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Małgorzata Niklewicz-Pijaczyńska*
University of Wrocław, Poland

From the Patent to the Concept of Free Revealing – Closed and Open Model of Industrial Property

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Abstract: *This article is based on literature studies, comparative analysis of two different models to stimulate innovative solutions and protect industrial property rights – particularly rights to inventions. For this purpose, the most important assumptions and the essence of traditional patent system based on institutional protection as well as concepts of free revealing (free access) and open innovation (open invention) were characterized. The paper also presents potential strengths and weaknesses of presented approaches – closed (traditional) and open inventiveness. The article gives value to the argument that, given real shortcomings, the most effective way to create and commercialize inventions would be one of a complementary nature, taking into account solutions offered by each of the presented approaches, changing current innovation policy. On the one hand, modern companies should not give up institutional protection of their developed technology solutions and carrying out R&D, on the other, they will be increasingly forced to resort*

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* Contact: mniklewicz@prawo.uni.wroc.pl, Uniwersytet Wrocławski, pl. Uniwersytecki 1, 50-137 Wrocław, Poland

to modern tools of stimulating innovations based on openness, direct market communication and flexible approach to innovation processes of products and services.

Introduction

A new approach to problems of economic development initiated by P. Romer and R. Lucas (Lucas, 1988; Romer, 1990) led to a verification of current views on the importance of various production factors for economic growth of countries and market success of companies. Major efforts have focused primarily on the most efficient development, acquisition and use of knowledge. This knowledge, which is the result of conscious and deliberate strategy, has become the most important factor, pushing the classical capital, labor and land to a supporting role. The new approach, however, has also created new problems. One of them is undoubtedly the problem of access to knowledge and, consequently, inventions and innovations. They are now the foundation of information society, the development of which is strongly associated with technological progress. In different institutional circumstances and turbulent external environment, innovative companies therefore faced the need to decide how, if at all, to protect their industrial property. Some of them, strongly tied to the classical patent system, decide to file an application at the office and get exclusivity (monopoly) on their developed invention. Traditional patent system generates nowadays so many problems that there appear more and more voices pointing out that it cannot keep up with the changing market and it is a kind of institutional museum. They say that strong protection of industrial property rights is a denial of creativity, and thus innovations, and that instead of stimulating – it suppresses. Some companies therefore focus more on maintaining secrecy within the organization, without resorting to formal legal protection. But some entities choose a different solution – to a varying extent they share their ideas with others, deciding to open and often choose spontaneous communication with users of products and services as well as with other companies. One such form is the concept of open innovation, implying sharing innovation with partners who then develop and commercialize them, expanding the company's market expansion scope. The second the is idea of free revealing, involving cooperation with users and completely free sharing of developed solutions and jointly created ideas. F. Gault and E. von Hippel point out that nowadays many innovators believe that the concept of free revealing makes it possible to obtain higher profits than classic patent protection guaranteed by the state (Gault, von Hippel, 2009). This happens, among others, by reducing the costs associated with creation of

research and development facilities, as well as creating cooperation networks. Companies deciding to implement any of these forms of open knowledge sharing, base their strategy on a number of important elements defined by E.S. Raymond and constituting neutralization of so-called Brooks' Law. These include, among others, openness to ideas coming from people situated outside of organization, ability to recognize when it is worth to create a product from scratch, and when to focus their efforts more on imitation, production flexibility, which means starting work if there is a particular issue, perseverance and consistency in its solving, cognitive curiosity and individually determined motivation, using users help – focus on group work, the ability to transfer project to others, alertness and responsiveness to market needs, spontaneity of action, the right to make mistakes, looking for the simplest solutions, errors verification with the help of users, as well as appreciation of each available information (Gajewski, 2011, pp. 36-37).

Referring to allocation made by A. Mattelart, it can therefore be regarded that a closed innovation model is based on information and an open one is based on communication. Information is a factor of destruction, because it consists of perceived facts, knowledge of which changes our beliefs, burst their knowledge and denies it, leads to a review, weakens the willingness to act, and ultimately separates people from one another (Mattelart, 2004, p. VI). However, communication is a socially constructive factor, it is a process of connecting people, creating a common content, building a culture that gives you a sense of collective strength, reinforcing identity (Mattelart, 2004). While the patent system individualizes by focusing on information and its protection, more open systems lead to socialization of innovation process.

