Joanna Rogozińska-Mitrut

Management by the Enterprise Intangible Assets

Sofia • 2019

Prof. Marin Drinov Publishing House of Bulgarian Academy of Sciences

This monograph should be useful to public administration specialists, to a variety of constituencies who are interested in the interrelationships between human resources management and IT, including managers who treat their personnel as a key factor for organizational success, leaders wishing to develop the human side of their organizations, IT experts, human resources managers, researchers, consultants, and practitioners. Each audience may have different levels of interest in the theoretical concepts, practical experiences, and empirical data presented in this monograph. As we are exploring an evolving discipline, we assume that any of these readers will begin, but not complete, an exploration of the e-HRM new world.

ISBN978-619-245-005-2

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Introduction

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Intangible assets are non-physical assets (such as franchises, trademarks, patents, copyrights, and goodwill) that grant the potential for certain rights and privileges as well as the possibility for economic benefits to the owner. The economic benefits may be fruitful or fleeting, depending on the nature of the intangible asset and the company exploiting it. Unlike physical or tangible assets, which you can see and touch, intangible assets cannot be physically distinguished. On the other hand, similar to tangible assets, in the appropriate circumstances an intangible asset can be exchanged, purchased, or licensed. For some companies intangible assets may have such a bearing on the business' value that shareholders are willing to go great lengths and expend funds to define their intangible assets, monitor and manage them, and protect them from infringement and damage. Nonetheless, an intangible asset's influence on business value may be simply ephemeral, subject to the gyrations of the stock market, consumer sentiment, and unrelenting competition.

The importance of intellectual property rights to shareholders is illustrated in the case of W. Earl Bennett, et al. vs. The Walt Disney Company, et al., involving the Winnie the Pooh litigation. A class action lawsuit has been filed on behalf of purchasers of securities of the Walt Disney Company between 1997 and 2002. The complaint in this case alleges that Disney and certain of its officers and directors violated the Securities Exchange Act of 1934 by failing to disclose to the investing public the existence, details, and potential effects of a pending lawsuit over merchandising rights concerning "Winnie the Pooh". The pending lawsuit alleges that Disney miscalculated royalties due from the sale of Winnie the Pooh dolls, books and other merchandise, and that millions of dollars of additional royalties are due for Winnie the Pooh videos, DVDs, computer software and other electronic products. If successful, the pending lawsuit could force Disney to pay hundreds of millions of dollars in damages, or even possibly affect Disney's merchandising agreement for Winnie the Pooh products. This could result in a substantial potential loss of revenues and profits each year. This case and the related lawsuits demonstrate how intellectual property litigation can involve significant monetary exposure. By contrast, in some cases, the value of an intellectual property asset may dwindle to zero based on competition, market forces, and consumer preference.

Intellectual property is simply a subset of intangible assets. Certain "new economy" companies, which may be defined by the nature of their intellectual property, are now competing in a knowledge-based economy. While old economy

companies competed under the armor of their bricks and mortar, the new economy companies that are dependent on their intangible assets contend for market share with adaptation and innovation. This article will describe the various types of intangible assets and intellectual property, the various approaches and methods to valuing them, and what situations may require the need for a valuation. Given the limited scope of this article, only a brief overview of intangible assets and intellectual property follows.

This monograph should be useful to a variety of constituencies who are interested in the interrelationships between human resources management and IT, including managers who treat their personnel as a key factor for organizational success, leaders wishing to develop the human side of their organizations, IT experts, human resources managers, researchers, consultants, and practitioners. Each audience may have different levels of interest in the theoretical concepts, practical experiences, and empirical data presented in this monograph.

Chapter 1. Management of the Intellectual Property of the Company

1.1. What is Intellectual Property & Intangible Assets

Intangible assets are non-physical assets (such as franchises, trademarks, patents, copyrights, and goodwill) that grant the potential for certain rights and privileges as well as the possibility for economic benefits to the owner. The economic benefits may be fruitful or fleeting, depending on the nature of the intangible asset and the company exploiting it. Unlike physical or tangible assets, which you can see and touch, intangible assets cannot be physically distinguished. On the other hand, similar to tangible assets, in the appropriate circumstances an intangible asset can be exchanged, purchased, or licensed. For some companies intangible assets may have such a bearing on the business' value that shareholders are willing to go great lengths and expend funds to define their intangible assets, monitor and manage them, and protect them from infringement and damage. Nonetheless, an intangible asset's influence on business value may be simply ephemeral, subject to the gyrations of the stock market, consumer sentiment, and unrelenting competition.

The importance of intellectual property rights to shareholders is illustrated in the case of the Walt Disney Company, involving the Winnie the Pooh litigation. A class action lawsuit has been filed on behalf of purchasers of securities of the Walt Disney Company between 1997 and 2002. The complaint in this case alleges that Disney and certain of its officers and directors violated the Securities Exchange Act of 1934 by failing to disclose to the investing public the existence, details, and potential effects of a pending lawsuit over merchandising rights concerning "Winnie the Pooh". The pending lawsuit alleges that Disney miscalculated royalties due from the sale of Winnie the Pooh dolls, books and other merchandise, and that millions of dollars of additional royalties are due for Winnie the Pooh videos, DVDs, computer software and other electronic products. If successful, the pending lawsuit could force Disney to pay hundreds of millions of dollars in damages, or even possibly affect Disney's merchandising agreement for Winnie the Pooh products. This could result in a substantial potential loss of revenues and profits each year. This case and the related lawsuits demonstrate how intellectual property litigation can involve significant monetary exposure. By contrast, in some cases, the value of an intellectual property asset may dwindle to zero based on competition, market forces, and consumer preference[1].

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[1] F. Vickery, (2019), *Intellectual Property & Intangible Assets*. http://sphvalue.com/news-resources/ articles-publications/intellectual-property-intangible-assets.

and what situations may require the need for a valuation. Given the limited scope of this article, only a brief overview of intangible assets and intellectual property follows.

Identifying Intangible Assets and Intellectual Property. To qualify as an intangible asset, the owner should be able to specifically identify and describe the asset, and it should be subject to legal protection. Moreover, one should be able to privately own the asset and legally transfer or sell it to another party. The asset should also have come into existence at an identifiable time or as the result of an identifiable event, and should be subject to destruction or termination at an identifiable time or an identifiable event.

For an intangible asset to have quantifiable value from an appraisal perspective, it should possess certain economic attributes or characteristics in addition to those that indicate legal existence. In particular, the asset should generate some measurable amount of economic benefit to its owner. Also, it should potentially enhance the value of the other assets with which it is associated. The defining characteristics and economic benefits of an intangible asset will manifest in a business' day-to-day operations. The following list demonstrates examples of intangible assets some businesses may possess[2]:

- trademarks, trade names, brand names, logos,
- process patents, product patents, technical know-how,
- copyrights, blueprints, trade secrets,
- computer software and automated databases,
- customer lists, customer contracts, open purchase orders,
- license and franchise agreements,
- trained and assembled workforce, employment agreements,
- leasehold interests, mineral rights, air and water rights,
- going concern goodwill, professional practice goodwill.

Amongst the above examples of intangible assets, there are five general classifications of intellectual property, including:

- trademarks,
- copyrights,
- patents,
- know-how,
- trade secrets.

Intellectual property differs from other intangible assets in that it is the result of conscious creative activity. Moreover, the deliberate inventive activities can be attributed to the efforts of specific people.

Valuation of intellectual property falls into three general approaches to value:

- income approach,
- market approach,
- cost approach.

[2] F. Vickery, (2019), *Intellectual Property & Intangible Assets*. http://sphvalue.com/news-resources/ articles-publications/intellectual-property-intangible-assets.

Income Approach. The Income Approach focuses on the future benefits that can be realized from a particular asset. In essence, the appraiser determines the potential future benefits from the asset as well as the inherent risks of realizing the benefits.

Methods that value intellectual property under the income approach may by focus on:

- the greater level of income realized by the owner of the intellectual property compared to not owning the property (leading to higher profitability),
- the lower levels of costs realized by the owner of the intellectual property compared to not owning the property (also leading to higher profitability),
- «relief from royalty» methods, which are based on a hypothetical royalty payment that the owner of the intellectual property would be willing to pay or otherwise would have to pay to a third party to exploit the rights and benefits of the intellectual property. The royalty represents the rental charge that would be paid to the licensor if this hypothetical arrangement were in place.

In any of the above circumstances the value of the business is incrementally greater as a result of the business' ability to successfully exploit the intellectual property and realize the economic benefits[3].

Market Approach. The market approach focuses on actual arm's length transactions of similar intellectual property assets between unrelated parties. The market approach process includes:

- researching the appropriate market for information on transactions and (or) license arrangements of comparable intellectual properties,
- analysis of the market data, facts, and circumstances of the comparable transactions.

Cost Approach. The two common types of cost include "reproduction cost" and "replacement cost." Reproduction cost is the total cost, at current prices, to develop an exact duplicate or replica of the subject intellectual property. This measures the amount of money that would need to be spent to develop the intellectual property in exactly the same way and to achieve the same final state as it currently exists.

Replacement cost, on the other hand, contemplates the cost to recreate the utility of the subject intellectual property, but in a form or appearance that may be different. This concerns the ability of the replacement property to perform its designed task, while, from an economic standpoint, having the ability to provide an equivalent amount of satisfaction. The replacement cost of an intellectual property is the total cost to create, at current prices, an asset having equal utility the intellectual property subject to appraisal. However, the replacement intellectual property would be created with modern methods and developed according to current standards.

Simplified Example Using Three Approaches.

Income Approach. The subject patented technology allows the business to

[3] F. Vickery, (2019), *Intellectual Property & Intangible Assets*. http://sphvalue.com/news-resources/ articles-publications/intellectual-property-intangible-assets.

generate $1 million in greater profits every year compared to not owning the patent. The added profitability adds $4.2 million in value to the Business.

Market Approach. Comparable patent sales were found related to the industry in which the subject business operated. The comparable transactions yielded value indications ranging from $3.5 to $6.2 million, after making adjustments for specific differences between the actual patents sold and the subject patent. All sales were arms-length between unrelated parties[4].

Cost Approach. The cost of developing the patent (including employee labor hours, testing costs, design costs, etc.) would range from between $2.1 and $2.8 million. A reconciliation of value from the three approaches shows that the benefits of owning and exploiting the patented technology were feasible and realizable. Therefore, more weight may be placed on the Income and Market Approaches, resulting in a value of approximately $4.5 million.

Uses of Intellectual Property Valuations. For those companies that are increasingly dependent on their intellectual property assets for a competitive edge, valuations of intellectual property have been and will be needed for a variety of purposes, including:

– identifying assets that enhance value or need protection,
– evaluating assets of a potential merger or acquisition candidate,
– purchase price allocation after an acquisition,
– making informed financial decisions protection, maintenance, and commercialization,
– evaluating potential for research & development projects,
– supporting loan collateral analysis,
– litigation disputes and damage claims.

The resulting valuation of a business' existing or prospective intellectual property may be the determining factor in whether an acquisition goes forward or a potential research and development project continues to receive funding. Moreover, as certain businesses experience intellectual property gaining a greater proportion of their value, the quality and precision of valuations will be of increasing importance to shareholders and business owners[5].

Intellectual capital is an integral part of the new economy and the most important component that identifies it to the greatest extent. At a certain stage of technological development, it turns out to be so intense that it allows us to talk about the fundamental difference of the new economy from the economy of the industrial industry, which is based on natural resources and labor of the so-called industrial-production personnel.

The formation of the meaning of the term "intellectual capital" in economic theory is closely linked with the awareness of the scientists of the peculiarities and specifics of intangible assets as one of the factors of economic growth. In the process

[4] Approach Shoes Market Insights, (2019), *Global and Chinese Analysis and Forecast to 2024* // https://www.bigmarketresearch.com/approach-shoes-market-insights-2019-global-and-chinese-analysis-and-forecast-to-2024-market.

[5] F. Vickery, (2019), *Intellectual Property & Intangible Assets*. http://sphvalue.com/news-resources/ articles-publications/intellectual-property-intangible-assets.

of studying the impact of scientific and technological progress on the development of production, economists offered different interpretations within the framework of various theories and concepts. At the same time, the main attention of researchers was aimed at determining the role of "intangible" assets as a source of economic growth in the structure of economic relations and the functioning of organizations. Under the organization here and on the floor, understood at the micro level, any entity of economic activity, regardless of the form of ownership and type of activity, and at the macro level, the set of relevant entities at the level of regions, countries, individual states or intergovernmental associations.

In their research, scientists used the concepts of "information", "knowledge", "intellectual property", "intangible assets", "intellectual assets", "intellectual resources", "human capital," and, ultimately, to determine the category of intangible assets. , "Intellectual capital" (see Table 1.1.1). As can be seen from the table below, the opinions of scientists are concentrated on one research object, but they do not give a clear systemic notion about it.

When comparing the signs of tangible and intangible resources, one can conclude that both the first and the second can be introduced into the authorized capital, be objects of operations of sale, lease, etc. They are involved in the formation of the value of the final product, the total value of the assets of the organization, which has a significant impact on the circulation of financial flows, including tax deductions (see Table 1.1.1).

Table 1.1.1. Characteristics of material and intangible resources

Indication	Material resources	Intangible resources
Openness	Simultaneous use is possible only by one participant	Ability to use different participants at the same time
Amortization	They worn out both physically and morally	Worn out as a rule morally
Value	It’s easy to calculate	It is difficult to calculate
Ownership rights	Transparent and clear	Limited and non-specific
Application of the provisions of property rights	Relatively easy	Relatively hard

Source: compiled by the author on the basis of materials (Vickery F., 2019).

The main difference between non-material resources and material resources is the lack of a natural-material form, and as a result, the right to use such assets is transferred on the basis of a special permit (license agreement), while simultaneously retaining all ownership rights of the owner. From the point of view of managing financial flows, it is difficult to determine the cost indices of intangible resources.

The important thing is ownership. An organization has the right to own intellectual property that it owns and does not own the intellectual property that is their source. So, the organization owns the ownership of the business processes that its employees have developed, but it does not include the knowledge of these

employees that they can take with them when deciding to leave the organization. Thus, intellectual property is a formalized (visible) part of intellectual capital.

