevaisuuden tekijänä* [*Innovation Media. Journalism as a Driver of the Future*] by Erkki Kauhanen, Jari Kaivo-oja and Antti Hautamäki was published in 2007.

A deeper conceptual analysis is, however, needed – not least because “innovation journalism” is a relatively young field of study. In addition, broader concepts of “innovation media” and “innovation communications” are needed since innovation journalism covers mainly journalism and journalistic practices. Various forms of public relations, expert communications, etc. can be included to the broader category of innovation communications.

A number of key terms and concepts have been grouped together in the recent debate over innovations and technology: knowledge society, information society, network society, informationalism, the Information Age, innovation economy, innovation environments, innovation ecosystems, business ecosystems, living labs, innovation media, innovation journalism, complex systems, autopoiesis, dominant

design, KIBS (knowledge intensive business services), STI and DUI principles, net generation, value networks, digital competence, creative economy, the creative class, creative buzz, learning regions, clusters and miniclusters, creative industries, media ecology, fitness landscape, open innovation, mobility, serendipity, swarm intelligence, crowdsourcing, social media, web 2.0, web 3.0, ubiquitous technology, everywhere, digital convergence, prosumerism, produsage, diffusion of new technology, IPR, etc.

Debate on technology and innovation has, in recent years, been disturbed by the fuzziness and ambiguity of terms such as *knowledge*, *information*, *data*, *innovation*, *creativity*, *media*, *ecosystems*, etc. John A. Barry has described the contemporary discussion on technology with an appropriate word, *technobabble*. The content of words is dependant, naturally, on the definer and the context. Even if we do not take too tight a stand on the ways language is used, it has to be stated that especially new, trend-like *buzzwords* are often used carelessly and accompanied by (too) far-fetched rhetorics. On the other hand, right key words electrify discussion and, for example, the terms and concepts of *creativity* and *innovation* have proven its usefulness on many occasions.

Some key factors and general elements that create structural changes inside the global innovation ecosystems are (1) ubiquitous and ICT (r)evolution (including so-called social technologies, *everywhere* and web 2.0 developments), (2) increased global pressure to create *new service innovations* to move towards a more innovative and productive service economy, (3) increased *global competition* in various industries, and (4) increased pressure to find a *better balance* between the business developments and environmental *sustainability* caused by global warming and related challenges.

Highly important in the innovation processes are the connections, contacts and communications between industries and experts of different fields. It is important to create and encourage contexts and environments where *serendipity* may occur. Growing attention has recently been devoted to the concept of open innovations both in the academia as well as in the practices of business life. Henry Chesbrough describes how companies have shifted from so-called closed innovation processes towards a more open way of innovating in his book *Open Innovation. The New Imperative for Creating and Profiting from Technology* (2003).

This approach is a great challenge and a great opportunity, e.g. for the European cluster strategy. The central objective of the European Union's science and technology policies is to develop the innovative capacity of the economic area just as well as to enhance the related creative processes towards higher efficiency and profitability. This has been defined as the economic, scientific and technological target of the whole EU. The R&D work concerning innovation processes will involve the public sector, universities and businesses (cf. the *triple helix* model).

The new idea and challenge in Europe is to combine the European cluster strategy with the new innovation paradigm (i.e. *open innovation*) and with the opportunities and future trends of *innovation media*. The rise of innovation media and innovation journalism reveals that the special role of media and innovation journalism has not

been taken into account in the *triple helix* model. In the ecosystemic view the role of media and communications (both the traditional mass media and the new Internet-based services) is evident.

2 Active Contemporary Debate: Innovation and “Innoflation”

“When memories exceed dreams, the end is near. The hallmark of a truly successful organization is the willingness to abandon what made it successful and start fresh.”

These words of business writer, Professor Michael Hammer, seem relevant in the context of the discussion on creativity, creative industries and innovation. Debate on creativity, creative economy, “creative class” and innovation has been by no means scarce, but are economies, businesses, research groups and technology developers heading in the right direction?

Maybe, maybe not. The main goal of the science and technology policy of the EU is to develop the innovativeness and related processes in a more sensitive, efficient and result-driven direction. This standpoint is listed as a goal in various instances with regard to economic, science and technology policies, and it concerns the public sector, higher education and business life alike.

How to meet this challenge in practice? Amongst other openings, some directions were given in a conference paper entitled “Homo Creativus”¹ at the 24th *IASP World Conference on Science & Technology Parks* in Barcelona, Spain, in 2007. Contacts, connections and sometimes surprising meetings and bumps (*the principle of serendipity*) in the in-betweens of various scientific and business fields and between different organizations are of paramount importance to the contemporary innovation environment. The contact points between the different societal actors have to be seen as one of the most important starting points in terms of innovations and innovation potential in Europe.

Creativity, innovation, creative economy and creative industries are examples of key concepts that spark a great deal of general interest as well as ambitious research and development projects. These concepts have, however, met a sort of “innoflation,” where *creative this* or *inno-that* have often lost their true meaning or purpose. The same kind of exaggeration and unrealistic hype was directed earlier to all things beginning with *cyber-*, *digi-*, and *mobile-*. Thus, a thoroughly analytic view with regard to the concepts that are part of the debate on creativity and innovation and a Hegelian *Anstrengung des Begriffs* (testing of the concept) would be very welcome. The usage of the words “innovation,” “creativity,” etc. should be

¹ Kakko & Inkinen 2007.

examined analytically and critically. In addition, the classical distinction between “ideas,” “inventions” and “innovations” is useful with this discussion.

On the other hand, there is an extensive use of the term *creativity*, and, among other contributions, the ideas concerning the *creative class* by Professor Richard Florida have become key issues of dynamic regional development all over the globe. The values and principles of the creative class also seem to be directly linked with the processes and problematic aspects of the “creative economy.”

According to the traditional definition, an innovation is a new product, a new process or a new organizational structure that enables an actor to be successful in the market. Amongst others, the Nordic Innovations Center (NICE) has stressed the holistic viewpoint in terms of innovation and has stated that research results and inventions can be translated into innovations only if they are closely interlinked with commercial interests and economic goals.²

The traditional, closed innovation model is built upon the idea that one’s own organization possesses all the needed knowledge and know-how. Protecting these knowledge assets is considered a way of securing a competitive edge in the market. In the recent years, however, debate over *open* innovation has gained a lot of ground. This change in the discussion is almost drastic enough to be called a paradigm shift. The concept of *innovation environments* includes much wider and deeper viewpoints than the traditional research on *innovation systems*. *Innovation environments* are affected, amongst other things, by the history and culture of the geographical region, the organizational traditions and behavioral patterns and traditions acquired over time.

In the Nordic countries, the main feature of the development of the innovation process is the so-called *triple helix* model, i.e. co-operation between the universities, the public sector and the private sector. The new concept of *national open innovation system* offers an alternative to the “traditional” triple helix model and brings forth that national innovation systems are no longer tightly closed national systems but function as a part in a complex, dynamic, global context.³

The main question is how to create something new and valuable; how to enable creativity to take place, to “happen” in the context of individual personalities, of organizational strategies and operational principles, and in the context of human interaction. Albert Einstein (1879–1955) once stated that “imagination is more important than knowledge.” Albert Szent-Gyögyi, a Nobel Laureate in Physics, has presented a similar idea in a slightly different way:

Discovery consists of seeing what everybody has seen and thinking what nobody has thought.

² Petra Nilsson-Andersen: Innovation and Clusters in the Baltic Sea Region BSR-InnoNet. *Nordic – Baltic Innovation Seminar, Science + Technology + Entrepreneurship*, Tallinn, Estonia 8.5.2007.

³ See Santonen & Kaivo-oja & Suomala 2007.

3 Creativity and Innovations: Concepts, Theory and Contemporary Discussion

Creativity has been a keyword in recent years in the business world, in educational institutions as well as in the wider discussions related to society. Creativity and innovations, creative work, creative industries, “creative economy,” “the creative class,”⁴ innovation systems and innovation environments⁵ and other *buzzwords* have become key concepts and mantras that are not only met with huge interest but also with a lot of unnecessary frenzy or mania.