Methodology of the research

The problem of insufficient innovations supply and low innovativeness level of both economies and organizations, is now one of the most important issues discussed in the international arena (e.g. in the new EU 2020) and in frameworks of national/regional innovation strategies. Knowledge and forming its embodiment – inventions and innovations, are in fact the most important determinant of both growth and economic development in line with guidelines of the endogenous growth theory. Therefore, on the basis of theory and practice different kinds of concepts, models and recommendations are formulated that may help to improve the efficiency of generating, development and commercialization of innovations.

One of proposed models is a model of open innovation, which through direct communication between users and unfettered spread of knowledge has impact on raising level of enterprises innovativeness.

Therefore, the subject to considerations contained in the study is the matter of efficiency resulting from concentration of innovative companies in the linear, nonlinear or mixed innovation model. Particular attention was paid to the concept of free revealing and open innovation. Thus, the object of research are innovative enterprises, consciously realizing one of discussed strategies.

The first of publication goals is to present two opposing attitudes towards protection of industrial property, in particular inventions, as well as strengths and weaknesses of each strategy implemented by a company. The second, complementary, objective is to answer the question, which of them seems to be more relevant to needs of modern economies, where one of the main problems is diffusion of knowledge stimulating innovation processes at macro and micro scale?

This objective will be accomplished primarily based on a critical analysis of sources, Polish and international literature on the subject. The paper includes references to original wording of presented models authors, including H. Chesbrough and E. Hippel. A comparative analysis of two opposing industrial property rights management models assumptions will also be carried out. For a more complete visualization of the problem a case study method will be used.

Conclusions from the study are intended to draw attention to the urgent need to revise not only current intellectual property management strategy of companies, but also institutional patent protection.

The paper gives value to argument that the most effective way to create and commercialize new solution is complementary consideration of closed and open inventiveness system in organization innovation strategy. On the one hand, it is impossible to slow down the transfer of knowledge, or completely control the flow of information. On the other hand, it is impossible and pointless to abandon totally the institutional system of patent protection.

The conclusions from the study shall be used to indicate directions of innovation strategies development so as to make the most efficient use of potential inventive activity of companies.

Traditional patent system

In a classical approach to patent system the foundation and its essence is exclusivity, obtained by entrepreneurs who decide to bear organizational effort, time, and above all funds, related to development of invention. This exclusivity is essentially limited to a temporary monopoly for profitable exploitation and professional in the subject to be protected in all areas of its business (used in business) and economic (licensing) operation. Patent monopoly has strictly specified scope, objective – to the person entitled to the patent, subjective – to the invention claimed in a patent documentation, temporary – a period of 20 years, and territorial – area covered by patent system, in which solution has been reported (Szczepanowska-Kozłowska, 1998, p. 11). This system of "Intellectual Property Rights" is based on the assumption that subjects, especially entrepreneurs, are willing to share the effects of their creativity only if the profits from commercialization of inventions at least compensate the costs incurred in connection with their development. These costs are mainly due to the need to create and enhance the creative potential of the organization (hiring creative staff and managerial staff, creating a cohesive culture based on effective motivation and incentives to open generate new ideas, to promote not only individualism but also teamwork skills). The total cost consists of expenses associated with conducting research and development, which are considered necessary for innovative companies. In the literature, it is emphasized that it is the effort connected with carrying and incurring costs of research and development, that is systematic, creative actions aimed at increasing the stock of knowledge, influence patent activity of companies. As a result of R&D work it comes to creating new scientific and technical knowledge, in turn, further increase of R&D investment intensifies increments of knowledge (e.g. in the form of inventions), and this leads to an increase in the number of patent applications and as a further consequence, increase in the number of granted protective rights in the form of patents. (Jasinski 2011, p. 43) Extensive studies on the correlation between expenditures on R&D and number of patents were carried out, among others, by Z. Griliches, who assumed that R&D expenditure is a specific measure of contribution to inventiveness and a patent is a profit from this activity. When a company modifies (increases or reduces) expenditure on R&D, parallel changes occur in relation to the number of patents received by them. Based on adopted variables Z. Griliches developed an econometric model of knowledge and production:

$$P = aK + v = aR + au + v,$$

where:

P – number of patents, K – unobservable variable expressing net economic gain of valuable knowledge, R – investment in research and development to invent, u – other sources of knowledge growth, v - random component, a – so called structural parameter of the model (Jasinski, 2011, p. 43).