The notion of intellectual property – belongs to the legal category and is used to consolidate the rights to the results of intellectual activity. Objects of intellectual property, as part of intellectual capital, are a materially expressed result of mental labor, which is protected by law, established norms and official documents (patents, licenses) and gives the author an exclusive right to it.

Intellectual property is a key strategic resource. This explains the capitalization of intellectual property, which is being actively pursued in recent times. Every day, this multifunctional tool is increasingly used to address a fairly wide range of economic tasks of organizations of different forms of ownership and activities, in order to obtain significant competitive advantages and tangible financial results.

The results of mental work of individuals and appropriately organized human communities (groups, divisions, laboratories, teams) are transformed into intellectual products. Due to the fact that the results of work have always been assigned in the past, are assigned today and will be assigned to future entities that for various reasons claim it, the moment of assignment automatically transforms intellectual products into intellectual property.

The Convention, approved in Stockholm on July 14, 1967, states that intellectual property includes rights relating to literary, artistic and scientific works, theatrical productions, phonograms, radio and television broadcasting, inventions in all areas of human activity, industrial designs, trade marks and trademarks, protection against unfair competition. Industrial property is a part of intellectual property and relates to the scientific and technical activities of man[6].

Intellectual assets are objects whose protection can be secured by means of patent and copyright, as well as legal means of protection of commercial secrets, production secrets (know-how). The structured appearance of these objects is presented in the table 1.1.2.

According to N. Starkov and A. Kostetskogo, intellectual assets are proposed to understand the totality of information factors of the functioning of an economic entity that are created and used both within the organization and in the external environment in order to form unique competitive advantages[7]. The authors suggest the following classification of the intellectual property of the organization (see Table 1.1.3).

However, along with the open, there is also a hidden part of the intellectual capital, represented by the knowledge, skills and abilities of the employees of the organization. Therefore, one of the most significant differences between the management of intellectual capital and intellectual assets is, first of all, the awareness that the first process covers the entire spectrum of types of intellectual resources that are at the disposal of the organization, including and those that are not recorded

[6] Convention Establishing the World Intellectual Property Organization (*Signed at Stockholm on July 14, 1967 and as amended on September 28, 1979*). sphvalue.com/news-resources/articles-publications/intellectual-property-intangible-assets (15.03.2019).

[7] N. Starkova, A. Kostetsky, (2012), *Intellectual assets of the company: identification and management* // http://intel-assets.h1.ru/articles/article09.htm.

verbally and not brought into the system.

The chairman of the consulting firm The Technology Broker E Broking used the term «intellectual capital» to describe intangible assets: «We identified four categories of imperceptible assets: human resources, intellectual property rights, infrastructure and market assets, called the generic term «intellectual capital»[8].

Table 1.1.2. Structure of intellectual property objects

Objects of industrial property	Objects of copyright	Know-how (secrets)
- Patents for inventions, - Certificates for utility models, - Patents for industrial designs, - Trademark certificates (service marks), - Brand names (certificates of registration of a legal entity), - Certificates of the right to use the appellation of origin.	- Scientific publications, including dissertations, monographs, articles, reports on research and design work, - Literary, dramatic, musical and dramatic, scenario achievements, - Choreographic achievements and pantomime, - Musical achievements with and without text, - Audiovisual achievements, achievements of painting, sculptures, graphic arts, etc. works of fine art., - Achievements of art., - Achievements of architecture, urban planning and garden art., - Photographic achievements and achievements obtained in ways similar to photography, - Geographic, geological and other maps, plans, sketches, topographies, - Programs for PC, databases, - Topologies of integrated circuits, - Other achievements.	- Commercial, - Technological, - technical, - Financial, - Organizational - Medical, - Biotechnology, - Other.

Source: compiled by the author on the basis of materials (Vickery F., 2019).

In accordance with the definition of Brooking, the Russian scientist B. Milner allocates such components of intellectual capital[9]:

- market assets,
- intellectual property as an asset,
- human capital,
- infrastructure capital.

Marketable are intangible assets related to market operations, for example, brand names, customer loyalty to the firm's brand, order portfolio, distribution channels, market contracts and agreements (licensing, franchising, etc.).

The value of market assets is that they provide the company with a competitive edge in the external environment. The presence of a brand name indicates the originality of goods and services. Purchasing power provides constant sales. Spent

[8] F. Vickery, (2019), *Intellectual Property & Intangible Assets*. http://sphvalue.com/news-resources/ articles-publications/intellectual-property-intangible-assets.

[9] B.Z. Milner, Z.P. Rumyantseva, V.G. Smirnova, A.V. Blinnikova, (2006), *Management of Knowledge in Corporations: Study Guide* / Ed. Dr. Econ. sciences, prof. B.Z. Milnera. M .: Delo, 2006. 304 p.

distribution channels guarantee the servicing of all potential customers and maximize profits from the sale of goods and services. Favorable contract terms allow you to use services such as advertising or merchant services on advantageous and guaranteed terms, which in general will give the organization specific advantages over competitors.

Table 1.1.3. Classification of intellectual property of an organization

Signs of classification	Types of Intellectual Property
1. The medium and source of education	1.1. Internal (technology, production know-how, organizational culture of the enterprise) 1.2. External (image, brand reputation, influence on distribution channels)
2. In the field of use	2.1. For internal use 2.2. To accumulate in the middle of the organization 2.3. For sale
3. Frequency of use	3.1. One-time 3.2. Reusable
4. By the method of creation	4.1. Direct 4.2. Indirect
5. By the potential	5.1. Radical (basic) 5.2. Combinatorial (used in various combinations) 5.3. Complementary
6. During the life cycle of a product (service)	6.1. Assets used at the stage of R & D, technical training, implementation 6.2. Assets used in the production stage 6.3. Assets used in the implementation phase 6.4. Assets used at the stage of service
7. In the form	7.1. Exploitable (subject to formalization) 7.2. Implicit (non-formalized)

Source: compiled by the author on the basis of materials (Vickery F., 2019).

Property acquired as a result of intellectual activity and protected by law is considered intellectual property. Intellectual property as an asset includes patents, copyrights, trademarks of goods and services, know-how, trade secrets, etc. These assets are an important part of the success of any organization that is engaged in the development of innovative or technically sophisticated products. And in the field of services, where knowledge and experience of the personnel of the firm play a special role, they are the main competitive factor. Intellectual property management is gaining increasing importance in line with the growth of services.

Human capital is a collection of collective knowledge of the employees of the organization: their creative abilities, ability to solve production tasks, leadership qualities, entrepreneurial and managerial skills. It also includes psychometric data and information about the behavior of individuals in different situations, such as teamwork or stress situations. Human capital consists of human qualities that are different for each employee, and only if they are detected and skillfully used, it becomes a real advantage for the organization.

Infrastructure capital is the technology, methods and processes that make the enterprise at all possible, such as corporate culture, risk assessment methods, methods of managing sales personnel, financial structure, market data bases in general and individual buyers, communication systems such as e-mail and teleconferencing. Infrastructure capital forms the environment in which employees work and communicate with each other. Classification of intellectual capital by E. Broking[10] is given in Table 1.1.4.

Table 1.1.4. The intellectual capital of the organization

Marketplace assets	Intellectual property	Human capital	Infrastructure capital
- the brand of service, - brand of goods, - corporate brand, - consumer affiliation with the trade mark, - corporate name, - portfolio of orders, - distribution mechanisms, - business cooperation, - franchise agreements, - license agreements.	- Patent, - Copyright, - Software, - the right to design, - production secrets, - know-how, - Trademarks, - service marks.	- Education, - professional qualification, - work-related knowledge, - work-related skills, - infrastructure assets.	- corporate culture, - management processes, - Information Technology, - network communication systems, - relations with the financial circles, - required standards.

Source: compiled by the author on the basis of materials (Broking E., 2001), and (Edvinsson L., Malone M., 1997).

The author of one of the most widespread approaches to the definition of the term "intellectual capital" is L. Edvinsson, which divides it into three components: 1) human capital; 2) organizational capital; 3) consumer capital[11].

Human capital is knowledge, practical skills, creative and mental abilities of people, their moral values, culture of work.

Organizational capital (capital of an organization) is organizational knowledge of procedures, management systems, technology, hardware and software, patents, brands, culture, customer relationships.

Consumer capital is the knowledge of customers and consumers, which consists of close ties and stable mutual relations.

According to Edwinson, intellectual capital is the knowledge that can exist in an organization in an «explicit» and «implicit» form: «... patents, processes, managerial skills, technology, experience, information about consumers and suppliers. Combined together, this knowledge forms the intellectual capital»[12].

The position of L. Edvinson is developed by scientists V. Inozemtsev[13] and B.

[10] E. Brooking, (2001), *Intellectual capital: the key to success in the new millennium*. - SPb .: Peter, 2001. - 288 p.
[11] L. Edvinsson, M. Malone, (1997), *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Roots*. New York: Harper Collins Publishers, 1997.
[12] L. Edwinsson, (2005), *Corporate longitude. Navigation in a knowledge-based economy*. - M .: INFRA-M, 2005. - 248 p.
[13] V. Inozemtsev, (1998), *Outside the Economic Society*. - M .: "Academia" - "Science", 1998. - 640 p.

Leontiev[14]. Thus, according to V. Inozemtsev's «Information and knowledge are specific in nature and forms of participation in the production process, factors that within the organization take the form of intellectual capital. Intellectual capital is something like the «collective brain» that accumulates scientific and practical knowledge of employees, intellectual property and accumulated experience, communication and organizational structure, information networks and the image of the organization».

The components of intellectual capital, according to V. Inozemtsev, are: first - human capital embodied in the company's employees in the form of their experience, knowledge, skills, abilities to innovations, as well as to the general culture, philosophy of the organization, its internal values; the second – the structural capital, which includes patents, licenses, trademarks, organizational structure, databases, electronic networks.

Intellectual capital is a leading capital, which forms the basis of any organization at the present stage of development of a market economy, sets the pace and nature of updating its technology, production, etc. Its main function is to substantially increase the value of profit through the formation and implementation of the necessary for the organization of a system of knowledge, things and relations, which, in turn, provide it with highly effective economic activity.

L. Lukicheva under the term «intellectual capital» proposes to understand the totality of intellectual assets and labor resources within a particular enterprise[15]. Intellectual assets are in turn made up of information and intellectual resources and information and intellectual products, which can be alienated from their creators and have real commercial value to the company and its contractors. Accepting the first component of intellectual capital, it is necessary to draw attention to the fact that the second component, namely, labor resources, are only carriers of intellectual capital, and not the capital itself. In addition, the level of knowledge, skills, abilities and capabilities of employees can be at a rather high level, but it can not be effectively evaluated and used to ensure the proper economic effect and the level of competitiveness of the organization.

Although the terms information and knowledge are often used as synonyms, there are clearly distinct differences between them. On the basis of information, new approaches to the interpretation of events and objects are made, the hidden values of their links are unclear, that is, it serves as a necessary medium, material for the acquisition or formation of knowledge . F. Dretske notes that information is a product from which knowledge can be obtained, and knowledge is derived from information.

So, systematizing the results of the study, the definition of «intellectual capital» as a set of formalized and unformalized knowledge of the subject of activity used in the process of economic activity with the aim of maximizing profit or satisfying non-commercial interests can be formulated.

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[14] B. Leontyev, (2002), *The price of intelligence. Intellectual capital in the Russian business*. - M.: Izd. Center "Shareholder", 2002. - 200 p.

[15] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu.P. Aniskina. M.: MIET, 2002. P. 57-64.

Developing the views of Edwinsson[16] and Inozemtsev[17], structural and human capital are components of intellectual capital. Structural capital includes mostly formalized knowledge, in particular, the methods and mechanisms for developing business structures, processes, formed databases, software, available information, distribution and other types of networks, distribution channels and supplies, etc. The human capital is mainly non-formalized knowledge such as organizational culture, reputation, competence, knowledge, skills, and staff skills. The result of the combination of structural and human capital is intellectual products that acquire their content and legal form through intellectual property, including know-how, licenses, patents, rational proposals, etc.

At the macroeconomic level, the country's intellectual capital is formed from the intellectual capital of economic entities legally registered and operating on the territory of the country.

The result of the formation of intellectual capital in the world economy is the socio-economic, scientific, educational, cultural and other forms of civilization development, expressed through the intellectual potential of society – the ability of civilization to understand the factors of the internal and external environment, accumulation, use and transfer of knowledge, as well as the ability to form a high-quality workforce capable of creating, evaluating, defending, commercializing and managing intellectual resources.

The intellectual potential of society is an important component for defining the human development index – the IRI. At the initiative of the UN since 1990, the IRPP is calculated practically for all countries of the world. The results of calculations are systematically published in scientific literature and reference materials. It is believed that countries in which the ILLP is equal to 80 points and above have a high level of human development, from 50 to 79 – an average, below 50 – low[18].

The intellectual potential of society is influenced by a number of other external factors, the comprehension of which makes it possible to improve the quality and reasonableness of the decisions at different levels of government (see Figure 1.1.1).

Intellectual capital absorbs the main properties of all other forms of capital and at the same time has its own content, which is determined by the specifics of its functions:

- availability and progressive development of intellectual property,
- formation of creative thinking of workers, entrepreneurs, scientists, management personnel, which forms and implements the basic models of reproduction of each particular economic system and their aggregate,
- formation in the economic environment of the intellectual center, covering the whole set of factors of production, distribution, exchange and consumption.

[16] L. Edwinsson, (2005), Corporate longitude. Navigation in a knowledge-based economy. M.: INFRA-M, 2005. 248 p.

[17] V. Inozemtsev, (2003), *Post-industrial society of the theory*. New philosophical encyclopedia. 2003. Access mode: http://terme.ru/dictionary/879/ word / postindustrialnogo-obschestva-teori.

[18] E. Brooking, (2001), *Intellectual capital: the key to success in the new millennium*. SPb .: Peter, 2001. 288 p.

General features of the formation of intellectual capital are given in Table 1.1.5. The content of the concept of "intellectualization" is also interpreted by modern scholars in different ways. Intellectualization is a stimulating influence by intellectual capital – knowledge on an economic entity that continuously engages, produces, distributes the components of intellectual capital, supporting the transfer and diffusion of various types of capital, promoting new and special knowledge, goods and services. Elements of intellectualization are information, scientific knowledge, as well as professional, scientific and cultural potential of society, which together can be considered as intellectual economic resources[19].