“Creativity and business,” the theme of the conference entitled *Interaktiivinen tulevaisuus & ihminen* (Interactive Future & the Human Being) held alongside the *Mindtrek* event in Tampere in 2005, is symptomatic of the Finnish discussion. This theme was tackled, for example, by Anssi Vanjoki, Nokia’s EVP of multimedia. In 2006, the University of Joensuu organized a seminar under the title *Luova talous – itääkö?* (Creative economy – growth?) The contemporary *Zeitgeist*⁶ was also showcased in the chosen name of a project by the University of Oulu; *CreaM – Creative Processes and Content Business Management*.⁷

One of the fundamental questions that needs to be answered is whether the recent exchange of thoughts has resulted in something truly new or groundbreaking. Debate over the different aspects of creativity has been active among universities in various countries, research communities, ministries, government agencies, think tanks and other (perhaps more independent) networks. One reasonably recent example of the exchange of thoughts on the European level comes from the German speaking world; the publication *Die organisierte Kreativität. Kulturpolitik an der Wende zum 21. Jahrhundert* (1999) [Organised Creativity. Cultural Politics at the Dawn of the 21st Century, edited by Franz Morak]. This offers a glance at “organized creativity” from the viewpoint of areas such as education, cultural politics, design and new media.

It is interesting to note that creativity has, in recent years, been closely connected to the wider discussion on society and the economy. The discussion emphasizes themes such as (national) competitiveness and innovativeness. The *creative class* and the *creative economy*, as introduced by Richard Florida, have been discussed in detail by futurists and futures researchers, both in Finland⁸ and internationally. Florida argues that the self-acknowledgeable professionals of the creative industries tend to choose such home and work environments (including cities and/or regions) that support and promote a rich and many-sided cultural life, offer a multitude of opportunities for participation in various activities, and have an

⁴ Cf. Florida 2002a, 2002b.

⁵ Cf. Stähle et al. 2004.

⁶ Cf. Inkinen 1999a.

⁷ www.cream oulu.fi

⁸ Cf. Wilenius 2004; Aaltonen & Wilenius 2002; Inkinen 2006a, 2006b.

atmosphere of spiritual openness (key issues being multiculturalism, tolerance and cultural diversity).

Florida's *The Rise of the Creative Class* (2002) has become an often cited key opus that could be described as the "bible of dynamic regional development." The book aims to underline the rise of the creative class in American metropolises. It looks at the structures of contemporary society from the viewpoints of regionality, regional development, information, and the socio-technical foundations of knowledge work. According to Florida, the creative class is found at the centre, at the core of society. Its values and principles underline the links between artistic, cultural creativity and the structures of the information economy. The book aims to find out where new, thriving business takes place in contemporary society, and to understand where businesses based on the input of creative innovative professionals (knowledge workers) are moving to geographically.⁹

According to Florida and his followers, creativity is a key driver of the information society. The roles of individuality, voluntary tribalism and creativity are of paramount importance in the society of to-day. These factors have become essential for economic success and regional competitiveness. The knowledge workers – researchers, designers, programmers, artists and other innovators – demand more than healthcare programmes from their employers and more than a sports stadium and a symphony orchestra from their home town and home environment. The creative class values active and many-sided cultural services.

It might be good to note here that, according to sociologists Scott Nash and John Urry, the new wealth of contemporary society has primarily been created by the producers of expert services.¹⁰ Producing special services (financial and cultural services, IT and ICT, educational services, innovation services, etc.) requires a high level of education and top notch professionalism. Florida includes scientists, architects, designers, educators, artists, musicians and entertainers in a single "class." Around this core of creativity, a wider group of knowledge workers is assembled; e.g. business, economics, law and health care professionals.¹¹

It is generally known that technology develops in a post-industrial, (post)modern society but, at the same time, social and economic structures also develop. According to Florida, the most essential change in our societies during the last 50 years has, indeed, not been the advancement of technology but the change in our social structures and cultural life. Globalization and the mobility of capital and work and a new set of values essentially shape current development and our future paths. At the same time, information technology and computer networks have influenced the birth of a new set of rules that affect our lives. Digital technology, networks, ubiquitous computing¹² and other socio-technological trends have had a crucial influence in the way that the post-industrial society is built around *information, symbols and knowledge capital*.

⁹ Cf. Kakko & Inkinen 2004; Säisänen 2005; Inkinen 2006a, 2006b.

¹⁰ Lash & Urry 1994.

¹¹ Cf. Säisänen 2005, 28ff.

¹² Cf. Weiser 1991; Greenfield 2006.

Florida's view of contemporary society is based on a theory that argues that humane creativity has become one of the essential (if not altogether the most essential) drivers of economic growth in western societies. Florida argues that by understanding the rise and meaning of the new “class,” we can also understand the processes of societal change and can influence our future proactively. This said, we have to understand that creativity is a many-sided issue and should not be limited to technological innovations, patents, new products and the like. The Floridan view of the ideals and mechanisms of the creative economy reach out all the way to the fundamentals of our societal and cultural processes.

We can think that journalists and media professionals are a part of Floridan “creative class.” In fact, perhaps innovation journalism and innovation media are specifically a task and a challenge for the “creative class.” It is worth to remember from the past that the working class used to have its own newspapers and media in the last centuries. It is worth asking if the “creative class” has in the contemporary world its own press and media – both in the form of traditional mass media (newspapers, magazines, radio stations, etc.) and the “new” media (blogs and wikis, microblogs, web 2.0...).

All in all it can be stated that creativity and innovativeness are key concepts that are loaded with challenges and expectations in contemporary society. In order to maintain a critical and analytic view, it has to be stressed that the recent discussion on creativity and innovation seems somewhat similar to the *hype* on digithis, cyberthat and mobilewhatnot of a while back.¹³ The discourse patterns around such buzzwords undoubtedly calls for reflective criticism or even straight-forward demystification.¹⁴ In the Finnish context, it has been interesting to follow the government’s interest in creating a “creativity strategy” which is meant to outline the future of creative activities and cultural policies. The Finnish Ministry of Education wrote on its web pages¹⁵ in administrative jargon (translation ours) some years ago that

Prime Minister Matti Vanhanen's first government program included the creation of a nationwide creativity strategy, listing it in the program under the chapter on culture politics. The efforts to promote creativity in society are not limited to cultural policies but reach beyond the administrative boundaries and beyond the scope of individual actors. The creativity strategy has been written from this standpoint. This is also where it differs from the national creativity strategies of other nations.

The work on the creativity strategy has been pre-planned to reflect the theme at hand in its processes and ways of working. The nature of creativity is cherished.

Talk on creativity has also been evident in the policies of the current cabinet, e.g. in the discussion on the new “innovation university” (the Aalto University) and on the

¹³ Cf. Inkinen 1999b.

¹⁴ Cf. Leppihalme 2006.

¹⁵http://www.minedu.fi/OPM/Kulttuuri/kulttuuripolitiikka/linjaukset_ohjelmat_ja_hankkeet/luovusstrategia/index.html

restructuring of the universities and higher education as a whole. Various estimates and prognoses have stated that there is a need to restructure the organizations and management systems of Finnish universities. It has also been stated that the demands of globalization and the new competition are not being adequately met by the current structure of Finnish universities.

Outlines such as the above-mentioned creativity strategy have been also been developed by other public institutions (e.g. the Finnish Innovation Fund Sitra and the Finnish Funding Agency for Technology and Innovation TEKES). Some have gone as far as to demand that Finland should become the most creative country in the world. Critical contemporary observers view such declarations as being unrealistic. On the other hand, the concept of developing “national creativity” can act as a positive driver and a fruitful goal that promotes issues related to creativity in a proactive and concrete way. Often the reasons behind such high-wired visions and “missions” are related to worries about Finland's national economic competitiveness and the country's position in the global playgrounds of future markets. Sitra's focus programme on innovations and innovativeness (for the years 2004–08)¹⁶ stated, among other things, that

The success of Finland has mainly been based on knowledge and competence. Finland has devotedly developed its educational system, R&D and business. The Finnish innovation system is one of the best in the world and Finland has placed well in international comparative studies on competitiveness and innovativeness.