However, since R&D is costly, the assumption of a closed system of innovation is "individuals and businesses are willing to invest in this business only if they expect to get specific, long-term, belonging only to them benefits associated with these investments. These profits could be significantly lower if imitators would have free access to the information on which a creator of innovations had bear expenses of their private pockets." (Niedbalska, 2009, p. 91) However, the patent system is an institution since the beginning struggling with specific barriers. Protection of intangible assets is neither easy nor fast. Traditionally, these include procedural redundancy, high cost of application, a complex maze of regulations different for different systems, insufficient knowledge of evaluators resulting, among others, in duplication of existing solutions. Also the validity period of a patent – 20 years – seems to be inadequate to the dizzying pace of modern knowledge economies. Furthermore, the institution of a patent does not relate to quantitative, but qualitative changes. Despite these reservations, in the long history of patent law, dating back to the nineteenth century, we find many concepts to justify its continuation. These include the theory of fair wages by A. Smith, the disclosure theory, the theory of natural law or the theory of incentives (Szczepanowska-Kozłowska, 2003, p. 59) Today, the institutional protection of industrial property rights is not only to compensate the costs incurred in connection with the invention and recoup its creator, but also to protect knowledge, and thus the economic good of the highest value. This knowledge by definition will hit the market (through published patent documents, or directly as a result of invention commercialization), but its use will lead to generation of added value – such as the ability to license and control the activities of competitors. Traditional patent system by institutional protection enables not only direct compensation for expenditures, but also long-term detachment of competitors in technological race. It is not a denial of the competition and does not serve its elimination. As I. Kirzner has emphasized, exclusive patent is sometimes "just noticing opportunities that missed other market participants, from ignorance, from abandonment, lack of funds, wrong risk assessment." (Kirzner, 2010, p. 101) Entrepreneur inventor is not a romantic visionary to commit resources in obtaining prop-

erty rights for invention, they must recognize the possibility of commercial use.

As a simplification, we can therefore assume that the classical patent system above all promotes innovation on the supply side. In this approach, inventions and innovations in general, are a result of entrepreneurs' creativity, rather than market impulses. Meeting the needs of the public is there the aim, but not the motivation (Niklewicz-Pijaczyńska, Wachowska, 2012, p. 69). What's more, entrepreneur "if necessary educates consumers and somehow creates desire for new objects or other objects in some respect different from those accustomed to consume." (Schumpeter, 1939, p. 84).

Open innovation and free revealing concepts

The free revealing concept is in some sense a consequence of the theory of "open innovation" created by H. Chesbrough, but it is also a broader idea. While the concept of free revealing is based primarily on the participation of users in generating innovation and making them available for free, in case of open innovation it is more about optimal management strategy for a collection of intellectual property rights owned by a company (Niedbalska, 2009, p. 91). In this arrangement, companies do not give up property rights belonging to them, but are open to licensing and sub-licensing to third parties. It may take a form of centrifugal and centripetal open innovation. The first one (outside – in open innovation) is a collaboration with external stakeholders to implement projects in excess of the company's potential. Second – called centrifugal open innovation (inside – out open innovation) is sharing of knowledge to others through contracts, alliances, new forms of cooperation such as outsourcing, which leads to the creation of partnerships for improvement, development and commercialization. Thus, technologies, goods and services produced by others are part of the offer, which the company directs to customers and markets, without incurring long-term burden of financing, development and improvement. Inside - out open innovation is thus a placement of resources or projects outside their own walls. This allows the company not only to save a lot of time and money that should be invested in these projects, but can also establish new relationships with suppliers and partners, promote innovation ecosystems and collect big profits from licensing." (Chesbrough, Garman, 2013).

The concept of open innovation is associated with Linux, which was put by its creator on one of university servers encouraging developers and users to joint development. In the beginning, the work was carried out in a small

group, but gradually the project involved more companies – IBM, HP and Intel.

The model concept of free revealing, translated as free access, is based on a slightly different assumption related to free and unlimited sharing of knowledge. This raises the concept of so-called social welfare. Information, knowledge generated with funds representing private ownership of the entity is to be made available free of charge to all interested, becoming a public good (Niedbalska, 2009, p. 92). In principle, such an approach is beneficial for both parties of transaction, for entrepreneurs and users, as on the one hand it does not reduce innovativeness of the economy, on the other it is much more profitable for the company itself, as well as the general public. It neutralizes not only the costs associated with pending patent applications, the costs associated with the purchase of patents, fees and the need to enter license agreements – which drives down price of goods and eliminates the risk of patent monopoly emergence on the market, but also the cost of research and development (Niedbalska, 2009, p. 91).

Free revealing contributing to reduction in overall level of economic costs of a project (both transaction costs and production) significantly affect the efficiency of investments (Iwanek, Wilkin, 1998).