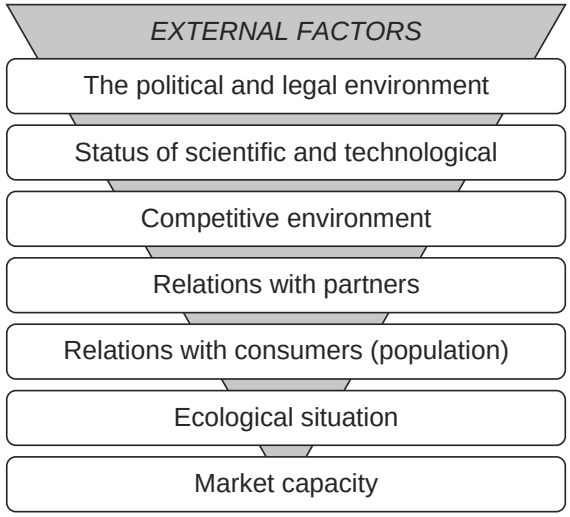

Fig. 1.1.1. External factors influencing the process of forming the intellectual potential of society

Source: compiled by the author on the basis of materials (Edvinsson L., Malone M., 1997).

Allocate such characteristic features of intellectualization of economic activity:

1) the intellectualization of economic activity is an inherent property or attribute of economic activity,
2) the intellectualization of economic activity does not directly depend on the informatization of society and economy; the development of information processes only contributes to accelerating the intellectualization of the economy,
3) the modern process of intellectualization of economic reality is a "denial of negation" of previous periods of economic relations and human interactions,
4) the intellectualization of economic transactions and the entire reproduction process in no way reduces the priority role of material production in the post-industrial society ... the intellectualization of the economy only means

[19] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works “Organizational and economic problems of management”; by ed. Yu. Aniskina. M. MIET, 2002. P. 57-64.

that the sphere of material production acquires a new quality.

The intellectualization of the economy is the process of gaining new qualities by the economy, when it begins to be based on knowledge, and information and services in comparison acquire a higher market value for goods possessing a natural-material form. At the same time, the strategic advantage of intellectualizing economic activity is minimization of material and raw material dependence and orientation on creation of added value with the help of intelligent technologies[20].

Table. 1.1.5. Features of the formation of intellectual capital (IC)

Characteristic	Specifics
1. Influence of IC on economic growth	In modern conditions, the IC determines the main trends of economic growth.
2. Costs for the formation of IC	Demands significant costs of material resources and creative energy.
3. Ability to accumulate IC	May be accumulated in the form of rights to intellectual property.
4. Possibility of growth of intellectual potential as an IC source	Rises to the appropriate level, which is limited to the upper limit of active labor activity, and then comes the period of decline.
5. Investments in IC	Investments in the IC provide a fairly significant volume, long-term and integral in nature economic and social effects, both for the individual and for society as a whole. The earlier investments are being made in the IC, the sooner they start to give return; more qualitative and long-term investments bring a higher and longer-lasting effect.
6. Liquidity of IC	IC is characterized by a low degree of liquidity
7. Sources of formation of IC	The IC is formed by transforming the intellectual potential that is inseparable from its carrier.
8. Ability to control IC	The processes of formation and use of IR can be controlled.
9. Ability to quantitatively measure IC	Measured mainly by qualitative parameters with their subsequent transformations into quantitative assessment.
10. Possibility of alienating IC	Has partial par excellence in accordance with the established rules of legal protection of intellectual property rights.
11. Possibility of simultaneous use of IC by several subjects	Can be used simultaneously by several business entities.
12. Tendency to worn IC	Prone to moral worn as a result of aging knowledge.

Source: compiled by the author on the basis of materials (Edvinsson L., Malone M., 1997), (Yakymchuk A., 2017).

An important point is that for the progressive economic development intellectualization is required not in isolated cases, but in the overwhelming majority of society. At the same time, allocate at least two options for the direction of intellectualization. One option is related to the accumulation of knowledge in society for the effective exploitation of the already created technology and technology, that is, such intellectualization is necessary for the successful use of existing knowledge.

[20] T. Bromberg, V. Khin, N. Lynnik *Recommendations for determining the value of industrial property objects*. M .: NPO Poisk, 1993. 128 p.

Another version of the orientation of intellectualization is associated with the generation of new knowledge, and hence with the provision of leadership in scientific and technological development and socio-cultural development. The highest degree of intellectual development of society is the transition of the country from the category of consumers of foreign knowledge to the generator of new knowledge. In this case, the possibility of influence and distribution of national capital grows to world level, and competitive advantages become its inherent feature.

Thus, after summarizing the results of the research of contemporary domestic authors and implementing the experience of foreign specialists in relation to the content of the definitions of "intellectualization", one can cite the author's interpretation of the concept of "intellectualization of world economic development" as a subject of research.

Thus, we can conclude that ensuring the balanced development of the modern world economy depends directly on the formation of a global institute of intellectualization of world economic development. In our opinion, the *intellectualization of world economic development* should be understood as the process of materialization of new ideas, knowledge, skills and abilities of humanity expressed in the creation and effective management of intellectual property in order to ensure global economic equilibrium in the global economy.

1.2. Theory of Knowledge in Organizations and Its Application

To create and provide products and services, organizations utilize their various resources. Different organizations use their resources differently, with varying market success and economic and social outcomes, depending on the knowledge they draw upon[21]. A view of *organizations as knowledge systems* focuses on the ways organizations draw upon their knowledge and create new knowledge so as to best utilize their resources in providing distinctive products and services[22]. The most interesting insight from such a view is that there is no limit in an organization's utilization of its knowledge resources: "the more practitioners *invent* new ways of using their resources (themselves included), the more services they can potentially derive". The key difference that makes a difference is the *knowledge* organizations draw upon and their knowledge generating capacity.

That knowledge makes a difference to performance has been realized by many organizations worldwide. In order to 'manage knowledge' better organizations undertake various knowledge management programs, appoint chief knowledge officers (CKO), and implement Knowledge Management Systems (KMS)[23]. Managing knowledge is considered to be of critical importance for sustained

[21] E. Penrose, (1959), *The Theory of the Growth of the Firm*. New York: Wiley.
[22] I. Nonaka and H. Takeuchi, (1995), *The Knowledge-Creating Company*. New York: Oxford University Press.
[23] M. Alavi and D. Leidner, (2001), "*Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues*". MISQ, 25, 1, 107-136.

competitive advantage (Nonaka, 1994[24]; Grant, 1996[25]; Earl, 2001[26]). However, despite the abundance of literature on knowledge management in Information Systems (IS), organization studies, management, cognitive science, sociology, and other disciplines, practitioners do not find many applicable or useful concepts, frameworks and models.

Organizations as Knowledge Systems. Knowledge-based approaches to organizations seek, on one hand, to classify the different types of organizational knowledge and, on the other, to explain the nature of knowledge in organizations (Tsoukas, 1996). Several taxonomies of knowledge have been proposed out of which we will mention only two most prominent ones. Spender (1996) classifies knowledge along two dimensions: a) knowledge held by an individual or by a collective; and b) knowledge articulated explicitly or manifested implicitly. As a result, according to Spender, knowledge can be i) *conscious* (explicit, held by the individual); ii) *objectified* (explicit, held by the organization); iii) *automatic* (preconscious, individual) or iv) *collective* (manifested in organization practices). Tsoukas (1996) rightly questions the rigid and artificial distinction between individual and social knowledge implied by this taxonomy. Another quite influential taxonomy was proposed by Nonaka (1994) and Nonaka and Takeuchi (1995). They also start from a distinction between explicit and tacit knowledge, based on their interpretation of Polanyi's work (1962, 1966)[27].

A good example of a study seeking an explanation of the nature of knowledge in firms is one by Tsoukas (1996). He extends the view of organizations as knowledge systems (Grant, 1996) and examines a concept of a firm as *a distributed knowledge system.* Inspired by Hayek's (1945)[28] (re)formulation of economic problem of society, Tsoukas argues that firms are inherently decentered systems and that the knowledge they need to draw upon is indeterminate and emerging, and cannot be known by a single mind. He also provides a well-grounded explanation of a distributed nature of a firm's knowledge. Tsoukas (1996) explains social practices as consisting of three dimensions: role-related normative expectations, dispositions (formed in past socializations), and interactive situations (involving local knowledge of particular circumstances, time and space). While firms may have more or less control over normative expectations, they have no control over its members' dispositions nor could they determine the use and creation of knowledge in social interactions in which members' normative expectations and individual dispositions are instantiated.

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[24] I. Nonaka, (1994), *A Dynamic Theory of Organizational Knowledge Creation*. Organization Science, 5, 1, pp 14-37.

[25] R.M. Grant, (1996), "*Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration*". Organization Science, 7, 375-387.

[26] M. Earl, (2001), "*Knowledge Management Strategies: Toward a Taxonomy*". JMIS, 18, 1,215-233.

[27] M. Polanyi, (1966), *The Tacit Dimension. London*: Routledge & Kegan Paul Ryle, G. (1949), The Concept of Mind. Chicago IL: University of Chicago Press Schon, D.A. (1983), The Reflective Practitioner. New York: Basic Books Spender, J.-C. (1996).

[28] F. Hayek, (1945), *The Use of Knowledge in Society.* American Economic Review, 35, 519-530.

The approach adopted in this paper draws from both streams of research in that it aims to classify types of knowledge and also contribute to the understanding of knowledge in organizations. The theoretical foundation of the work presented here, however, is different from approaches in either of the streams: it originates from the sensemaking perspective of knowledge in organizational context.

A Sensemaking View of Knowledge in Organizations. Sensemaking is an everyday activity, briefly described as "the reciprocal interaction of information seeking, meaning ascription, and action". Whenever we encounter an event that is surprising, puzzling, troubling, or incomprehensible, we try, more or less consciously, to interpret it, and to assign meaning to it, that is, to make sense of it. In the process of interpretation and explanation we typically draw from our experience and from our background knowledge of a context within which the event occurred. We also often talk to colleagues (workers, citizens, friends), share our experiences, test and co-create our assumptions and beliefs in an attempt to 'structure the unknown' and assign the meaning to the surprising event. The interpretation and understanding of the event, achieved either individually or collectively, is an outcome of the sensemaking process the importance of which is usually more appreciated if it triggers or enables an action.

Several aspects of sensemaking are relevant for exploration of knowledge in organizational contexts. First, an individual makes sense of her/his work environment, tasks and activities, and also more broadly of organizational processes and events. In this process, the individual both uses and re-creates her/his personal knowledge. Second, members of an organization interact, informally and formally, to explore problematic situations, share their assumptions and experiences, and co-create inter-subjective meanings. In this collective sensemaking process problematic situations are named and framed, the boundaries of intervention are set, and a coherent 'structure' imposed allowing an intelligible action. Key components of this process – knowledge sharing, achieving mutual understanding, inter-subjective meaning making and knowledge co-creation, as well as taking action – are all entangled in social interaction in an undistinguishable manner. Only by engaging in and observing social interaction, can we as researchers make sense of them and learn about collective knowledge, its formation and use.

Third, in any organization there are commonly accepted norms and rules for seeing and doing things. An organization is characterized by its processes, structures, and roles, the meaning of which is shared among its members without them participating in their creation. The meanings ascribed to organizational roles (normative expectations), organizational processes and structures persist while individuals performing them may change. Sensemaking involved in creating and maintaining such generic meanings is called 'generic subjective'. This is the so-called social structure level at which "concrete human beings, subjects, are no longer present. Selves are left behind at the interactive level. Social structure implies a generic self, an interchangeable part – as filler of roles and follower of rules - but not concrete, individualized selves"[29]. While inter-subjective meaning making through

[29] N. Wiley, (1994), *The Semiotic Self. Cambridge*: Polity Press.

social interaction is a source of innovation, encouraging change, generic subjectivity enforces control, securing stability.

Fourth, involved in all sense making processes described above, are customs, norms, habitual behavior, rituals, myths, metaphors and other language forms, etc., that fall under the general rubric of culture. This realm of abstract symbolic reality underpins all other sense making levels. Referring to Wiley (1988), Weick[30] calls culture an 'extra-subjective' level of sense making which provides a reservoir of background knowledge allowing and constraining meanings at other levels.

Organizations can thus be viewed as a dynamic web of sense making processes. They are created and recreated by continuous and simultaneous interplay between all types of sense making: intra-subjectivity of its members, their inter-subjective and generic subjective (social structure) sense making, all embedded in organizational culture (that is in extra-subjective sensemaking). The three levels of sense making above the level of individual should be understood, not in a hierarchical sense, but as different generalisations of social reality, each more distant from the individual.

The Sensemaking Theory of Knowledge in Organizations. By taking this four-level sensemaking view of organizations as my point of departure, I explore the nature of knowledge at each level and processes by which such knowledge is created and managed. I begin with the level of individual sensemaking, where knowledge belongs to an individual and is thus called the individual knowledge. I then identify and describe the inter-subjectively created or collective knowledge, the generic, social structure or organizational knowledge and knowledge embedded in culture, at the three levels of sensemaking beyond an individual. Studying the nature of sensemaking processes at each level should help us understand not only the nature of knowledge and how knowledge is created, maintained and used at these levels, but also the continuous interplay and knowledge dynamics between the levels.

Individual knowledge is acquired through personal experience and reflects education, work experiences and past socialisations. It involves a person's values, beliefs, assumptions, experiences, skills, expertise, etc. that enable the person to interpret and make sense of the environment, perform tasks and take actions. In other words, individual knowledge is created, maintained, used and recreated through intra-subjective sense making. By being involved in particular organizational processes and work practices, by interacting with other members, an individual gains new experiences, faces problems and makes sense of them, which frequently triggers revisiting and updating his/her personal knowledge. This results from the intra-subjective sense making (and by implication individual knowledge) being intertwined with and influenced by other sense making processes.