However, we must look ahead. Competition is getting tighter and the traditional developed countries are now challenged by new actors such as India, China and Brazil who are able to compete with Europe, Japan and the US not only on the grounds of cheaper work force but with increasing knowledge and competence, too. Finland has to make sure that the Finnish innovation environment is top notch in the future as well and to ensure that Finland is able to produce competitive innovations and to attract investments, competent professionals and businesses.

As a nation and as an innovation environment Finland has its pros but its obvious cons, too. The global market opens up great possibilities for small countries, but the threat of not being able to keep up with the competition is real, especially if the available resources are not exploited efficiently and the new possibilities pursued actively.

According to Florida and his followers, it is characteristic of our time that economic and technological creativity is increasingly linked to artistic and cultural creativity. These new links and combinations of creativity should, indeed, give rise to the much needed new innovations and drivers of national competitiveness. This can be seen in the recent discussion and problems related to copyright and other immaterial property rights (IPRs).

In the economic structure of to-day, wealth is more and more based on intellectual, culture-bound symbolic property. Futurist, Professor Markku Wilenius presents a

¹⁶ Sitra 30.8.2004.

thought in his book *Luovaan talouteen. Kulttuuriosaaminen tulevaisuuden voimavarana* (Towards the Creative Economy. Cultural Competence as a Resource of Tomorrow, 2004) that could be considered as one of the heuristic mottos of the recent debate over creativity:

We are moving towards an economy that is primarily driven by cultural competence and the humane and organisatorial creativity born out of it. Cultural competence includes all the human abilities and organisational factors that enable us to make good use of our cultural capital in the interaction between individuals and in all activities of production. If we are to promote Finnish creativity and innovativeness, we have to ponder what sorts of cultural competence pave the way for creativity and innovations.¹⁷

Content business, the management of creative processes and the development of popular and urban culture are discussed in the above-mentioned book, for example in the following way: “The role of symbol production and aesthetics have dramatically increased in business life. This shows e.g. not only in the growth of communication and media businesses themselves but in the growth of the meaning of communication and media to other areas of business. Product aesthetics and ‘symbolic literacy’ show in the visual developments of advertising, work environments, shopping centers, restaurants and whole urban areas.”¹⁸

¹⁷ Wilenius 2004, 11.

¹⁸ Ibid., 37.

4 Innovation dynamics: the meaning of synergy, networks and “positive accidents”

This same point can be generalized to life: maximize the serendipity around you.
– Nassim Nicholas Taleb¹⁹

Decision-makers of science and technology policies all around the world stress that *innovativeness* is a prerequisite for future development and future competitiveness. It is often stated that an innovative environment makes organic growth possible with a means to enlarge the shared, common good. An innovative environment comes with a positive culture of “doing” and polishes the image of the region and the organization.²⁰ Critical mass and a “creative buzz” are needed to bring life to a developable innovational spirit.

This is just as true where industries and business life are concerned. The demand for innovativeness is crucial for the success of businesses, organizations and geographical regions in the face of ever-tightening global competition. One key challenge is the management of creative processes. In 2004, the Finnish Parliament published an opus with the title *Innovatiivisten ympäristöjen ja organisaatioiden johtaminen* (Management of Innovative Environments and Organisations),²¹ which states that

Regions and businesses need to be able to increase their innovativeness continuously. Widespread co-operation, creating related structures and guiding related processes form a huge challenge that has to be met in order to create functioning innovation systems. We are facing a multidimensional renewal task that calls for change in our physical, operational and mental structures.²²

Again, the social aspects of human networks and human development are essential. PowerPoint presentations and memos calling for the goals for innovativeness too often forget that, in the end, we are discussing an issue closely bound to humane and social action. Even if we talk on the level of innovation systems, all

¹⁹ Taleb 2007, 204.

²⁰ Cf. Inkinen 2006a, 2006b.

²¹ Eduskunnan kanslian julkaisu 6/2004.

²² Stähle et al. 2004, 5.

development and new ideas are sparked by *creative individuals* who have their own needs and desires. In the 1990s, there was a lot of talk about innovation systems. According to a definition

an innovation system is a term used to describe the different actors and their interdependent relations, who take part in the creation, dissemination and use of knowledge that is economically exploitable [...]. It is important to understand that an innovation system is by nature a social system and this underlines the meaning of interaction between humans [...]. The attention paid to innovation systems has increased our understanding of the systemic and interactive nature of innovations. Nevertheless, a lot of work and research is still needed to fully understand the multidimensional interaction, management and competence related to innovations and innovativeness.²³

Today, in addition to “innovation systems,” we also speak more of innovation environments.²⁴ A thriving innovative cluster is often a social organization where the various actors of the academic, cultural and business worlds meet in a fruitful way. It has to be stressed that alongside strategic planning and decisive management, accidental meetings and fruitful serendipitous bumps play a major role in innovation processes. A key term used is, indeed, *serendipity*,²⁵ which is discussed interestingly and thoroughly in *Serendipity. Accidental Discoveries in Science* by Royston M. Roberts (1989) and in Richard Eyre's *Spiritual Serendipity. Cultivating and Celebrating the Art of the Unexpected* (1999).

Serendipity means the accidental, unplanned encounter which can lead to a better-than-intended outcome.²⁶ In a way, serendipity equals a lucky chance, a fruitful accident or a positive collision. Merriam-Webster Online²⁷ defines serendipity in the following manner:

Main Entry: **ser·en·dip·i·ty**
[...]
Function: *noun*
Etymology: from its possession by the heroes of the Persian fairy tale *The Three Princes of Serendip*
: the faculty or phenomenon of finding valuable or agreeable things not sought for

The definition refers to an old Persian fairytale where the three princes of Serendip travel to far-off lands to search for a magical secret poem that would put threatening dragons to sleep. During their travels, the princes encounter such fascinating and

²³ Stähle et al. 2004, 14.

²⁴ Cf. Kakko & Inkinen 2005, 221–223.

²⁵ Cf. Hakala 2002, 227–228.

²⁶ Cf. Kakko & Inkinen 2005, 223–226; Kakko & Inkinen 2007.

²⁷ <http://www.m-w.com/dictionary/serendipity>

wonderful things that they nearly forget the reason for their travels. It might be interesting to note that the World Technology Network mentions *happy accidents* as one of their goals (emphasis ours):

About World Technology Network

The World Technology Network is a London-headquartered organization that was created to “encourage serendipity” – **happy accidents** – amongst those individuals and companies deemed by their peers to be the most innovative in the technology world. WTN’s areas of interest range from IT and communications to biotech, energy, materials, space, as well as related fields such as finance, marketing, policy, law, design, and ethics. Each year, WTN members are brought together through an ongoing global series of Roundtable Dinners, Chapter Meetings and other events. WTN also publishes “World Technology Intelligence”, a bi-monthly magazine about what is imminent, possible, and important in the technology world, written largely by its own members – the people driving the most significant innovations. Central events in the WTN calendar include the annual World Technology Summit and World Technology Awards – the culmination of a global judging program through which new members are nominated and selected and by which the network grows and is refreshed.²⁸

It is worth stating that concepts such as serendipity and chance are not unproblematic, nor is the discussion around them. It is also relevant to say that we live in a more fragile, complex and connected world than ever before – even if the “networked society”²⁹ is not, historically speaking, a new issue. It is often emphasized that success today is, as it has been in the past, enabled through networking and concrete cooperation. These standpoints can be considered prerequisites for (academic) research and development. Professor Wilenius endorses this by saying (*italics ours*):

Networks are the form of social organisation of this new era, *cultural competence* is its most essential competence and *creativity* its main driver. Competence in the network society differs from that of the industrial society. At its core are human management and the ability to create trust. It is ever increasingly based on questioning existing solutions and creating new innovations. Success in network society requires the ability to draw the right conclusions from the megatrends that affect the structure and processes of the society. These, in turn, show that economic growth is more and more based on immaterial goods and that a shift from exploiting natural resources towards the use of immaterial and human resources is taking place.³⁰

Cooperation networks come in various concrete forms. A few examples of

²⁸ <http://funredes.org/english/institucion/institucion.php3/docid/439>. Bold text ours.

²⁹ Cf. McNeill & McNeill 2003.