A necessary condition for the occurrence of mutual interaction is a sufficient level and commonness (preferably free or at least relatively cheap access to appropriate tools), which enable sharing of the information possessed by individual users. Only then will the information be used effectively, allowing to reduce workload, reduce the amount of stored products, save energy and raw materials, as well as reduce time, space and money essential for production (Toffler, Toffler, 2006, p. 68).

The concept of free revealing, therefore, is the essence of provoked innovation and stimulated by demand. In this perspective, innovation is a clear answer to explicitly and directly formulated market needs. An example of a product obtained in response to signals from the demand side is an isotonic drink Gatorade, created as a result of multifaceted cooperation between companies and people. The formula developed by University of Florida researchers on request of the university football team coach was forwarded to the company Stokely – Van Camp. Thus, the Gatorade revenue generated significant capital for the university, enabling research projects that have so far been only in initial phase (Kays, Phillips-Han, 2003).

At the same time, moving towards smart, 'flexible technology' and direct collaboration of supply and demand, promotes diversity and individual user preferences (Toffler, Toffler, 2006, p. 69). Parties of that specific dialogue communicate with each other, confront expectations and opportunities, and establish a consensus between what is expected and what is possible. This

is an example of management rationality in the most efficient dimension. It is here that the innovation process is a sequence of incidents undertaken as a result of market observations, on the basis of which innovation implementation enables the entrepreneur to gain competitive advantage (Drucker, 1895). Wherein E. von Hippel identified three types of potential players in the dialogue. Innovators – users who benefit from using solutions developed by them, innovators – producers who benefit from the sale of their self-concept and so-called lead users (Niedbalska, 2009, p. 92). A particularly important element in this exchange is the last one – a specific group of consumers or particularly creative users who are ahead of trends prevailing in the market, creating a new, unknown needs (Niedbalska, 2009, p. 92). In such an open system of cooperation two elements count, the knowledge of individuals accumulated in one place and specific informal rules of their mutual cooperation (Gajewski, 2009, p. 38). In this perspective, the idea of free revealing touches upon the concept of distributed knowledge by F. von Hayek, and detailed knowledge as a set of information distributed among different individuals. Each of them has only a part of the general knowledge – incomplete and frequently contradictory. Because the individual does not have full knowledge, realization of their objectives is only possible through other people who have complementary information. The free revealing approach not only enables efficient collection of distributed knowledge in a set, order to enable generation of novel solutions, as well as voluntary and spontaneous exploitation from human minds grouped around a common idea (thus, there is a network effect used by companies such as Google and Microsoft).

These two factors reinforced by specific characteristics of knowledge – practical inexhaustibility and transferability, make it possible to provoke innovative products and services in almost unlimited way. This distinguishes it from traditional factors of production and allows simultaneous use. Knowledge, as opposed to a furnace or an assembly line can be used by two different companies at the same time. And they can use it in order to generate further knowledge (Toffler, Toffler, 2006, p. 68). This means, among others, that two companies with similar potential and experience, at the same time, thanks to skillful communicating with users – which are co-authors and recipients but also creators – are able to generate not only completely different products, but also to stimulate appearance of yet another innovative solution. In this respect, the concept of free revealing has a real advantage over the traditional system of knowledge commercialization under the banner of patent protection. Inventions provoke other solutions also there, but face specific constraints. Firstly, users must be able to access proprietary inventions. Secondly, the time necessary to generate a second-

ary inventions is often inadequate to the dynamic changes in the market. Time has become a variable that makes businesses more and more open to working directly with users. A gradual, time-consuming research and development lying at the heart of traditional engineering is replaced by so-called concurrent engineering. Money moves at the speed of light. Information must move faster. This acceleration approaches more and more companies of a third wave (Toffler, Toffler, 2006, p. 73). Such problems do not appear in free revealing strategy, and the process of knowledge sharing is extremely democratic and pro-proliferation through the so-called "network effect". It is the best move for these innovative companies that are just entering the market and build their identity and brand. But not only that, according to a study by Rensselaer Polytechnic Institute. Large, existing companies, despite declarations and actual involvement in innovative processes, also cannot cope with proper institutional, financial organizing or in terms of effective human capital management (Colarelli O'Connor et al., 2010) In case of free revealing strategy, the entire innovation creation process could be simplified and, consequently, significantly accelerated.