Individuals who work together and complete tasks jointly (eg. as a project team or a strategic planning group) often learn to cooperate with one another, interpret situations inter-subjectively and undertake joint or coordinated actions. What makes a group of individuals act as a *collective,* capable of completing complex tasks that no single individual would be able to complete, is their *collective knowledge.* The nature

[30] K. Weick, (1995), *Sensemaking in Organizations*. Sage.

of collective knowledge (derived from the concept of *collective mind* by Weick and Roberts, 1993) is essentially different from individual knowledge in that it does not reside within but between and among individuals. To understand collective knowledge we need to understand social interaction and patterns of interlocking behaviours among the individuals that lead to joint or coordinated actions. Collective knowledge, defined as an emergent capacity to act collectively, involves continuous co-creation of inter-subjective meanings and mutual understanding through 'heedful interrelating' (as defined by Weick and Roberts, 1993). Weick and Roberts (1993, p. 362)[31] warned that heedful performance should not be mistaken for habitual performance. "In habitual action – they explained – each performance is a replica of its predecessor, whereas in heedful performance, each action is modified by its predecessor".

Social interactions and collective knowledge also create and maintain a particular level of social reality. Through inter-subjective meaning making and heedful interrelating individual selves get transformed from 'I' into 'we' (Weick, 1995). In any social setting, these processes are ongoing within groups and among groups, leading to a multiplicity of pockets of collective knowledge that are in a state of flux, with shifting focus and indeterminable boundaries.

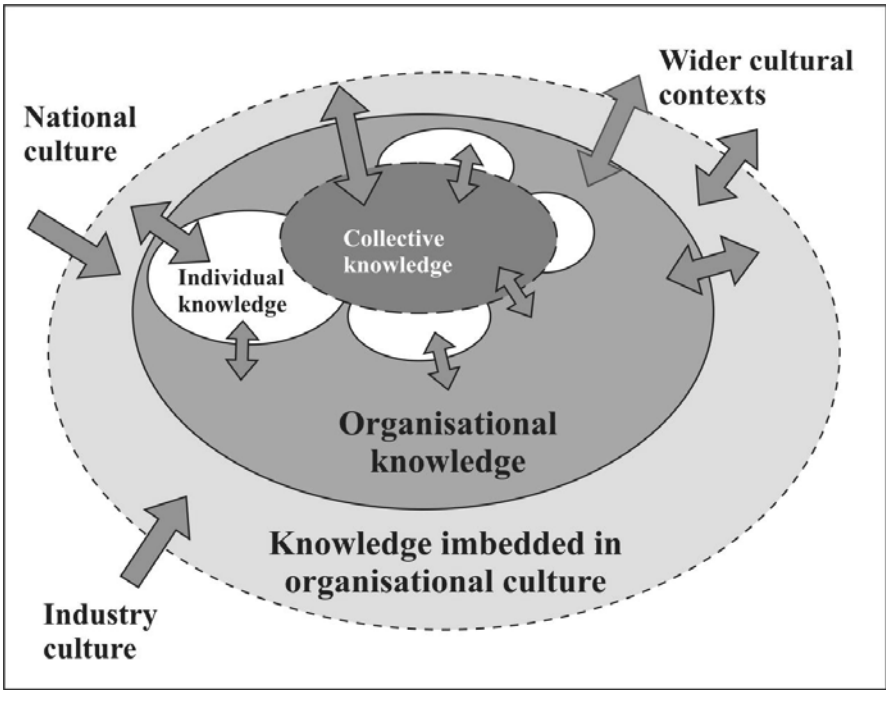
Unlike collective knowledge, organizational knowledge has more visible forms, is typically subject to legitimation and is thus more easily identifiable. Organizational knowledge involves generic meanings and social structures shared by and transmitted to organizational members irrespective of their participation in their creation. Typically it includes notions of organizational structure, roles, policies, norms, rules and control mechanisms, social networks, scripts or patterns of activities and actions. Tsoukas and Vladimirou (2001) call it 'organizational knowledge in a strong sense'. Generic meanings may emerge through different processes. On one hand, generic meanings may be created through sense making processes involving institutional role-holders (typically top managers), following the norms and rules that prescribe how organizational knowledge is legitimated (a due process etc.). In such a process, which is a kind of a top-down process, organizational knowledge is assumed to flow to and be shared and used by organizational members in their everyday activities. On the other hand, generic knowledge may emerge through a continuing transition from inter-subjective meanings to generic-subjective meanings, that is, through a bottom-up process. These two processes are in fact operating simultaneously. In their dialectic relationship Weick (1995, p. 71) sees the essence of organising.

The fourth type of knowledge defined by the Sensemaking Model is *knowledge embedded in culture* which assumes a stock of tacit, taken-for-granted convictions, beliefs, assumptions, values, norms and tradition that members of an organization draw upon in order to make sense of a situation and create meanings at all other levels. As part of a symbolic reality, cultural knowledge is *extra-subjective.* As such knowledge embedded in culture serves as a reservoir from which they derive their

[31] K. Weick and K. Roberts, (1993), "*Collective Mind in Organizations: Heedful Interrelating on Flight Docks*". Administrative Science Quarterly, 38, 357- 381.

meanings and thereby get to understand each other. In other words, knowledge embedded in culture determines the horizon of possible understanding among the members of an organization. Moreover, common beliefs and values are said to be the 'glue' that holds communities together[32]. People are usually not consciously aware of their cultural knowledge. Such knowledge is transmitted through language, symbols, metaphors, rituals and stories. Only when an element of this knowledge is explicated and brought into a situation can it be thematised, contested, and justified. Only then does it become critic is able knowledge that is part of an explicit stock of knowledge resulting from interpretive accomplishments of actors at other levels.

The Sensemaking Model of Knowledge in organizations that identifies the four knowledge types – the individual, collective, organizational and culture knowledge – is graphically presented in Figure 1.2.1. It should be noted here that while the four types of knowledge identified by the model reflect the different nature of knowledge and knowing in organizational context (resulting from the different nature of sense making) they are not, and cannot be separated. These four types of knowledge are mutually constituting. They are intertwined in such a way that they continuously influence and recreate each other. In order to understand the nature of knowledge in organizations, it is obviously important to identify and analyse different types of knowledge at each sensemaking level, but it is e-qually important to investigate how knowledge at one level affects the other, and how tensions between them arise.



[32] H. Blumer, (1969), *Symbolic Interactionizm: Perspectives and Method*. Englewood Cliffs, NJ: Prentice Hall.

Fig. 1.2.1. The Sense making Model of Knowledge Management in Organizations

Source: compiled by the author on the basis of materials (Blumer, 1969) and (Tsoukas and Vladimirou, 2001).

The Sensemaking Model portrays an anatomy of knowledge in organizations. It explicitly describes the distributed character of knowledge in organizational context thus contributing to the understanding of organizations as distributed knowledge systems. The model also enables decomposition of 'knowledge management' into specific types of knowledge management tasks. At each level of sensemaking, knowledge is emerging: it is continually created, recreated, maintained, shared and applied. At each level, sensemaking is affected by knowledge emerging at all other levels.

For instance, the emergence of collective knowledge – creation of shared understanding as a basis for cooperative action by a group of individuals engaged in a project, policy decision-making, or IS development – is the process inherent to the group but is influenced by 1) each individual's knowledge, 2) organizational structure knowledge (norms, rules, normative expectations) and 3) organizational culture. These influences may be more or less obvious, intentional and forceful. Firstly, when individuals participate in a group activity they bring into this activity their individual knowledge, their experiences from past socialisations, their schemes of perception, thought and action, or in Bourdieau's (1990)[33] words their 'habitus'. Each individual may be more or less open to argumentation and more or less capable and willing to develop mutual understanding of a situation and engage in 'heedful interrelating' with others. Secondly, the normative context and structures determined by knowledge management at the organizational level may be more or less conducive to knowledge sharing and cooperation at a group level. In addition, organizational knowledge may impose strict rules, incentives or limitations for both the intra-group or inter-group cooperation and knowledge sharing. Thirdly, organizational culture and the embedded knowledge which is the least amenable to being managed, provide a broad social and historical context, a value system, language, and tacit background assumptions and beliefs which may encourage or discourage trustworthiness, cooperation and collaboration. As a result, what is called knowledge management in a group depends on other types of knowledge and knowledge management processes. A knowledge management task can thus be seen as pertaining to a particular knowledge type but, cannot and should not be limited to studying only this knowledge type. Similarly, knowledge management in an organization can be seen as a number of interrelated knowledge management tasks undertaken at different sensemaking levels and across the levels.

The purpose of the Sensemaking Theory is to describe the particular nature of each knowledge type identified by the model and characteristics of relationships

[33] M. Boudourides, M. Mavrikakis and E. Vasileiadou, (2002), *E-Mail Threads, Genres & Networks in a Project Mailing List*, Proceeding of Internet Researchers International Conference, Maastricht, the Neterlands, Octobver 13-16.

between the knowledge types. Furthermore, the theory aims to explain specific knowledge management tasks and the dynamics of simultaneous and continuous mutual influences among different knowledge types in an organization. In the next section some illustrative examples of knowledge dynamics and tensions between knowledge types drawn from recent empirical studies are presented.

Learning From Empirical Studies. The Sensemaking Theory of Knowledge has been applied and developed further in field studies of knowledge management processes in three different organizations. The first was the field study of a university restructure process in which a large three-member Federated University (distributed on seven campuses) transformed into a unitary university, including transformation of all academic, administrative, and management structures and processes, as well as Information Technology (IT) services (Cecez-Kecmanovic and Jerram, 2001[34], 2002[35]; Jerram, et al., 2002[36]). The second was the field study of an Investment Banking Company and continuous development of its core Information System (Cecez-Kecmanovic and Key, 2001, 2002). And the third was the longitudinal case study of a retail company (Colruyt, Belgium), its decision-making practices and the use of a groupware system (Cecez-Kecmanovic and Janson, 2000). By drawing from these field studies I will illustrate how the Sensemaking Theory of Knowledge informed the interpretation of findings and how in turn learning from these studies contributed to further theory development.

Organizational Knowledge is Collective Knowledge. Organizational knowledge generally tends to persist and resist change, thus ensuring organizational stability. On the other hand, inter-subjectively created collective knowledge is just the opposite: it is a permanent source of creativity and innovation that emerges from social interaction. Even in relatively stable environments, inter-subjectively created knowledge tends to challenge generic meanings, established practices and norms (or other aspects of organizational knowledge), thus undermining social structure stability. There is, as Weick (1995) points out, an inherent tension between inter-subjectively created, collective knowledge, on one hand, and the generic, organizational knowledge, on the other. Managing this tension is one of the key knowledge management issues with large ramifications for organizational performance, which often remains unrecognised and poorly understood. How is the tension between inter-subjective knowledge and organizational knowledge managed in the observed organizations?

In the Colruyt Company decision-making is highly distributed. Employees interested in a problem and those having expertise to solve it, self-nominate to initiate and participate in problem resolution. The philosophy of the Colruyt Company is

[34] D. Cecez-Kecmanovic and C. Jerram, (2001), *Understanding Crisis from a Sense-Making Perspective: An IS Operation Change*. In Proceedings of The Twelfth Australasian Conference on Information Systems ACIS 2001, Coffs Harbour, NSW, Australia, 103-112.

[35] D. Cecez-Kecmanovic and C. Jerram (2002), *A Sensemaking Model of Knowledge Management in Organizations*. In Proceedings of the European Conference on Information Systems ECIS 2002, Gdansk, Poland, 894-904.

[36] C. Jerram, D. Cecez-Kecmanovic, L. Treleaven and C. Sykes, (2002), *Email and Assumptions: a Study in Electronic (Misunderstandings*. In Proceedings of the Thirteenth Australasian Conference on Information Systems ACIS 2002, Melbourne, Australia, Vol. *2*, 509-521.

continuous innovation and development through employees' participation and workplace democracy. The development of the Company has to a large degree depended on bottom-up initiatives and innovations and broad cooperation within groups and between groups across the Company. Creation of collective, intra-subjective knowledge through social interaction (face-to-face and via the in-house developed groupware system ISID) is promoted and highly valued. The Company is managed less by control and more by providing participatory social framework, and by nurturing cooperation and trust (Janson and Cecez-Kecmanovic, 2003)[37]. When inter-subjectively created knowledge challenges established organizational knowledge (eg. a discount policy, norms regarding customer services, confidentiality rules), a public debate via ISID is instigated and all interested or affected members are typically invited to self-nominate and take part in a task force. The Company culture implies that the force of the better argument should determine the outcome.

Here we see that the tensions between collective knowledge (which e- merges from social interaction) and organizational knowledge do arise and that the Company has well-established norms and processes to deal with them and to learn from them. Furthermore, embedded into these processes is the groupware system ISID which assists and enables Company-wide debate and a broad access to organizational decision-making (Cecez-Kecmanovic and Janson, 2001)[38]. An interesting lesson to be learned from the Colruyt Company is how to harmonise inherent tensions between organizational knowledge and collective knowledge emerging through numerous and on-going social interactions. While the Colruyt Company encourages knowledge co-creation and sharing through social interaction, it also carefully maintains its organizational knowledge. However, it does so in a harmonious way. The distinguishing features of the Colruyt Company are its culture of cooperation, collaboration, and solidarity, its participatory ethos and its reflective practice. In particular, their use of ISID in everyday communications facilitates the emergence of collective understandings and at the same time enables a constructive questioning of the established organizational knowledge (norms, rules, policies). In summary, the emergence of collective knowledge through social interaction is stimulated, enabled and guided by organizational and cultural knowledge. At the same time, organizational and cultural knowledge are reproduced, challenged and recreated through reflective organizational practices.

In the case of the University restructure, one of the major objectives was to establish a single academic structure and a unique set of educational programs, policies and procedures for the whole, united University. While in the past, there were attempts to unify educational programs across member-Universities, its was never fully achieved (eg. students enrolled in one member-University needed a special permission to take subjects from other members). In the restructure the old

[37] M. Janson and D. Cecez-Kecmanovic, (2003), *Information Systems and the Participatory Ethos*, The European Conference on Information Systems ECIS 2003, Naples, Italy, 18-22 June.

[38] D. Cecez-Kecmanovic and C. Jerram, (2002), *A Sensemaking Model of Knowledge Management in Organizations*. In Proceedings of the European Conference on Information Systems ECIS 2002, Gdansk, Poland, 894-904.

organizational knowledge of member-Universities was officially abandoned and new organizational knowledge of the unitary University had to be created and legitimised. The University Executive understood well the immensity and complexity of the task. They also rightly worried that the restructure of such a scale might instigate disintegrative forces and chaos. Therefore they felt responsible to carefully manage change and control the restructuring process. To prevent chaos and ensure the least disruptive transition from the old to the new University, the Executive designed a one-year restructure process driven by the guidelines and various policy documents (available on the intranet). The guidelines, proposed by the Executive, specified principles, norms and rules for the new academic structure. While the formation of four Colleges was determined by the Executive, the schools within these colleges were first to be proposed by academics themselves, in a so-called bottom-up process, following the rules in the guidelines, and then decided by the Executive.