³⁰ Wilenius 2004, 28. Italics ours.

cooperation networks discussed in the literature of the social sciences are *supply networks* (just in time), *strategic alliances* (airlines), *production networks* (product licenses), *innovation networks* (cooperation between industry and universities), *client networks* (product development in cooperation with clients), *standardization coalitions* (e.g. businesses supporting a certain standard for the next generation of mobile phones), and *policy networks* (policy related cooperation between governmental, public authorities and other actors). In addition, subcultures and ground level organizations cooperate with each other in a creative and networked manner, and increasingly this cooperation is global and multicultural, and it makes good use of the social media applications on the Internet and on mobile networks.

As stressed above, it is crucial to understand that cooperation is undertaken by people, not by organizations. Developing cooperation built on trust and a real, open interaction between people is a challenging task. Experiences from businesses, communities and regions suggest that successful cooperation between institutions and individuals relies on a shared willingness and *trust* between the participating people and communities. Understanding the theory and practice of networks, Albert-László Barabási sums this up:

The most visible element of this [organisational] remaking is a shift from a tree to a web or a network organisation, flat and with lots of cross-links between the nodes. As valuable resources shift from physical assets to bits and information, operations move from vertical to virtual integration, the reach of business increasingly expands from domestic to global, the lifetime of inventories decreases from months to hours, business strategy changes from top-down to bottom-up, and workers transform into employees or free agents.³¹

5 The Challenges of “Open Innovation”

Growing attention has been recently devoted to the concept of “Open Innovation,” both in academia and in practice. Chesbrough, who coined the term “Open Innovation” describes in his book *Open Innovation: The New Imperative for Creating and Profiting from Technology* (Chesbrough 2003) how organizations have shifted from so-called closed innovation processes towards a more open way of innovating (Chesbrough 2003; cf. Sundbo and Gallouj 1998, 2000; DeJong et al. 2003, De Brantani 1991).

³¹ Barabasi 2003, 202.

Traditionally, new business development processes and the marketing of new products have taken place within the firm boundaries (Figure 1). Open innovation model is very relevant new concept also for non-economic innovations. This new gradually developing research tradition is becoming more and more relevant.

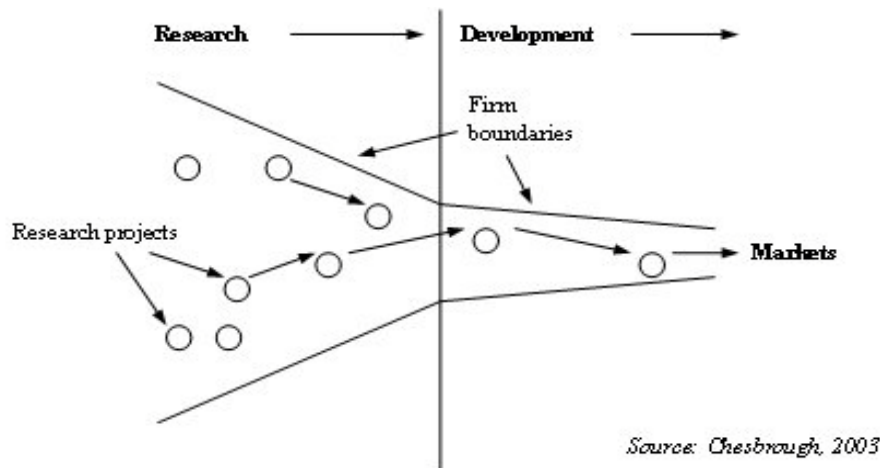


Figure 1. Closed innovation paradigm (Chesbrough 2003, xxii).

Several factors have led to the erosion of closed innovation. First of all, the mobility and availability of highly educated people has increased over the years. As a result, large amounts of knowledge exist outside the research laboratories of large organizations. In addition to that, when employees change jobs, they take their knowledge with them, resulting in increasing knowledge flows between firms. Secondly, the availability of venture capital has recently increased significantly, which makes it possible for good and promising ideas and technologies to be further developed outside the business organization. Besides, the possibilities to further develop ideas and technologies outside the organization are growing, for instance, in the form of spin-offs or through licensing agreements. Finally, other organizations in the supply chain, e.g. suppliers, play an increasingly important role in the innovation process.

As a result, organizations have started to look for other ways to increase the efficiency and effectiveness of their innovation processes. For instance, through active search for new technologies and ideas outside of the firm, but also through cooperation with suppliers and competitors, in order to create customer value. Another important aspect is the further development or out-licensing of ideas and technologies that do not fit the strategy of the organization. Open Innovation can thus be described as: combining internal and external ideas as well as internal and external paths to market to advance the development of new technologies (Figures 2 and 3).

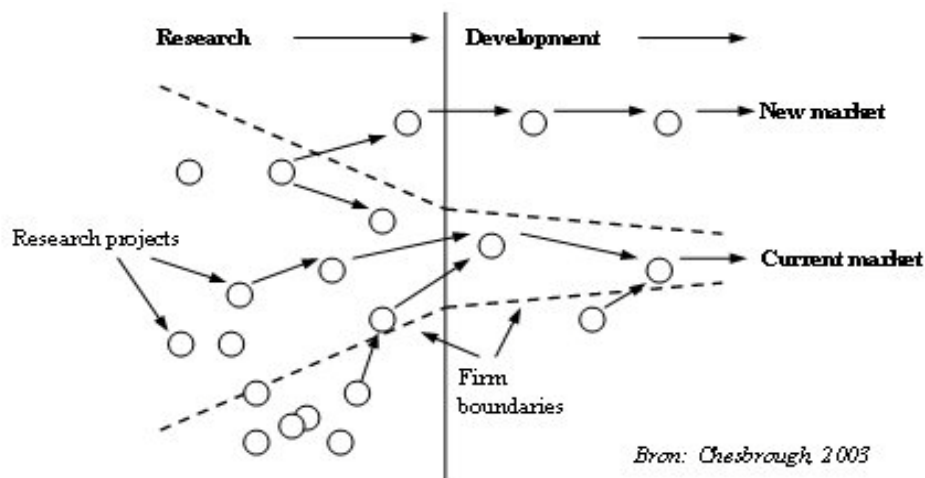


Figure 2. Open innovation paradigm (Chesbrough 2003, xxv).

One interesting aspect of open innovation model of Chesbrough (2003) is that it is not taking non-economical innovations into to considerations; just new markets are described as potential place where innovations are outsourced (see Figure 3). This issue is analyzed more in the context of innovation category model. Accordingly we can conclude that open innovation model could be developed towards taking also non-economic innovations into consideration.

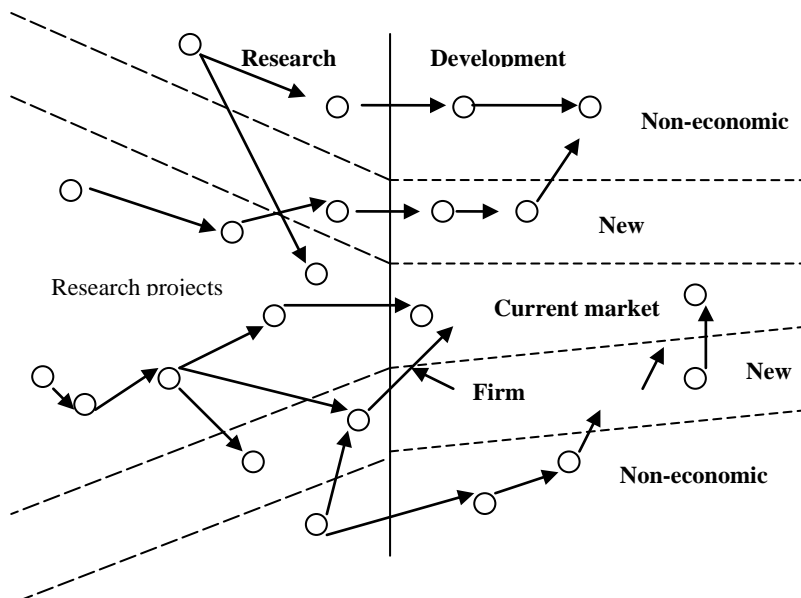


Figure 3. Open innovation paradigm with non-economic innovations.