Conclusions

Each of the presented approaches to protection of industrial property has its supporters and opponents. Each also has its own strengths and weaknesses. Standing alongside the mainstream of economics, those advocating open and free dissemination of knowledge argue that today's market added a pair of brand new points to the already long list of traditional patent system weakness, among others the problem of overlapping patents and the creation of so-called patent thickets. The first is reporting a number of patents for the same product, the others for distributing the original patent, which enables processing of applications, even in the case of partial rejection of the core or the main application. Another problem is the actions of "patent trolls". It involves deliberate use of inconsistencies between different pieces of the system in order to register or otherwise obtain non-proprietary solutions and get financial gain. Thus, it comes here to an abuse of patent system basic functions – to stimulate innovation and appropriate compensation for the creator of solution. And here comes the most important problem associated with the flow of and creating of new knowledge. Is it possible and necessary in the modern global economy to control all sources, distribution channels and the ways to use often spontaneously emerging knowledge? This question raises the issue of industrial property rights infringement, among others by third countries. This type of illegal activity

does not have much in common with the strategy of imitation accepted by the market. First convergence of legislation for industrial property protection, second procedures of accountability for violations, as of today it seems to be an idea which is impossible to complete, as indicated by at least tedious work on the establishment of the Community Patent. Furthermore, there is a contested correlation between the number of patents and innovation capacity. Although R&D activity has an impact on the number of patents, and consequently the level of innovation, there is an optimal spending limit beyond which these works make a loss instead of profits. Such an example of a spending measure on R&D work can be at least ROI (Gajewski, 2009, p. 30).

Adversaries of the open innovation system, which puts on a pedestal the traditional system of patent exclusivity, do not negate the significance of above allegations, however, point out that inventive openness is not without its drawbacks. Doubts are raised by the question whether in the technological race based on direct communication and business cooperation with users, and at the same time deprived of institutional protection, a truly radical breakthrough in Schumpeter meaning of innovation will appear? Will they be only minor changes, imitations and improvements that, in fact, represent only a substitute for genuine inventiveness? Unfortunately, everything points to the fact that open innovation relates more to the problems and niche markets neglected by entrepreneurs where heavy competition mechanisms do not operate.

Doubts may be also raised by the question whether industrial property is eligible under the concept of public good. In the case of classical social goods, there is the assumption that we all finance them, and consequently we can use them. In the case of industrial property, it looks that we are using someone else's fruits of creativity, however, it may turn out that actual weight of financial, organizational burden and time associated with commercialization of innovation, in fact, will be passed to the entrepreneur. So the question is whether companies are adequately prepared for it.

Moreover, it seems that the concept of free revealing does not work in every industry. Admittedly this may be the optimal solution for the IT sector but not where preparation of innovation requires a strong R&D resources, for example in the pharmaceutical industry. The pharmaceutical industry has a strong commitment to closed innovation system, which is not a baseless strategy. Admittedly, according to DeMonaco research, most of innovative drugs were created with the participation of practitioners through publications and direct exchange of views, but most alliances and other forms of cooperation, after an initial period of cost cutting, paradoxically

cally led to their growth and efficiency of releasing new drugs to the market resemble the equation $1 + 1 = 1$ (DeMonaco, 2005).

In addition to free revealing, ideas are formulated which are, by definition, fighting with classic bureaucratization of the patent system, in fact, constitute its reproduction. For example, F. Gault and E. von Hippel put forward proposals for changes in pro-innovation policy through introduction of tax incentives similar to the deductions applicable to the R&D, for those entities that will free of charge pass developed solutions to others. The basis for such a reduction would be analogous to the patent application documentation – including acknowledgment of novelty requirement by the Patent Office (Niedbalska, 2010, p. 93). In a word, waiving the protection of property rights, while trying to secure a minimum gratification from their own creativity, entities will be forced to go through the process of institutional, bureaucratic verification.

On the one hand, there is a question if you can slow down the flow of knowledge, control the flow of information. On the other hand, is it possible to completely abandon the patent system? It seems that the best chance in today's market belongs to the companies that do not reject closed system of innovation completely, and include new features in their strategy. They are the result of the specific truism formulated by H. Chesbrough – the company cannot hire all the best specialists. Therefore, an equally important factor are external research and development, and the ability to use other people's solutions to build effective business model – based on a combination of internal and external organization capacity (Chesbrough, 2003). However, regardless of adopted strategy to protect industrial property, there is no doubt that a real, long-term success can be achieved by companies who are ready for change – both those functioning in the framework of the traditional patent system and those geared to share free of charge, and form a kind of networking. As the market is constantly changing, the position of a company seems to be less important than its flexibility and ability to maneuver (Toffler, Toffler, 2006, p 72).

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