The guidelines represented the first evidence of the new organizational knowledge formulated by the Executive. It was tacitly assumed that academic staff would understand the meanings in this document and that they would be able to apply it «correctly» in their particular circumstances. Circumstances, though, were very different across disciplines and across member-Universities. For instance, academics from various psychology units in the old University structure did not have problems in proposing the new School of Psychology. Their discipline was well defined and the expected number of staff in the proposed School of Psychology was within the prescribed range, so they easily fitted within the guidelines' criteria and received approval from the Executive. Academics in some other fields, though, did not sail through that easily. Some academic groups experienced huge problems and were not able to agree on a school proposal that would satisfy the guidelines. In the field of management, for instance, three school proposals were initially submitted. The differences could have been resolved had some rigid criteria for school formation in the guidelines been changed. As a result, academics from the management group submitted a request for change which the Executive rejected. The final decision by the Executive to accept one proposal and reject others disappointed many and greatly discouraged them from further active participation.

This example illustrates how the Executive took control of the new organizational knowledge creation processes. Being convinced in the legitimacy of their objectives – unification of the University – the Executive believed it was their duty to establish new organizational knowledge to replace the old member-Universities' knowledge. They also expected different academic groups from the three former member-Universities (each having different organizational culture, different teaching approaches and attitudes towards academic disciplines) to appreciate their intentions, to understand the new organizational knowledge, and more importantly, to apply it without having a chance to adapt it to their specific circumstances. The Executive did not expect nor did they understand why some academic groups had different views regarding the new academic structure and how it should be formed. Tension between the new organizational knowledge (as expressed in Guidelines) and collective knowledge, inter-subjectively created by academic groups (related to individual school proposals) grew. This tension was

never resolved and ramifications were still felt after the new academic structure took place.

The task of changing organizational knowledge was not recognized as such, but was nevertheless among the key issues that determined the outcomes of the restructure. The analysis of the restructure processes, and especially the inauguration and implementation of guidelines, informed by the Sensemaking Theory of Knowledge, clearly indicated why the problems occurred and how the tension could have been attenuated. Had it been understood beforehand that organizational knowledge could not simply be re-shelved (by top management or anybody else), but that it had instead to emerge through reflective organizational practices and continuous inter change with similarly emerging collective understanding, many problems and conflicts could have been avoided.

The Use of Email as an Enabler of Staff-Executive Communication. Another interesting insight came from the analysis of the use of email to communicate ideas, suggestions and concerns by staff (academics and general) to the President of the University during the restructuring process. The idea was that an open communication channel between all interested staff and the President would democratise the restructure process and help staff contribute to the decision-making. While this was technically feasible, and many academics and administrative staff, including the President, took it seriously, such use of email failed to achieve the objectives. The President was flooded with emails and made an honest effort to read them all and responded to as many as possible. Interviews with staff who sent these emails showed that they considered this whole exercise 'futile' and 'misleading'. They felt their emails 'went into a big hole' without making any impact. The President, on the other hand, was convinced that many good ideas and proposals were actually taken into account. Looking through the lens of the Sensemaking Model, we see that individuals assumed that by sending emails with their views and proposals to the President, they would participate in the formation of the new organizational knowledge. As they did not get feedback and did not engage in any shape or form in the organizational knowledge formation process, they felt misled and denied their legitimate rights. On the contrary, the President believed that by acquiring, sorting and summarising ideas and proposals from several thousand staff emails to inform the organizational knowledge recreation (at the Executive level), individual staff knowledge was in fact taken into account. The President and other members of the Executive were hence convinced that the use of email did democratise the restructure process. Informed by the Sensemaking Model of Knowledge, we found out that the both sides, the staff and the Executive, had unrealistic expectations due to the lack of understanding of the nature of organizational knowledge and the process of its re-creation[39].

The lessons learned from this case study contributed to further theoretical development of the Sensemaking Model of Knowledge Management in

[39] C. Jerram, D. Cecez-Kecmanovic, L. Treleaven and C. Sykes, (2002), *Email and Assumptions: a Study in Electronic (Misunderstandings*. In Proceedings of the Thirteenth Australasian Conference on Information Systems ACIS 2002, Melbourne, Australia, Vol. *2*, 509-521.

organizations. The nature of organizational knowledge is such that it needs to be widely shared by all members of an organization. Only then will it help individuals and groups to coordinate their actions and contribute to an organization's capacity to act. Successful re-creation or transformation of organizational knowledge cannot be achieved by concentrating all meaning making at the social structure level irrespective of 'quantity' of the individual members' input. Knowledge in an organization is inherently distributed and discursive. No matter how well intentioned, concentration of knowledge creation and maintenance at the social structure level to bear on all local circumstances, especially in large organizations, is problematic and unsustainable. The lessons from this study confirmed that "the key to achieving coordinated action does not so much depend on those 'higher up' collecting more and more knowledge, as on those Tower down' finding more and more ways of getting connected and interrelating the knowledge each one has" (Tsoukas, 1996, p. 22).

Inter-group Relations and Knowledge Sharing. In the Investment Banking Company case the major issue was how to improve services to clients and increase competitive advantage. Analysts' knowledge was considered a key Company resource that determined the quality of services and ultimately its competitive advantage. By developing an Information System (IS) that captured analysts' spreadsheet models (representing their knowledge about listed companies) in the Company database and thereby providing much bigger range and higher quality of financial reports to clients, the Company achieved its objectives. After initial resistance, analysts learned to use the IS and to appreciate its value for their job. The Company attracted a significant number of new large clients who used the IS directly. The philosophy of the IS team was continual IS development and co-evolution with the Company (Cecez-Kec-manovic and Key, 2001, 2002).

The analysis of knowledge management issues behind the successful development and use of the IS revealed productive interactions between the IS team and the analysts as well as between the IS team and the clients. The IS team gradually developed mutual understanding with analysts which enabled productive social interaction, knowledge sharing and cocreation. Having such experience, the IS team knew how to approach external clients and establish mutual understanding and trust with them as well. Lessons learned from this case study pertain to inter-group relationships, collective knowledge creation and coordination of actions.

Knowledge sharing and co-creation emerged through recurrent interactions between members of these groups driven by collectively shared aims to excel in their individual jobs and, in the case of the IS team, in their group task – IS development. The history of joint accomplishments enabled heedful interrelating between IS team members and analysts and later on between IS team members and clients. This in turn improved mutual understanding and trust. As a result individuals felt that they improved their individual knowledge and they were more efficient and effective in completing their complex tasks. What we observed in addition was that they also developed their collective knowledge, which was demonstrated in patterns of heedful interrelating and patterns of coordinated actions. Whilst it is widely believed that the culture in investment banking is highly individualistic, and that company performance essentially depends on analysts' expertise, we found that company

performance can be enhanced further through the emerging collective knowledge built around the IS development and use, which is thoroughly social. Whereas one might think that 'capturing' analysts' knowledge in the database was a key to the IS and the Company success, the researchers found that it was actually knowledge sharing among the three groups (analysts, IS team and clients) and the emergence of their collective knowledge that made the IS and the Company successful (Cecez-Kecmanovic and Key, 2001, 2002). These findings confirm Weick and Robert's (1993) proposition that notion of collective mind, "conceptualised as a pattern of heedful interrelations of actions in a social system" (p. 357), can explain organizational performance and their capacity (or lack of it) to act in complex and turbulent environments.

The Sensemaking Theory of Knowledge, outlined briefly in this monography, identifies and describes different types of knowledge in organizations - individual, collective, organizational, and cultural – that are in permanent flux, influencing and re-constituting each other. The Sensemaking Theory of Knowledge is consistent with and contributes to the view of the firm as a *distributed* knowledge system "which is not, and cannot Hayek, 1945, 1982). This theory describes several ways and levels of knowledge be, known in its totality by a single mind" (Tsoukas, 1996, p. 22) distribution in an organization: from individual knowledge of organizational members, to collective knowledge of groups, to organizational knowledge and knowledge embedded in culture. Through the emergence within and dynamic interchange between these types of knowledge, knowledge in an organization is continually transformed and re-constituted. By drawing from the three field studies of knowledge management, the paper illustrates the applicability and usefulness of the Sensemaking Theory of Knowledge in investigating these simultaneous knowledge creation processes and the dynamics of knowledge transformation in practice.

The outline of the Sensemaking Theory of Knowledge and illustrations of its application, while brief and cursory at times, indicate that there is a wealth of knowledge and theoretical concepts created in disciplines such as psychology, social psychology, sociology, organization theory, economics, and communication, to mention just a few, that pertain to knowledge in organizations and could be useful for understanding specific aspects of its creation, transformation and use. Why such sources of valuable knowledge and theory have not been more widely used in knowledge management practice? - is a question raised at the Workshop quite rightly. While the reasons are various, it can be argued that among the key obstacles is the complexity of these concepts and theories that makes their interpretation and application in knowledge management practices quite difficult. Due to their complexity, concepts and theories from different disciplines are typically not quite understood (discussed, applied, criticized) outside limited professional circles. To understand them and interpret them in the specific context of knowledge management is not straightforward and often requires considerable background disciplinary knowledge[40].

[40] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M.: MIET, 2002. P. 57-64.

When some of these theories, though, do cross over disciplinary boundaries, such as, for instance, concepts of 'tacit' and 'explicit knowledge or theories of group behavior (brought from social psychology), they run the risk of being oversimplified and applied as easy-to-do recipes. This is exactly what happened when Nonaka and Takeuchi (1995) adopted concepts of tacit and explicit knowledge from Polanyi's work (1962, 1966). They interpreted tacit and explicit knowledge as two mutually exclusive types each of which can be transformed into the other. Taken as unambiguous and clear-cut concepts, tacit and explicit knowledge form the basis for their model of knowledge transformation, that became hugely popular in knowledge management literature and practice. A contrary example is the notion of collective mind (Weick and Roberts, 1993)[41] that draws from several complex theories and is itself a complex concept, which has not made it into the knowledge management literature, despite its demonstrated explanatory power and high potential value in understanding knowledge sharing and conditions for coordinated action. One is tempted to conclude that the wealth of knowledge and theories from other disciplines have been imported and applied to knowledge management problems only when heavily simplified and presented in an easy digestible form. It is arguable, however, that this should not necessarily be so.

If we, practitioners and researchers in knowledge management, realize that the problems we face and questions we ask are not entirely new and that we may in fact be asking old questions using a different language, perhaps with different purposes in mind, we may appreciate the wealth of knowledge created before we came to the scene. Furthermore, when dealing with any specific issue – be it the nature of personal versus the collective knowing and acting, or the problems of knowledge sharing and transfer within or between organizations – we need to investigate what has been done in relevant disciplines so far, and whether and how an existing body of knowledge can be applied to our specific problems. Such investigations would require collaboration with researchers and professionals from relevant disciplines (eg. psychologists, anthropologists, sociologists) to ensure 'proper' interpretation and mindful appropriation of concepts and theories from these disciplines for specific purposes of knowledge management. Proper interpretation here means deep understanding and critical assessment of various concepts and theoretical foundations and their specific meaning within the context of knowledge creation, transformation and use in organizations. Mindful appropriation means the adoption of concepts and theories that takes into account background knowledge from originating discipline(s) and preserves their authentic meaning and richness while being re-interpreted and re-defined for knowledge management.

Finally and more broadly, the reluctance of knowledge management professionals to embrace the new worldviews, new paradigms, and new dimensions of problems at hand may be seen as another obstacle to fruitful adoption of concepts and theories from other disciplines and their integration into knowledge management field. The Workshop like this one, that brings together both practitioners and

[41] K. Weick, and K. Roberts, (1993), *Collective Mind in Organizations: Heedful Interrelating on Flight Docks*. Administrative Science Quarterly, 38, 357- 381.

researchers with different backgrounds and professional affiliations, is an excellent example how this obstacle can be overcome. As we have experienced in this Workshop, opening up to the new worldviews, new paradigms, and new dimensions of problems is not really threatening or arduous but can indeed be challenging and hugely exciting.

1.3. The Significance of Knowledge Management for a Large Company

In a study of any market, there are successful companies side by side less successful companies within the same market sector. But why should less successful companies find it so difficult to have good management? The methods and tools for management seem to be well known, taught in business schools and universities, and they are more or less the same in each company. The organizational structure of companies may differ, but, within each structure, companies can post a typically good or poor performance. So it seems to be rather difficult to manage a company while the «proven» concepts taught in business schools and implemented by advisors might not be as reliable as those actually needed.

In this monography the fundamentals behind the state-of-the-art approach to the management of a company has been described. It has been shown that these fundamentals may be insufficient and may even be wrong. Then an alternative basis for a company will be described focusing on knowledge and knowledge management and yet without being able at the present time to suggest suitable methods and tools for the management of a company from that point of view.

In principle, management of a typical company works as follows[42]:

1) determine the company's current market situation and evaluate how things have developed up to now,
2) think about what form the future might take and how the company should be positioned,
3) draw up a plan describing what operational steps should be taken in order to turn this future possibility into reality for the company,
4) make sure that efficiency is maintained and the company is permanently in line with the goal. Monitor the implementation of this plan and, additionally, the activities within the company in general.

This is a very short description of management. But what is being managed here? A company and its processes consist of:

- many different elements: projects, products, internal and external services, customers, competitors, departments, units,
- a wide range of functions: purchasing, sales, development, production,
- various influences: markets, economic developments, interest rates, competition,

[42] J. Davis, E. Subrahmanian, (2005), *Art Westerberg (Editors) Knowledge Management and Technological Dimensions*. Physica-Verlag Heidelberg, New York 2005. 204 p.

- many measurable quantities: market share, number of employees, profit (loss), sales, customer satisfaction, growth,
- a high degree of interaction between the various items: market share affects profits and revenues; customer satisfaction influences market share etc.

A company builds up simultaneously both a complicated and a complex system: this system consists of very many different items and the interaction between the items is very often non-linear and often depends on the actual status of other items. A company is far from being fully transparent in all its items and cannot be controlled by dealing with each factor and quantity in isolation.