The existence of open innovation model implies that in the first place, the shift described above means that organizations have to become aware of the increasing importance of open models and practices of innovation dynamics. Not all good ideas are developed within the business organizations, and not all ideas should necessarily be further developed within the business organization's boundaries.

6 Flow, Haste, Idleness – Challenges of Creativity in Work and R&D Environments

The mindset of a creative person has been outlined by the Hungarian-born creativity researcher, Mihaly Csikszentmihaly.³² He has coined the term *flow*, which is used to describe a deep feeling of happiness when everything just seems to succeed with no effort. Flow can be a part of work or leisure time, and is a deep, transcendent experience. During a flow period, one's awareness of self disappears, and it can be compared to a supernatural experience.

How does a person create? A paradox of creativity is that it can be learned, but not necessarily from text books. However, we must agree that there are varying opinions on this issue. While some experts claim that it is easy to learn or to teach creativity, others say that it is impossible. No matter what the truth is, bookstores sell a whole variety of "ABCs of Creativity" as well as more substantial handbooks. An (academic) example of the latter could be *Handbook of Creativity* by Robert J. Sternberg (2002).³³

Competition refines, it is said. Many contemporaries state that a crisis also refines. Deadlines or other severe pressures may give rise to magnificent ideas and innovations, while crises and conflicts have given birth to a great number of new

³² Cf. Csikszentmihaly 1996, 1997, 2003.

³³ "The goal of the *Handbook of Creativity* is to provide the most comprehensive, definitive, and authoritative single-volume review available in the field of creativity. To this end, the book contains 22 chapters covering a wide range of issues and topics in this field. / The chapters are intended to be accessible to all individuals with an interest in creative thinking. Although the authors are leading behavioral scientists and most readers are likely to have an interest in behavioral sciences, those involved in the natural sciences and humanities will find much that appeals to them in the volume, especially because so many of the examples and even case studies draw on the natural sciences and humanities." (Preface, Sternberg 2002, ix) The main sections of the book are as follows: I Introduction, II Methods for Studying Creativity, III Origins of Creativity, IV Creativity, the Self, and the Environment, V Special Topics in Creativity, VI Conclusion.

solutions. Many people have experienced how the creative mind still functions, even though the person is utterly tired, stressed out or burnt out. Maybe this is grounds for stating that creativity is often born out of extremes; either idleness or utter necessity.

It is interesting to note that the *slow life* phenomena (including *slow food*, *slow travel*, etc.) have been growing in the recent years all around the world. Time management and focus on the core activities are key issues also in the context and practices of innovation journalism. Competition and tight schedules often kill all spontaneous creativity.

In addition, the ever worsening atmosphere in our workplaces has also been a key issue in recent years. It is easy to list issues that restrict creativity: external evaluation, fear of job loss, a feeling of Big Brother watching, etc. Conflicts are, of course, a part of a creative community as well, but there the contradicting opinions related to new ideas tend to be ultimately fruitful. A key issue is how to combine competition, creative freedom and profit-making responsibilities. Another problem is how to bring knowledge about creativity into practice. Creative people are often sensitive. On the other hand, they can also be primadonnas with gigantic egos. Educational institutions and workplaces are challenged to tolerate difference.

How are things in real life? Not necessarily too well. Some years ago, the *Financial Times* discussed how creative and differing people are positioned in organisations. The difference between what is said in speeches and the reality is apparent. Companies big and small declare that *thinking out of the box* is their goal and a prerequisite for success. In practice, the outcomes for thinking on one's own, regardless of existing schemes, models and set rules, are often not positive at all. This is why people with original ideas and true creativity are not particularly successful in the actual business world.

Besides attempts to conceptualize and to study creativity, action has been taken to enhance creativity in practice. Perhaps a creative community is more like an *organism* than a traditional organization.³⁴ Furthermore, maybe problem-solving inside an organization is first and foremost a *process* that includes various identifiable and separatable phases. In his article “*Luova toiminta organisaatiossa*” (Creative actions in organisations), Yrjö Toivola has made references to studies made at the State University of New York in Buffalo that outline the development of problem-solving as a process as follows:³⁵

³⁴ Cf. Kakko & Inkinen 2004, 2005, 2007.

³⁵ Toivola 1984, 199–200. Bold text ours.

1. Problem, challenge, opportunity, outlining

Understanding that an opportunity to create something new, something better exists; intuitive knowledge, as well as a vision, might be a trustworthy guide at this phase (as well as in phases 3 and 4), because actual, fact-based, knowledge and its “mending effect” always come in too late.

2. Fact phase

Digging out the real facts in order to find the core of the problem that one is about to solve.

3. Problem phase

Identifying the actual problem according to the facts.

4. Idea phase

The shaping of alternative solutions.

5. Solution phase

Refining and polishing the chosen solution to make it usable and implementable.

6. Approval phase

Having all the actors who need to take part in the actualization of the chosen solution in order to make it successful to approve with it.

7. Realization phase

The arising (new) problems, or newly identified parts of the original problem, may force the process to be started anew or some phases to be gone through again. Several phases may have to be run through multiple times even before the realization phase has been reached.

A creative (work) environment is challenging, free, supports ideas, is emotionally safe, dynamic and the atmosphere promotes humor. In such an environment debates are considered positive, conflicts constructive, risk taking is allowed and, in the end, new ideas have the time they need to take shape.

An interesting phenomenon of our time, both in Finland and elsewhere, is active project work around the themes of creative and innovative environments. One such project is the *netWork Oasis* (Joensuu Science Park) that does research and develops things to meet the demands of knowledge workers (with the emphasis on increasing their capacity to work better) and creative work environments.

The project takes a view on creativity, regional attractiveness and knowledge workers using the three i's: (1) *instruments*, (2) *interior*, and (3) *interaction*. *netWork Oasis* aims to be a community where the various actors of the academic world, arts and business life meet in a fruitful way – without forgetting the serendipity principle. During the project, key words like “network hunting” and “network incubation” have been used. The central motto of the project can be

summed up in the phrase “respect serendipity.”³⁶

The clients and workers of netWork Oasis are, by nature, networking individuals who have the desire to maintain various kinds of relationship networks and to get to know new interesting people and communities. They take moving beyond and across organizational boundaries for granted and naturally create professional networks (*ad hoc* organizations) if the situation or goals so demand. These types of individuals have a healthy self-esteem and are professionals who want to work in an environment that is as open as possible, an environment that is interconnected in all possible directions (*win-win / open source / open innovation*) and one that is built upon the ideals of equality, satisfaction and a culture of getting things done together.

The starting points and the management of creativity are also promoted through various technological solutions. Many R&D projects have a bottleneck where good (but scattered) *ideas* ought to be refined and made real in the form of *concepts* or *prototypes* that could, in turn, be further developed into innovations that succeed on the market. Recent years have brought about specific innovation tools that act as idea storage, promote “swarm intelligence” and follow the principles of *social media* (web 2.0) in that they include conversational and ideating forums, the advancement of open innovation in the product development process, and strategic decision-making.

7 Contemporary and future humans: homo ludens, homo aestheticus- informaticus, homo creativus...

Creativity, innovation and flexible processes of action currently seem to be highlighted as the essential starting points for developing work life and the economy, and this will increasingly be the case in the near future. It seems clear that the innovators, experts and knowledge workers of the “creative economy” possess loads of human capital and seek various kinds of experiences to develop their own minds, their methods, their models of action, and their technical and technological toolkits. Such people are characterized by the *ethos of creativity* and by multicultural competence(s). Following in the lines of Richard Florida, who has

³⁶ Cf. Kakko & Inkinen 2004, 2005, 2007.

risen to the status of an international “guru,” the *creative class* can be viewed as an interesting condensed mix of the bourgeois and the boheme.³⁷

It is somehow symptomatic that the term *homo ludens* has become popular in the contemporary debate. We have understood that the human is not merely a *homo economicus* of economic rationality nor the engineering blacksmith of *homo faber*, but a playful human, *homo ludens*, as cultural philosopher Johan Huizinga stated as early as 1938 in his classic work of the same title. Huizinga's main idea was that even “unnecessary” challenges seem to play a big role in the advancement of the human race. Cultural life, works of art, games and sports are deeply rooted phenomena of humanity, even though they are not the results of straightforward need or necessity.

Homo ludens has been a key term, not only in academic discourse but, for example, in the advertising world also. As an opposite to the traditional *homo economicus* or *homo faber* who stress the importance of sense, achievement and quantity, *homo ludens* knowingly seeks for new experiences, plays around with possibilities, embraces the idea of freedom, and is happy to take risks to obtain new sensations.

A reference to the French word *bricolage* might add some interesting depth to this discussion. 'Bricolage' is used to mean the building, the assembly or hobby-like hand crafting,³⁸ and it acts as a nice metaphor of creative processes and the management thereof, since often creativity is defined as a process of assembling where something extraordinary is built. It combines separate and sometimes distant elements into new combinations to fulfill a certain need or certain needs or to be useful in some other way. The process of creativity can also be defined as a process to create a product or a service that can be considered a new one to its creator or someone else.³⁹

Other phrases starting with the word 'homo' have been used to describe the contemporary members of the information and media society. Aki Järvinen, a researcher of digital culture has used the phrase *homo aestheticus-informaticus* to describe the knowledge-intensive type of human who nevertheless stress the importance of aesthetic values and new sensations (art, design, experiences, entertainment industry, etc.).⁴⁰ And apparently, the contemporary human is, indeed, *homo creativus*: the creative contemporary actively searching for himself and for the future. As a conclusion it can be said that the significance of creativity is growing and it is bringing new challenges to innovation journalism and media.

³⁷ Cf. Florida 2002a, 2002b.

³⁸ Cf. Leppihalme 2006.

³⁹ Cf. Ruth 1984, 21–22.

⁴⁰ Järvinen 1999, 170.

8 Anatomy of Innovation

Now, to begin the Hegelian exertion of the concept with the first key question: what is innovation? In short, innovation can be defined as a new product, new process or new organizational structure that enhances the chance for success on the market. The many-sidedness of innovations, the (Finnish) national innovation structure and ecosystemic thinking have been discussed, amongst others, by Antti Hautamäki (2007).

Hautamäki, who used to work as a research director and innovation expert in the Finnish Innovation Fund Sitra, started working as a research professor (innovation) at the University of Jyväskylä in March 2009. He has presented and commented on innovations and innovative action from various standpoints. He has described the main concepts of innovation in the following manner:

Ideas, inventions and innovations are often distinguished from each other. An idea is a preliminary thought or a mental image of a new device or solution. An invention, on the other hand, already exists, but it is not applicable or commercial as such. An innovation is a novelty that is applicable in practice. Typically, innovations are commercialized products or services. The route from an idea to an innovation is often long and includes a number of different phases.⁴¹

When pondering on the deeper meaning of concepts, it is fruitful to look back in time and find out what classic thinkers have written and to see how they have argued on different aspects of the issue at hand. The historic causal connections of many concepts are often revealed through the *classics*. Hautamäki refers to the pioneer of economics and innovation research, Joseph Schumpeter, who has stated that innovations consists of bringing a new product to the market, implementing a new means of production, opening a new market, opening a new source of raw materials or semifinished goods, or creating a new industrial organization. The concept of innovation includes, according to current understanding, process innovations, production innovations, organizational innovations and social innovations.⁴²

It is justified to say that Schumpeter is the father of the so-called *evolutionary economics*. In fact, this area of economics is sometimes referred to as *neo-Schumpeterian economics* or *neoschumpeterianism*. It is a line of research that is

⁴¹ Hautamäki 2007, 110. Translation ours.

⁴² Ibid., 110–111.

especially interested in research on the *change in technology*. According to evolutionary economics it is *technology* that forms the dynamic core of the development of economies, economic growth, and our societies as a whole.

Technological change is generally thought to be born out of innovations. The research paradigm is formed primarily of the social and economic aspects that form the boundaries and trends of innovativeness and that draw out the future direction of various processes. The main principles are represented in such key words as *change dynamics, dominant design, learning processes, continuous competition* and *creative destruction*.

The “hard” Darwinian influences are apparent already in the name of evolutionary economics. Tarmo Lemola states that this line of research has borrowed concepts from the theory of evolution and created models of thought, which are applied in research on the birth and dissemination of technological innovations. Alongside the concept of evolution itself, these borrowed concepts include *variation, choice, and adaptation*. In addition, evolutionary economics underline the significance of history (hereditary factors in the theory of evolution), the cumulative nature of development and discontinuation (mutations), etc. However, sociobiological viewpoints are not promoted through evolutionary economics.⁴³

The main ideas of Darwin’s evolutionary biology are natural selection and the origin of species. Darwinian evolutionary biology and modern biological theories have created the starting point of the term *ecosystem*, which is widely used in economics and innovation research as well. Again, we should not forget the history. In fact, according to Hautamäki, the idea to view business environments as developing ecosystems is not new as such. Thorsten Veblen criticized the classic model of economic balance already in the late 19th century and emphasized the ability of institutions to adapt to ever-changing circumstances of the market.⁴⁴

According to Veblen and his followers, competition is a good starting point because it drives development further in a dynamic fashion. It is also worth noting that Schumpeter underlines the role of *businesses* where the creation of innovations and economic growth and development are concerned. When we track down the historic (scientific) origins of evolutionary economics, we notice the obvious influence of classic economists such as Adam Smith, Karl Marx and Alfred Marshall.

The following innovation models are inspired by the innovation category model of von Stamm (2003, 49). Her model divides innovations to incremental and radical

⁴³ Lemola 2000, 150.

⁴⁴ Hautamäki 2007, 128–129.

innovations and to existing market and new market innovations. To understand the new role of non-economic innovation we can add non-economical innovations to her model. In this reshaped innovation category model there 6 innovation categories A, B, C, D, E and F). In Figure 4 is presented conventional trends in markets and society. According to this approach innovation tend develop in the long run towards incremental and existing market system. These conventional trends are linked to the closed innovation model, not to the open innovation model. In Figure 4 I have added non-market boxes to von Stamm's (2003) conventional innovation category model.