The primary question that we pose in this paper is how do we effectively manage a complicated and complex system at all? In other words, how is it possible to monitor a more or less non-transparent system and then steer this system in the right direction when there are hundreds of possible directions to pursue.

To simplify the complexity of the system a *model of the company* is used, very much smaller than the company so that the complicated and complex system can then be handled. This company model is based on the assumption that there are a few *key factors* that have to be precisely monitored, measured and controlled since they represent the impact made by the company. All other factors are of secondary importance: they are either directly linked to the key factors, thus allowing them to be portrayed in conjunction with the latter, or, they are of minor importance so that they do not have to be taken into account when managing the company. This model of a company is the basis of all the operational and strategic controlling and steering measures. The key factors form the basis for defining optimization strategies and for implementing them in the company.

The company's "really relevant factors", commonly known as "factors of production" are:

- labor,
- capital,
- facilities and raw materials.

At first sight it might appear rather surprising that the very complicated system "company" can be reduced to only these three items and that the non-linear interactions are not explicitly mentioned in this model, but, as we will now show, this is the world we now live in when we talk about, and work in, the management of a company. This way of looking at things in a company has its origins in the 19th century.

Today this company model offers a wide range of methods and tools for handling these "factors of production" in the operational and strategic management of a company, in order to monitor, plan and implement optimization measures:

- monitoring labor-time, planning resources, head count, etc. focuses on *labor,*
- controlling, cost centers, balance sheets, budget planning, etc. focuses on *capital,*
- capital expenditure account, (fixed) cost accounting, write-offs, etc. focuses on *facilities and raw materials.*

These methods and tools are constantly being adapted and refined by business experts.

Also at the operational level these three factors of production are the main focal points.

Managing a development project, for example, demands tight control of the labor and capital factors in the starting phase by reducing budgets as much as possible and by planning the optimal use of human resources; in the working phase rigid control has to be exercised over money and the labor investment (people, working hours). Even in the strategic area these three factors of production build the basis for new optimization strategies: lean management (labor factor), shareholder value (capital factor), lean production, just-in-time production and outsourcing (investment and raw materials) are examples from the last decade. If something very important has to be done in a company, these three factors of production have to be kept in focus.

Additionally, these factors of production represent values and so there is a kind of business philosophy behind this model: earnings and profits are more or less proportional to the use of these factors. The possession of these factors of production and their investment in a real product brings its own rich rewards.

The situation is described here in such detail as to make it clear that this really is the common model of the company. Managing a company means thinking and acting according to this model. Of course, it is not a bad thing to use a model when dealing with complicated and complex systems. In fact, it is the only way to act sensibly and not just leave it to chance.

Nevertheless, one big problem still exists: is the model the right one or the best one possible? If not, wrong decisions might be taken in the company and wrong optimization strategies might be set up. If a better model for companies existed, its implementation would bring more clarity and better opportunities for control and, consequently, it would cause fewer problems and generate higher profits.

Testing the Model. The model should be able to describe effects, events, processes and measurable quantities within the company. What can this model tell us?

Here are just a few questions (Q) and answers (A):

Q: What is sold?

A: Products and services.

Q: What is knowledge?

A: Knowledge (know-how or experience) is intangible and comes into existence when work is being done on new (material) products. It can also appear spontaneously or be generated intentionally at creativity workshops (ideas, visions etc.). Knowledge is an attribute of our products and processes. It is generated while work is being carried out on the product[43].

Q: How should knowledge be handled?

[43] J. Biesner and G. Briiggen, (2005), *The Significance of Knowledge Management for a Large Company*. Knowledge Management and Technological Dimensions. Physica-Verlag Heidelberg, New York, 2005. P. 159-168.

A: It should be stored, shared, distributed, etc. (for example, according to the elements of Probst's circle of knowledge).

*Q:*What can be done to ensure success for the company in the future?

A: Invest work and money in development projects. This pays off when certain success factors are taken into account such as the monitoring and control of the amount of money, labor and investment spent on the projects.

Up to now, the model has given us reasonable answers to the questions. However, there are simple questions to which the model either cannot give any answer or merely gives answers that are unsatisfactory or irritating:

Q: From dishwasher to millionaire – how is that possible?

A: Not at all! The labor has already been sold and there is neither capital nor facilities. There cannot be any gain from, or any combination of, the three factors of production.

Q: How does the software industry make its money?

A: ?

Q: How can a estate agent earn so much money by injecting so little investment, so little money and – as the clients often say – so little work?

A: ?

Q: How is growth achieved? Where does it come from?

A: ?

The answer to the first question is somewhat curious: the great American Dream cannot be explained by conventional methods of looking at companies. Actually, the history of most companies is not explainable using this model because they all started off as very small enterprises.

The software and estate agent questions ask why there are such large differences in the gains achieved from labor. Do other companies also have such huge gains from their use of labor? Moreover, if a company is part of the "Old Economy" with production facilities (investments), its profits should be significantly higher than if it were part of the "New Economy" because it also uses the two other factors of production. And this should result in additional gains.

These questions may be simple but they are of a fundamental nature. It is really annoying that these questions cannot be answered. It should also be noted that even after using the company model for 150 years, it could be said that we still end up facing similar, even identical, problems in managing the company, in spite of all the extensive controlling and steering measures intensified in the last years by all the IT-based ones. Therefore, one might come to the conclusion that the company model is inadequate. It doesn't fit[44].

This might also be the reason for the permanent search for better management methods and for the searchers' lack of success. It may be that we cannot develop suitable management methods and tools within the framework characterized by the three traditional factors of production.

[44] J. Davis, E. Subrahmanian, (2005), *Art Westerberg (Editors) Knowledge Management and Technological D imensions*. Physica-Verlag Heidelberg, New York 2005. 204 p.

The Knowledge-based Model of the Company. We suggest that knowledge is the important factor when it comes to ensuring the success of a company. This model has the following fundamentals:

- only by having knowledge about product functions, production processes, markets and internal organizations can a company successfully manufacture and sell products or services,
- knowledge is not part of a product but rather its precondition,
- a company's competitiveness is achieved by its advantage over its rivals in the field of knowledge. An important consequence of this is that the company requires exclusive, proprietary knowledge. It is not enough to use the knowledge that is publicly available,
- the employees work in processes either to create new knowledge or to apply existing knowledge.

Testing the Knowledge-based Model. The most fundamental question is: *How is business done?* The answer reveals a rather different picture of the nature of the company. Five processes define the business of a company:

- knowledge is bought by the company in the form of employees, licensing rights, components, machines and assembly plants, etc.,
- knowledge is used for the (existing) products and for optimizing the efficiency of the processes. This keeps the company state-of-the-art in those areas which do not belong to its core competencies. Additionally, this knowledge is the basis for the next process,
- knowledge is newly created. When all the available state-of-the-art knowledge is applied, it will add that little bit extra and so achieve an advantage over competitors,
- knowledge is converted by the production process into a marketable form, i.e. into a service or product,
- knowledge is sold in its converted state.

To sum up, the company's business is to buy, use, create, convert and sell knowledge. The other factors of production (labor, capital, investments and materials...) are needed to run the processes to use this knowledge. They largely depend on the amount and complexity of the knowledge involved: the amount of knowledge needed lies in conjunction with the company's efficiency in the application and creation of knowledge and the effort needed for the conversion of such knowledge. On the basis of this model, the tricky questions mentioned previously can easily be answered in a consistent manner:

- the dishwasher possesses knowledge about the market and the needs of its customers. He also possesses knowledge about product functions or services and the ways to offer these to the customers. This knowledge he can sell,
- the software industry offers IT-based knowledge which the company needs in order to increase the efficiency of its processes. The company buys this knowledge, which is also available to the public, in order to keep pace with

its competitors. The profit of a software company does not come from invested labor, but from the market value of the knowledge generated,
- the estate agent sells his or her knowledge of the market, not his (her) labor,
- growth is based on the company's ability to generate efficiently the right knowledge for the market.

Preliminary Conclusions from the Knowledge-based Company Model. Taking a closer look at the knowledge and knowledge management (KM), some preliminary conclusions can be drawn:

- KM has two tasks: of course, it has to ensure that the existing knowledge is efficiently applied in the processes and converted into the products. This is the typical task of KM in today's organizations. In addition, it has to manage the effective and efficient creation of new knowledge for the future business of the company,
- KM is not an additional process which runs parallel to the existing product development and production processes, but it should be the core of the management process itself,
- projects are seen to be different by their amount of knowledge creation and knowledge conversion. Only the latter type can be managed (monitored and steered) in the conventional way by focusing on work. The other project type must be managed by focusing on the knowledge needed and knowledge creation.

The role of the employees is then also defined differently: we need creative employees who can create new knowledge as well as employees who can transform this knowledge efficiently and with determination into products. These are different roles with different requirements[45].

Implementation of the Knowledge-based Company Model. Today it is easy to think in terms of the concept of a knowledge-based company model, but it is hard to act according to it. Up to now no common units exist to represent knowledge or the knowledge needed as we have for labor (hours, number of employees) or capital (money). When we have solved this problem, the difficult task remains to develop the methods and tools for monitoring and steering the company's processes with regard to knowledge. Many of today's common methods and tools of knowledge management may be useful and might be applied, but this will only be recognized after close analysis of the knowledge requirements of the company's processes. Some initial ideas already exist but they have not yet been fully developed and there is a lack of extensive testing and optimization.

Perfection can be realized only in the long run, but it should be kept in mind that today's methods of management also have a history of development over more than 100 years – and are still not working completely satisfactorily.

[45] J. Biesner and G. Brigen, (2005), *The Significance of Knowledge Management for a Large Company*. Knowledge Management and Technological Dimensions. Physica-Verlag Heidelberg, New York, 2005. P. 159-168.

We have shown that present day company management is based on a model of the company, which might be insufficient and thus constrain the development of efficient and effective management methods and tools. We have presented here an alternative company model based on knowledge that might have the potential to open up the way towards a new and better understanding of the company and could lead to a new and better operative and strategic management. The result is that knowledge management is no longer an additional task for the company – but the core of the company management itself.

1.4. Knowledge Management Experiences: India's Light Combat Aircraft

Aviation is a knowledge-intense activity. Its direct contribution to economic prosperity is a measure of its success in pioneering the "Knowledge Society". The people directly employed in the aviation enterprises are highly skilled "knowledge" workers, well practised in the use and exploitation of advanced technologies including the new digital information technologies. Others working in the laboratories push forward the technological frontiers developing the knowledge that is crucial for economic growth.

In aviation the largest investments are made on military aircraft development since they are linked to national security. Military aircraft also have the most demanding and the most diverse performance requirements. It is therefore not surprising that the best technologies and often the best science emerge from the development of military aircraft. These technologies then find their way into civil aviation sector and often to one's delight, also to non-aviation sector.

Taking into consideration, the military and financial aspects, the Indian Light Combat aircraft program was initiated in the mid-eighties. This fighter aircraft is world's smallest, lightweight supersonic fighter of its class. This necessitated development of new infrastructure, new enabling technologies and new core technologies. Collaborative effort between academic institutions, R&D laboratories and Industry was undertaken on a very large scale. Hundreds of new products, processes, facilities and technologies were developed as a part of this program. This paper outlines the strategy adopted to develop and manage the knowledge base.

Indian Light Combat Aircraft (LCA). LCA is die world's smallest, lightweight, multi-role supersonic aircraft designed to meet the stringent requirements of Indian Air Force (1AF) as its frontline, multi-mission single-seater tactical aircraft for the 21st century[46].

The Key requirements are:

- higher agility and maneuverability,
- multi-mission capability,
- all weather, day and night missions,
- cockpit compatible with night vision systems,
- capability to carry (Precision guided weapons, Conventional bombs and rockets.

Close Combat and beyond visual range missiles, Sensor and Electronic counter measure pods),

- high survivability in ECM/ECCM environment,
- adequate range for close support and interdiction.

The need was that performance must be superior to fighters such as F-16 of American origin, Mirage-2000 of French origin and Mig-29 of Russian origin. Another requirement was that the technology' deployed should enable aircraft remain current for duration of its service without major upgrades. It was evident that goals of

[46] J. Davis, E. Subrahmanian, (2005), A. Westerberg (Editors). *Knowledge Management and Technological Dimensions*. Physica-Verlag Heidelberg, New York 2005. 204 p.

performance and life could be achieved only if the best of technologies available in the field of aviation were harnessed in the making of LCA.

Core Technologies and Design Concepts of LCA. LCA integrates modem design concepts and state-of-art technologies such as compound delta plan form with relaxed static stability, fly by wire flight control system, advanced digital cockpit, multimode radar, integrated avionics system, advanced composites for airframe and a state-of-art, high performance engine. LCA is a total weapon system capable of precision weapon launch. There are eight weapon stations with capability to cany and deliver a wide range of missiles (close combat, beyond usual range, air-to-air, air to surface and air to sea), bombs, rockets, etc. In addition to the multimode radar, which is the prime sensor of LCA, it is designed to carry additional sensors such as FLIR (forward looking infrared sensor), IRST (Infrared search and track system), LDP (Laser designation Pod) and Reconnaissance Pods (Davis J., Subrahmanian E., 2005).

Enabling Technologies for LCA Design, Development and Production. LCA is packed with latest technologies relevant to contemporary' fighters. The performance, weight and cost targets specified by the customer demanded not only the best of core technologies but also best of design processes, manufacturing technologies, testing infrastructure (testing facilities) testing technologies, software development, testing and validation methodologies and a host of other enabling technologies and management tools. Some of the enabling technologies needed for development of LCA were:

- Computer Aided Design (CAD),
- Computer Aided Manufacturing (CAM),
- Computer Aided Engineering (CAE),
- Digital Prototype Assembly (DP),
- Virtual Prototyping (VP),
- Rapid Prototyping (Rapid Tooling (RP/RA),
- Reverse Engineering (RE),
- Product Data Management (PDM),
- Enterprise Resource Planning (ERP).

A few of the CAD tools such as CATIA were available in the commercial market. However, most of the CAD/CAE/CAM/DP/VP/RP/RA tools needed to be developed by the LCA teams as they were not available in the commercial market. The Aircraft Industries develop these tools in-house and would not like to part with them as they are their knowledge base and provide them competitive advantage. The Indian Industry had not developed any of these tools and technologies earlier as they did not have a development program which demanded such tools and facilities.