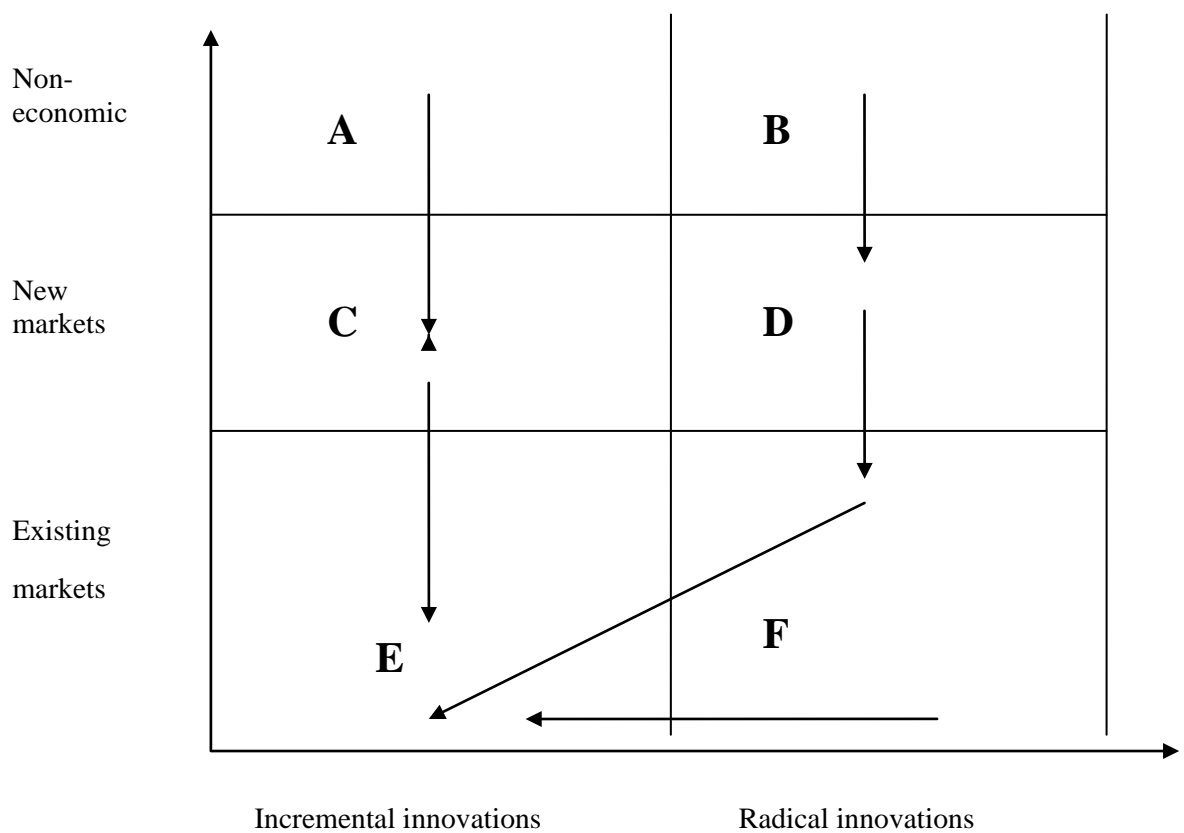


Figure 4. Innovation category model: Typical innovation processes.

In Figure 5 are presented non-conventional, countervailing trends in markets and society. According to this alternative nonconventional approach innovations can also developed in the long run towards new markets, radical innovation model and

towards non-economic systems. These non-conventional trends are linked to the open innovation model, not to the closed conventional innovation model where innovations tend to be incremental and placed in the established markets.

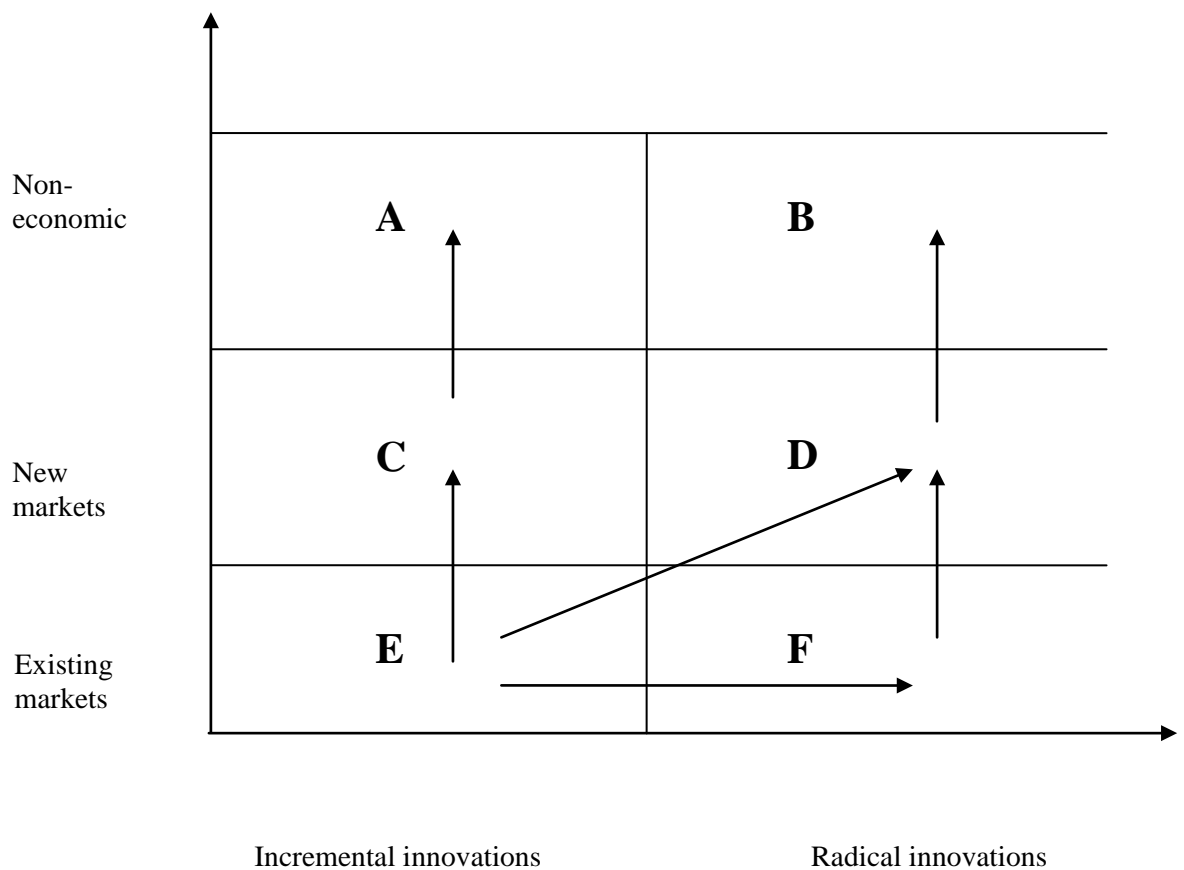


Figure 5. Innovation category model: countervailing open innovation processes.

9 Media of Innovations and Innovations of Media

The main goal of the science and technology policy in many countries is to develop the innovativeness and related processes towards a more sensitive, efficient and result-driven direction. This standpoint is listed as a goal in various instances regarding economic, science and technology policies, and it concerns the public sector, higher education and business life alike. The starting points of innovation politics can be summed up in the following manner:

Innovation politics is based on the view that technological advancement and innovations are the seeds of long-term economic growth. These, in turn, require the creation and dissemination of knowledge of areas that do not have a completely functioning marketplace. Businesses have no resources or motives to produce generally useful, non-profit knowledge. Basic research and education require governmental funding. If these were to be left for the responsibility of businesses, their spectrum would be rather limited and the emphasis would be on the special interests of the businesses. (Hautamäki 2007, 112)

The article of Hautamäki quoted above, “Suomen innovaatiopolitiikka verkottuneen tietotalouden aikakaudella” (The innovation politics of Finland in the era of networked knowledge economy) has been published in the book *Innovaatiomedia. Journalismi tulevaisuuden tekijänä* (Innovation Media. Journalism as a Driver of the Future, 2007). “Innovation media” and “innovation journalism” are good examples of new terminology that have been born due to the recent changes in the innovation economy, innovation processes and (digital) ecosystems.

It is wise to discuss this issue in little more detail. The new paradigm of *innovation journalism* has been under debate also in Finland – largely due to the impact of David Nordfors who currently works in Stanford. According to its (Finnish) Wikipedia definition, innovation journalism is a new journalistic genre or standpoint, which deals with innovations from a wider, more general level. Amongst other things, it deals with the direction science and technology are heading to as well as with industrial development processes and immaterial rights.⁴⁵

One might add that innovation journalism is often obviously *futures journalism*, where the more traditional fields of journalism (science, economy, technology, and politics) meet each other as a sort of a hybrid. Innovation journalism is a challenge for media, editorship, and the education of journalists because the complex world and the many-sided nature of innovation and innovativeness require many-sided and deep knowledge and competence: the ability to gather information from various and differing sources, to conduct deep analyses, trace complicated causal connections and to spread this information around in a clear and plausible manner to a potentially very heterogenic audience.