Challenges of Knowledge Generation and Knowledge Management. For a proper understanding of the significance of LCA for Indian Aeronautics, one needs to know a little bit about the historical background of fighter aircraft design and development in India. The last fighter prototype, the HF 24, Marut flew in 1961. This aircraft development was undertaken in India under the leadership of a German design team using mostly imported materials, equipment and processes. This aircraft was a contemporary fighter. However, no follow-on program was undertaken for next

two and half decades. As a result the knowledge base, not only did not grow but even the existing knowledge base got dissipated. In a field such as aviation, one has to continue to develop new technologies and products to retain their position, whereas in India, no significant initiative was taken to develop new technologies. Thus the base was very weak.

Unlike the previous generation aircraft, LCA systems are totally software dependent. The flight control system is an all digital system incorporating safety critical onboard software. The Glass Cockpit does not incorporate any discrete instruments. The multifunction displays are driven by software and instruments on demand are created. The onboard avionics computer is driven by onboard mission critical software which not only manages vehicle management functions but also carries out multiple functions such as control of displays, weapons management, sensor management, systems health management, electronic counter measures and a host of other related tasks. The software is so critical that new development and testing technologies were required to be established and mastered.

The new generation fighters such as LCA are highly integrated systems, each element is dependent on many other elements and together they serve the multiple objectives of vehicle management, mission management, life management, vulnerability/survivability management. Development of such an integrated system, needed concurrent engineering approach and related tools; ground rigs for testing at component, subsystems and system level; simulators mimicking the major systems, the vehicle itself and also the complex environment in which the vehicle has to operate. Development of a complex system such as LCA needed a structured process of validation and verification leading to certification for safe flying leading to service induction. The testing involves not only on ground but also flight testing. It is a complex process needing lot of know-how and know-why along with excellent professional management skills. This is a complex knowledge and resource management which was developed from scratch.

A complex system such as LCA needed thousands of scientists/engineers/technicians with expertise in multiple disciplines. No single organization within India had the abilities to develop these complex knowledge bases and technologies. Hence along with knowledge innovation there was a need to bring in organizational innovation to achieve the objectives[47].

The Knowledge Circuit. Following major tasks were accomplished within the program:

Knowledge Generation. The design team strength varied from 300 engineers/scientists at projected definition phase to almost 3000 at the peak of development. The knowledge generation work was done at more than 300 industries, 25 academic institutions and 40 research laboratories.

The Subsystem/System Knowledge Intensification. System teams integrated the various components (equipment, software) – processes developed by industry/R&D labs./academics and carried out testing extensively. The vehicle and system designers

[47] T. Bromberg, V. Khin, N. Lynnik, (1993), *Recommendations for determining the value of industrial property objects*. M .: NPO Poisk, 1993. 128 p.

also had to build high fidelity simulators (both hardware and software) to test the vehicle behavior, to fine-tune the man machine interface and to carryout failure analysis. This data and knowledge base was consolidated for subsequent formal validation by independent agencies.

Knowledge Validation. The validation of system functioning under normal and failure modes are done by independent certification agencies based on extensive testing done on simulators, ground rigs and flight testing.

Knowledge Transfer. One of the big challenges is to consolidate and document the database and knowledge to enable smooth transfer to production agencies. This is a difficult task. However, new generation enabling technologies such as digital models, virtual prototyping tools, product data management tools, networking environment are helping in the smooth transfer of knowledge base.

Support System for Innovation. The most challenging task was establishment of culture that supports innovation and knowledge generation. The key elements of this support system are the culture supportive of innovation and the culture of taking up challenges. This needed dismantling of all organizational and other barriers. Such a strong cultural base enabled ideas generation, facilities creation, technologies development and establishment and relevant systems to achieve the mission of developing the LCA.

Development of Indian Light Combat Aircraft, the largest R&D Program undertaken in the country so far, is an extraordinary experience for the development team. It achieved a considerable degree of cultural and system changes. It enabled creation of a valuable knowledge base at the various work centers. This knowledge base is expected to have many spin-off benefits not only in the aviation but also in the non-aviation sector.

Chapter 2. Intangible Market Resources and Their Importance in the Economic Development of Companies

2.1. Trademarks and Company's Names

A trademark, trade mark, or trade-mark is a recognizable sign, design, or expression which identifies products or services of a particular source from those of others, although trademarks used to identify services are usually called service marks. The trademark owner can be an individual, business organization, or any legal entity. A trademark may be located on a package, a label, a voucher, or on the product itself. For the sake of corporate identity, trademarks are often displayed on company buildings.

The first legislative act concerning trademarks was passed in 1266 under the reign of Henry III, requiring all bakers to use a distinctive mark for the bread they sold. The first modern trademark laws emerged in the late 19th century. In France the first comprehensive trademark system in the world was passed into law in 1857. The Trade Marks Act 1938 of the United Kingdom changed the system, permitting registration based on "intent-to-use", creating an examination based process, and creating an application publication system. The 1938 Act, which served as a model for similar legislation elsewhere, contained other novel concepts such as "associated trademarks", a consent to use system, a defensive mark system, and non-claiming right system.

A trademark identifies the brand owner of a particular product or service. Trademarks can be used by others under licensing agreements; for example, Bully land obtained a license to produce Smurf figurines; the Lego Group purchased a license from Lucas film in order to be allowed to launch Lego Star Wars; TT Toys Toys is a manufacturer of licensed ride-on replica cars for children. The unauthorized usage of trademarks by producing and trading counterfeit consumer goods is known as brand piracy.

The owner of a trademark may pursue legal action against trademark infringement. Most countries require formal registration of a trademark as a precondition for pursuing this type of action. The United States, Canada and other countries also recognize common law trademark rights, which means action can be taken to protect an unregistered trademark if it is in use. Still, common law trademarks offer the holder, in general, less legal protection than registered trademarks[48].

Designation. A trademark may be designated by the following symbols:

- ™ (the "trademark symbol", which is the letters "TM" in superscript, for an unregistered trademark, a mark used to promote or brand goods),
- ℠ (which is the letters "SM" in superscript, for an unregistered service mark, a mark used to promote or brand services),
- ® (the letter "R" surrounded by a circle, for a registered trademark).

[48] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu.P. Aniskina. M .: MIET, 2002. P. 57-64.

Styles. A trademark is typically a name, word, phrase, logo, symbol, design, image, or a combination of these elements. There is also a range of non-conventional trademarks comprising marks which do not fall into these standard categories, such as those based on colour, smell, or sound (like jingles). Trademarks which are considered offensive are often rejected according to a nation's trademark law.

The term *trademark* is also used informally to refer to any distinguishing attribute by which an individual is readily identified, such as the well-known characteristics of celebrities. When a trademark is used in relation to services rather than products, it may sometimes be called a service mark, particularly in the United States.

Fundamental concepts. The essential function of a trademark is to exclusively identify the commercial source or origin of products or services, so a trademark, properly called, *indicates source* or serves as a *badge of origin*. In other words, trademarks serve to identify a particular business as the source of goods or services. The use of a trademark in this way is known as *trademark use*. Certain exclusive rights attach to a registered mark.

Trademark rights generally arise out of the use of, or to maintain exclusive rights over, that sign in relation to certain products or services, assuming there are no other trademark objections.

Different goods and services have been classified by the International (Nice) Classification of Goods and Services into 45 Trademark Classes (1 to 34 cover goods, and 35 to 45 cover services). The idea behind this system is to specify and limit the extension of the intellectual property right by determining which goods or services are covered by the mark, and to unify classification systems around the world.

History. In trademark treatises it is usually reported that blacksmiths who made swords in the Roman Empire are thought of as being the first users of trademarks. Other notable trademarks that have been used for a long time include Löwenbräu, which claims use of its lion mark since 1383. The first trademark legislation was passed by the Parliament of England under the reign of King Henry III in 1266, which required all bakers to use a distinctive mark for the bread they sold[49].

The first modern trademark laws emerged in the late 19th century. In France the first comprehensive trademark system in the world was passed into law in 1857 with the "Manufacture and Goods Mark Act". In Britain, the Merchandise Marks Act 1862 made it a criminal offence to imitate another's trade mark 'with intent to defraud or to enable another to defraud'. In 1875, the Trade Marks Registration Act was passed which allowed formal registration of trade marks at the UK Patent Office for the first time. Registration was considered to comprise *prima facie* evidence of ownership of a trade mark and registration of marks began on 1 January 1876. The 1875 Act defined a registrable trade mark as a device, or mark, or name of an individual or firm printed in some particular and distinctive manner; or a written signature or copy of a written signature of an individual or firm; or a distinctive label

[49] Trademark Rules, (2019), https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf.

or ticket'.

In the United States, Congress first attempted to establish a federal trademark regime in 1870. This statute purported to be an exercise of Congress' Copyright Clause powers. However, the Supreme Court struck down the 1870 statute in the *Trade-Mark Cases* later on in the decade. In 1881, Congress passed a new trademark act, this time pursuant to its Commerce Clause powers. Congress revised the Trademark Act in 1905. The Lanham Act of 1946 updated the law and has served, with several amendments, as the primary federal law on trademarks.

The Trade Marks Act 1938 in the United Kingdom set up the first registration system based on the "intent-to-use" principle. The Act also established an application publishing procedure and expanded the rights of the trademark holder to include the barring of trademark use even in cases where confusion remained unlikely. This Act served as a model for similar legislation elsewhere.

Oldest registered trademarks.

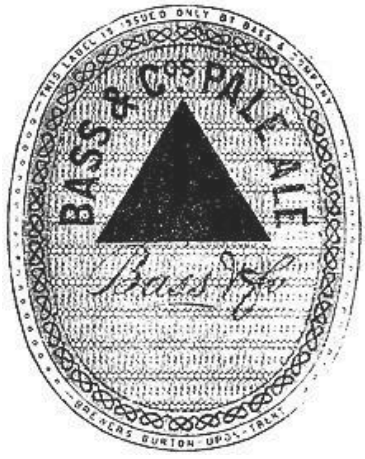


Fig.2.1.1. Bass Brewery's logo as the first image to be registered as a trademark in the UK (1876)

Source: Trademark Rules, 2019. https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf.

Bass Brewery's logo became the first image to be registered as a trademark in the UK, in 1876[50].

The oldest registered trademark has various different claimants, enumerated below:

- United Kingdom: 1876 – The Bass Brewery's label incorporating its triangle logo for ale was the first trademark to be registered under the Trade Mark Registration Act 1875,
- United States: there are at least three claims:
- a design mark with an eagle and a ribbon and the words "Economical, Brilliant"[18] was the first registered trademark, filed by the Averill Chemical Paint Company on August 30, 1870 under the Trademark Act of

[50] Trademark Rules, (2019), https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf.

1870. However, in the *Trade-Mark Cases*, 100 U.S. 82 (1879), the U.S. Supreme Court held the 1870 Act to be unconstitutional,

- the oldest U.S. registered trademark still in use is trademark reg. no 11210, a depiction of the Biblical figure Samson wrestling a lion, registered in the United States on May 27, 1884 by the J.P. Tolman Company (now Samson Rope Technologies, Inc.), a rope-making company,
- Germany: 1875 – The Krupp steel company registered three seamless train wheel tires, which are put on top of each other, as its label in 1875, under the German Trade Mark Protection Law of 1874. The seamless train wheel tire did not break, unlike iron tires with seams, and was patented by Krupp in Prussia in 1853.

Symbols. The two symbols associated with trademarks, ™ (the trademark symbol) and ® (the registered trademark symbol), represent the status of a mark and accordingly its level of protection. While ™ can be used with any common law usage of a mark, ® may only be used by the owner of a mark following registration with the relevant national authority, such as the U.S. Patent and Trademark Office (USPTO or PTO). The proper manner to display either symbol is immediately following the mark in superscript style.

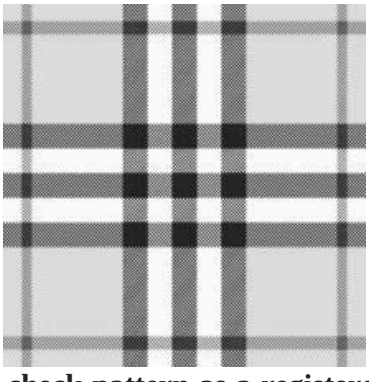


Fig. 2.1.2. Burberry check pattern as a registered trademark of Burberry Ltd.

Source: Trademark Rules, 2019. https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf.

Terminology.

Approximate drawing of Burberry check pattern. The pattern is a registered trademark of Burberry Ltd.

Terms such as "mark", "brand" and "logo" are sometimes used interchangeably with "trademark". "Trademark", however, also includes any device, brand, label, name, signature, word, letter, numerical, shape of goods, packaging, colour or combination of colours, smell, sound, movement or any combination thereof which is capable of distinguishing goods and services of one business from those of others. It must be capable of graphical representation and must be applied to goods or services for which it is registered.

Specialized types of trademark include certification marks, collective trademarks and defensive trademarks. A trademark which is popularly used to

describe a product or service (rather than to distinguish the product or services from those of third parties) is sometimes known as a genericized trademark. If such a mark becomes synonymous with that product or service to the extent that the trademark owner can no longer enforce its proprietary rights, the mark becomes generic.

A "trademark look" is an informal term for a characteristic look for a performer or character of some sort. It is usually not legally trademark protected and the term is not used in the trademark law.

Registration. The law considers a trademark to be a form of property. Proprietary rights in relation to a trademark may be established through actual use in the marketplace, or through registration of the mark with the trademarks office (or "trademarks registry") of a particular jurisdiction. In some jurisdictions, trademark rights can be established through either or both means. Certain jurisdictions generally do not recognize trademarks rights arising through use. If trademark owners do not hold registrations for their marks in such jurisdictions, the extent to which they will be able to enforce their rights through trademark infringement proceedings will therefore be limited. In cases of dispute, this disparity of rights is often referred to as "first to file" as opposed to "first to use." Other countries such as Germany offer a limited amount of common law rights for unregistered marks where to gain protection, the goods or services must occupy a highly significant position in the marketplace – where this could be 40% or more market share for sales in the particular class of goods or services[51].

In the United States, the registration process includes several steps. First, the trademark owner files an application to register the trademark. About three months after it is filed, the application is reviewed by an examining attorney at the U.S. Patent and Trademark Office.