⁴⁵ <http://fi.wikipedia.org/wiki/Innovaatiojournalismi>

The above-mentioned book, *Innovation media*, includes detailed articles by Erkki Kauhanen (“Journalismi tulevaisuustyönä”, Journalism as Futures Work) and by Research Director Jari Kaivo-oja (“Tulevaisuudentutkimus, journalismi ja muuttuva mediakenttä”, Futures Studies, Journalism and the Changing Media Field]). Currently working as the Head of Communications in Metla, the Finnish Forest Research Institute, Kauhanen has done a lengthy career in journalism and is also experienced in the field of innovation journalism. He sums up the mission and goals of innovation journalism in the following manner:

In innovation journalism, media acknowledges its share of the responsibility for the economic development of the society. On one hand, this is a result of considerations related to media ethics, but on the other hand of the idea that media is not an external observer of an innovation system, but a natural part of it – whether it wants to be or not. The way media operates has a direct effect on how the system performs. Media can search for its effect willingly or cause an impact indirectly, with eyes closed. The latter option might sound intriguing if one does not want to address the question about the responsibility of journalism. Such an option would not free journalism from its responsibilities; it would merely hush the discussion thereof.⁴⁶

From the viewpoint of the current *innovation economy*, the interdependencies between the society, businesses, universities and media are of paramount importance where the national economy and ecosystems are concerned. In the Nordic countries, the main feature of the development of the innovation processes is the so-called *triple helix* model, i.e. the co-operation between the universities, the public sector and the private sector. However, we should remember that Silicon Valley has adopted a more market-oriented and the Asian countries a more centralized model even though the old principles of *command economy* have been thrown out of the window. Kauhanen states that

the job of businesses in the innovation economy is to create, commercialize and market innovations. The public sector creates structural and operational possibilities. In this organic “body”, media acts like the circulatory system. The flow of information and debate created by media acts as a societal touchpoint where a surprisingly large share of the information relevant to both businesses and the public sector is transmitted, and where a great share of related conversation is held. This is how media affects the bookkeeping of businesses and the national economy. In democracies, press is also the main forum of the debate between the elites and the larger audiences. In a true civil society, the voice of ordinary citizens is heard in the media.⁴⁷

⁴⁶ Kauhanen 2007, 29.

⁴⁷ Ibid., 29.

One could add that the Habermasian ideas of communicative action and of non-authoritarian communication are classic principles which are interestingly linked to the current debate on journalism and the civil society. Such themes have also been brought up in the conversation on social media, alternative channels of communication, Internet forums, web 2.0, etc.

How well can the “citizens’ voice” be heard (or can it be heard at all) in the midst of the current mediasphere characterized by media wars, contemporary huffing and puffing, and “reality”-TV, is its own interesting question. Critical media research has a great deal to comment. On the other hand, the rapid growth of social technologies and Web 2.0 applications in recent years has significantly democratized computer networks as well as the wider power structures. The effort required to speak one’s mind or to present one’s opinion has become reasonably smaller – or at least that is what we would like to think.

10 Key Concepts: Clusters, Innovation Systems, Ecosystems

Let us look at the past again. “Clusters” and “national innovation systems” are concepts that influenced researchers, experts and decision-makers widely already in the 1990s.

One of the main authorities of cluster theory has been Professor Michael Porter and his numerous publications. The world-renowned strategy guru sees that clusterization and national competitive advantages are closely bound together. He sees that the main question is to reach critical mass and about being able to concentrate on the relevant issues on the national level. Later interest has been shown towards regional innovation clusters as drivers of the national innovation system.

The development of *clusters* as well as of national and regional innovation systems has been emphasized especially in the Finnish science and technology policies. The Science and Technology Council of Finland, chaired by the Finnish Prime Minister, largely relies on the concept of innovation systems and related thinking. Furthermore, national innovation systems also played a major role in the TEP program of the OECD some years back.

On the other hand, the concept of national innovation systems has had its critics,

too. The opposition has feared and criticized the fact that the discussion on innovations and innovation systems leads almost naturally to the glorification of technical and engineering sciences at the expense of humanities and social sciences. In addition it is wise to note that science and the academic world are by nature international, and thus are not limited by the tight borders of nationality.

Let us look at the past once more. Alongside clusters, discussion has been recently active on *innovation systems*. Antti Hautamäki states that “[t]he concept of innovation system was born in the 1980s to describe the importance of innovativeness to national economies. The pioneer of the field, [Christopher] Freeman defined national innovation system to be a network of public and private institutions whose activities and interaction create, modify and spread out new technologies. This definition emphasizes the networking and interaction of the institutions, which form the dynamic structure of the system. On the other hand, this definition only considers technologies and does not discuss process, business model, or social innovations at all.”⁴⁸

Discussion on national innovation system creates various problems related to the concepts and their borders as well as justified criticism (cf. Nelson 1993). Much alike the terms “multimedia,” “information society” or “virtual reality,” “innovation system” can be redefined more widely or limitedly to suit current interests or the context at hand.

The more limited definition of innovation system consists of not much more than the institutions and actors of research and development activities. The wide definition requires that the connections between the innovation system and labor market issues, financial institutions, fiscal and trade politics, etc. are analysed. The limited approach may be too restricting and the wide approach might be just too wide to be useful in research that aims to influence the science or technology policies.⁴⁹

The newest addition to the line of key concepts in the discourse on innovation, technology and regional development is the term “innovation environment.” The viewpoint of research on innovation environments tends to be wider than in research on innovation systems. The build-up of an innovation environment is affected by regional history and culture, organization models, and behavioral models created over time. In other words, mental aspects are also important. Recent innovation research and related theorization is described by Hautamäki:

⁴⁸ Hautamäki 2007, 112–113. Translation ours.

⁴⁹ Lemola 2000, 168–169.

The most interesting new standpoints are the various network theories, Richard Florida's theory about the creative class and the *theory of innovation ecosystems that follows the model of biology*. These all emphasise gradual development that is based on earlier strengths. Whereas traditional innovation policies have a spirit of guidance and enabling (top down model), the new standpoints underline the importance of the activity and self-guidance on the bottom level (bottom up model). Good examples of the top down model are the focus points of R&D funding – which are, of course, understandable where resources are scarce.⁵⁰

Ecosystems?! It is advisable to discuss the semantic dimensions of such a biological metaphor. As we all know, continuous competition takes place between different species and between the individual animals of a single species (cf. the references to Darwin above). Changes in the environment are reflected in the food chain, the biological processes and the population.

In the same way, each actor and service of an innovation economy or digital ecosystem has to find its own “ecological category” in order to survive the struggle for existence that takes place on the market. Digimedia is often still looking for its “category,” as the questions to the status of digital TV, Internet phonecalls, VOD services or hybrid media remain unanswered in the wider whole known as the digital ecosystem. Only in afterthought will we be ready to assess and analyse the effect the current change and turbulence have had on the long-term structures of ecosystems.

The tension between the “free market” and the controlling and supporting functions of public structures, institutions and legislature, etc. are relevantly related to this issue. In the American framework these problems fall back on the classic political differences between the democrats and the republicans. In Europe, the sometimes heated debate has been conducted around such themes as welfare state, privatization, neo- and market liberalism, etc.

Just as clusters, ecosystemic thinking can be applied when taking a look at regional innovation processes or structures. Silicon Valley is often mentioned as an example of a successful, market-oriented, and future-oriented ecosystem or of a community that refines and enriches ideas towards potential innovations. The success of the region as the prominent technologic expertise center and as the R&D diamond of the world has been explained with favourable conditions, positive and entrepreneur-oriented atmosphere, and with the tradition of success. Professor Hautamäki refers to Homa Bahrami ja Stuart Evans,⁵¹ and sums up the views of innovation research about the success of northern California:

⁵⁰ Hautamäki 2007, 121–122. Translation and italics ours.

⁵¹ See Bahrami & Evans 2000.

The concept of the ecosystem of innovations has proven to be a fruitful tool to shape a general picture of the innovation activities of a region. It has been used to depict the dynamic business environment of the Silicon Valley. In the same vein as in nature, the growth and success of Silicon Valley can be [...] explained by the ever-shaping whole, which is built of differing, independent and interconnected entities that feed and support each other. [...] The ecosystem of the Silicon Valley is best described by five basic factors: universities and research institutes, venture capitalists, specialized business services, the global pool of talent and entrepreneurs, and the business-oriented culture.⁵²

Finally – *summa summarum*: It is important for the development of the innovation media and innovation journalism to understand the key notions and their semantic meaning. We can also see that innovation media are functioning as a natural part of economic clusters and innovation ecosystems. It is challenging but necessary to understand the functional logic of these environments and ecosystems.

Important issues related with operational environment and innovation activities have been discussed in this paper. In addition, a conceptual analysis was started and it should be continued focusing more specifically on “innovation journalism” and “innovation media.” It is also worth noticing that these notions have appeared into the public discussion simultaneously with the discussion and debate on the “creative class.” This is an interesting observation: innovation journalism and innovation media have been connected with the rise of the creative class.

⁵² Hautamäki 2007, 129–130.

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