The examining attorney checks for compliance with the rules of the Trademark Manual of Examination Procedure. This review includes procedural matters such as making sure the applicant's goods or services are identified properly. It also includes more substantive matters such as making sure the applicant's mark is not merely descriptive or likely to cause confusion with a pre-existing applied-for or registered mark.

If the application runs afoul of any requirement, the examining attorney will issue an office action requiring the applicant to address certain issues or refusals prior to registration of the mark. If the examining attorney approves the application, it will be "published for opposition." During this 30-day period third parties who may be affected by the registration of the trademark may step forward to file an Opposition Proceeding to stop the registration of the mark. If an Opposition proceeding is filed it institutes a case before the Trademark Trial and Appeal Board to determine both the validity of the grounds for the opposition as well as the ability of the applicant to register the mark at issue. Finally, provided that no third-party opposes the registration of the mark during the opposition period or the opposition is ultimately decided in the applicant's favor the mark will be registered in due course.

Outside of the United States the registration process is substantially similar to

[51] Trademark Rules, (2019), https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf.

that found in the U.S. save for one notable exception in many countries: registration occurs prior to the opposition proceeding. In short, once an application is reviewed by an examiner and found to be entitled to registration a registration certificate is issued subject to the mark being open to opposition for a period of typically 6 months from the date of registration.

A registered trademark confers a bundle of exclusive rights upon the registered owner, including the right to exclusive use of the mark in relation to the products or services for which it is registered.

The law in most jurisdictions also allows the owner of a registered trademark to prevent unauthorized use of the mark in relation to products or services which are identical or "colourfully" similar to the "registered" products or services, and in certain cases, prevent use in relation to entirely dissimilar products or services. The test is always whether a consumer of the goods or services will be confused as to the identity of the source or origin. An example may be a very large multinational brand such as "Sony" where a non-electronic product such as a pair of sunglasses might be assumed to have come from Sony Corporation of Japan despite not being a class of goods that Sony has rights in.

Once trademark rights are established in a particular jurisdiction, these rights are generally only enforceable in that jurisdiction, a quality which is sometimes known as territoriality. However, there is a range of international trademark laws and systems which facilitate the protection of trademarks in more than one jurisdiction.

Search. In the United States the USPTO maintains a database of registered trademarks. The database is open to the public. A licensed attorney may be required to interpret the search results. As trademarks are governed by federal law, state law, and common law, a thorough search as to the availability of a mark is very important. In the United States obtaining a trademark search and relying upon the results of an opinion issued by an attorney may insulate a trademark user from being required to pay treble damages and attorney’s fees in a trademark infringement case as it demonstrates that the trademark user performed due diligence and was using the mark in good faith. The USPTO internally captures more information about trademarks than what they publicly disclose on their official search website, such as the complete contents of every logo trademark filing.

Trademarks may also be searched on third-party databases such as LexisNexis, Dialog, and CompuMark[52].

Within the European Union, searches have to be conducted taking into account both EU Trademarks as well as national trademarks.

Classification systems exist to help in searching for marks. One example is the "International Classification of the Figurative Elements of Marks", better known as the Vienna Classification.

Ability to register. In most systems, a trademark can be registered if it is able to distinguish the goods or services of a party, will not confuse consumers about the relationship between one party and another, and will not otherwise deceive consumers with respect to the qualities.

[52] Trademark Rules, (2019), https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf

Distinctive character. A trademark may be eligible for registration, or registerable, if it performs the essential trademark function, and has distinctive character. Registerability can be understood as a continuum, with "inherently distinctive" marks at one end, "generic" and "descriptive" marks with no distinctive character at the other end, and "suggestive" and "arbitrary" marks lying between these two points. "Descriptive" marks must acquire distinctiveness through secondary meaning – consumers have come to recognize the mark as a source indicator – to be protectable. "Generic" terms are used to refer to the product or service itself and cannot be used as trademarks. (See the KitKat v Cadbury case).

Maintaining rights. Trademarks rights must be maintained through actual lawful use of the trademark. These rights will cease if a mark is not actively used for a period of time, normally 5 years in most jurisdictions.

In the case of a trademark registration, failure to actively use the mark in the lawful course of trade, or to enforce the registration in the event of infringement, may also expose the registration itself to become liable for an application for the removal from the register after a certain period of time on the grounds of "non-use".

It is not necessary for a trademark owner to take enforcement action against all infringement if it can be shown that the owner perceived the infringement to be minor and inconsequential.

This is designed to prevent owners from continually being tied up in litigation for fear of cancellation. An owner can at any time commence action for infringement against a third party as long as it had not previously notified the third party of its discontent following third party use and then failed to take action within a reasonable period of time (called acquiescence). The owner can always reserve the right to take legal action until a court decides that the third party had gained notoriety which the owner 'must' have been aware of. It will be for the third party to prove their use of the mark is substantial as it is the onus of a company using a mark to check they are not infringing previously registered rights. In the US, owing to the overwhelming number of unregistered rights, trademark applicants are advised to perform searches not just of the trademark register but of local business directories and relevant trade press. Specialized search companies perform such tasks prior to application.

All jurisdictions with a mature trademark registration system provide a mechanism for removal in the event of such *non-use*, which is usually a period of either three or five years. The intention to use a trademark can be proven by a wide range of acts as shown in the "Wooly Bull" and *Aston v Harlee* cases.

In the U.S., failure to use a trademark for this period of time will result in *abandonment* of the mark, whereby any party may use the mark. An abandoned mark is not irrevocably in the public domain, but may instead be re-registered by any party which has re-established exclusive and active use, and must be associated or linked with the original mark owner[53].

A mark is registered in conjunction with a description of a specific type of goods, and if the party uses the mark but in conjunction with a different type of

[53] Trade marks identify the goods and services of particular traders. Signs that are suitable for distinguishing products or services of a particular enterprise from that of other companies are eligible for trade mark protection". Retrieved 2012-12-22.

goods, the mark may still be considered abandoned, as was the case in Lens.com, Inc. v. 1-800 Contacts, Inc. If a court rules that a trademark has become "generic" through common use (such that the mark no longer performs the essential trademark function and the average consumer no longer considers that exclusive rights attach to it), the corresponding registration may also be ruled invalid.

Unlike other forms of intellectual property (e.g., patents and copyrights) a registered trademark can, theoretically, last forever. So long as a trademark's use is continuous a trademark holder may keep the mark registered with the U.S. Patent and Trademark Office by filing Section 8 Affidavit(s) of Continuous Use as well as Section 9 Applications for renewal, as required.

Specifically, once registered with the U.S. Patent and Trademark Office the owner of a trademark is required to file a Section 8 Affidavit of Continuous Use to maintain the registration between the 5th and 6th year anniversaries of the registration of the mark or during the 6-month grace period following the 6th anniversary of the registration.

During this period, a trademark owner may concurrently opt to file a Section 15, Declaration of Incontestability. A mark declared incontestable is immune from future challenge, except in instances where the mark becomes generic, the mark is abandoned, or if the registration was acquired fraudulently. Note, if the Section 8 Affidavit is filed during the 6-month grace period additional fees to file the Affidavit with the U.S. Patent and Trademark Office will apply.

In addition to requirement above, U.S. trademark registrations are also required to be renewed on or about every 10-year anniversary of the registration of the trademark. The procedure for 10-year renewals is somewhat different from that for the 5th-6th year renewal. In brief, registrants are required to file both a Section 8 Affidavit of Continuous Use as well as a Section 9 Application for Renewal every ten years to maintain their registration.

Enforcing rights. The extent to which a trademark owner may prevent unauthorized use of trademarks which are the same as or similar to its trademark depends on various factors such as whether its trademark is registered, the similarity of the trademarks involved, the similarity of the products or services involved, and whether the owner's trademark is *well known* or, under U.S. law relating to trademark dilution, *famous*.

If a trademark has not been registered, some jurisdictions (especially Common Law countries) offer protection for the business reputation or goodwill which attaches to unregistered trademarks through the tort of passing off. Passing off may provide a remedy in a scenario where a business has been trading under an unregistered trademark for many years, and a rival business starts using the same or a similar mark[54].

If a trademark has been registered, then it is much easier for the trademark owner to demonstrate its trademark rights and to enforce these rights through an infringement action. Unauthorized use of a registered trademark need not be

[54] Trade marks identify the goods and services of particular traders. Signs that are suitable for distinguishing products or services of a particular enterprise from that of other companies are eligible for trade mark protection". Retrieved 2012-12-22.

intentional in order for infringement to occur, although damages in an infringement lawsuit will generally be greater if there was an intention to deceive.

For trademarks which are considered to be well known, infringing use may occur where the use occurs in relation to products or services which are not the same as or similar to the products or services in relation to which the owner's mark is registered. A growing area of law relating to the enforcement of trademark rights is secondary liability, which allows for the imputation of liability to one who has not acted directly to infringe a trademark but whose legal responsibility may arise under the doctrines of either contributory or vicarious liability.

Limits and defenses to claims of infringement. Trademark is subject to various defenses, such as abandonment, limitations on geographic scope, and fair use. In the United States, the fair use defence protects many of the interests in free expression related to those protected by the First Amendment. A product bearing "Linux" name, but not infringing the trademark owned by Linus Torvalds, because it falls into a different category.

Fair use may be asserted on two grounds, either that the alleged infringer is using the mark to describe accurately an aspect of its products, or that the alleged infringer is using the mark to identify the mark owner. One of the most visible proofs that trademarks provide a limited right in the U.S. comes from the comparative advertising that is seen throughout U.S. media.

Fig. 2.1.3. "Whisper Quiet" products

Source: Trademark Rules, 2019. https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf.

An example of the first type is that although Maytag owns the trademark "Whisper Quiet" for its dishwashers, makers of other products may describe their goods as being "whisper quiet" so long as these products do not fall under the same category of goods the trademark is protected under[55].

An example of the second type is that Audi can run advertisements saying that

[55] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M. MIET, 2002. P. 57-64.

a trade publication has rated an Audi model higher than a BMW model, since they are only using "BMW" to identify the competitor. In a related sense, an auto mechanic can truthfully advertise that he services Volkswagens, and a former *Playboy* Playmate of the Year can identify herself as such on her website.

Wrongful or groundless threats of infringement. Various jurisdictions have laws which are designed to prevent trademark owners from making wrongful threats of trademark infringement action against other parties. These laws are intended to prevent large or powerful companies from intimidating or harassing smaller companies.

Where one party makes a threat to sue another for trademark infringement, but does not have a genuine basis or intention to carry out that threat, or does not carry out the threat at all within a certain period, the threat may itself become a basis for legal action. In this situation, the party receiving such a threat may seek from the Court a declaratory judgment; also known as a declaratory ruling.

Public policy. Trademark law is designed to fulfill the public policy objective of consumer protection, by preventing the public from being misled as to the origin or quality of a product or service. By identifying the commercial source of products and services, trademarks facilitate identification of products and services which meet the expectations of consumers as to quality and other characteristics.

Trademarks may also serve as an incentive for manufacturers, providers or suppliers to consistently provide quality products or services to maintain their business reputation. Furthermore, if a trademark owner does not maintain quality control and adequate supervision in relation to the manufacture and provision of products or services supplied by a licensee, such "naked licensing" will eventually adversely affect the owner's rights in the trademark. For US law *see, ex. Eva's Bridal Ltd. v. Halanick Enterprises, Inc.* 639 F.3d 788 (7th Cir. 2011). This proposition has, however, been watered down by the judgment of the House of Lords in the case of *Scandecor Development AB v. Scandecor Marketing AB et al.* UKHL 21; wherein it has been held that the mere fact that a bare license (equivalent of the United States concept of a naked license) has been granted did not automatically mean that a trademark was liable to mislead.

By the same token, trademark holders must be cautious in the sale of their mark for similar reasons as apply to licensing. When assigning an interest in a trademark, if the associated product or service is not transferred with it, then this may be an "assignment-in-gross" and could lead to a loss of rights in the trademark. It is still possible to make significant changes to the underlying goods or services during a sale without jeopardizing the trademark, but companies will often contract with the sellers to help transition the mark and goods or services to the new owners to ensure continuity of the trademark.

Comparison with patents, designs and copyright. While trademark law seeks to protect indications of the commercial source of products or services, patent law generally seeks to protect new and useful inventions, and registered designs law generally seeks to protect the look or appearance of a manufactured article. Trademarks, patents and designs collectively form a subset of intellectual property known as industrial property because they are often created and used in an industrial

or commercial context.

By comparison, copyright law generally seeks to protect original literary, artistic and other creative works. Continued active use and re-registration can make a trademark perpetual, whereas copyright usually lasts for the duration of the author's lifespan plus 70 years for works by individuals, and some limited time after creation for works by bodies corporate. This can lead to confusion in cases where a work passes into the public domain but the character in question remains a registered trademark[56].

Although intellectual property laws such as these are theoretically distinct, more than one type may afford protection to the same article. For example, the particular design of a bottle may qualify for copyright protection as a non-utilitarian [sculpture], or for trademark protection based on its shape, or the 'trade dress' appearance of the bottle as a whole may be protectable. Titles and character names from books or movies may also be protectable as trademarks while the works from which they are drawn may qualify for copyright protection as a whole. Trademark protection does not apply to utilitarian features of a product such as the plastic interlocking studs on Lego bricks.

Drawing these distinctions is necessary, but often challenging for the courts and lawyers, especially in jurisdictions where patents and copyrights pass into the public domain, depending on the jurisdiction. Unlike patents and copyrights, which in theory are granted for one-off fixed terms, trademarks remain valid as long as the owner actively uses and defends them and maintains their registrations with the competent authorities. This often involves payment of a periodic renewal fee.

As a trademark must be used to maintain rights in relation to that mark, a trademark can be 'abandoned' or its registration can be cancelled or revoked if the mark is not continuously used. By comparison, patents and copyrights cannot be 'abandoned' and a patent holder or copyright owner can generally enforce their rights without taking any particular action to maintain the patent or copyright. Additionally, patent holders and copyright owners may not necessarily need to actively police their rights. However, a failure to bring a timely infringement suit or action against a known infringer may give the defendant a defense of implied consent or estoppel when suit is finally brought.

Like patents and copyrights, trademarks can be bought, sold, and transferred from one company or another. Unlike patents and copyrights, trademarks may not remain intact through this process. Where trademarks have been acquired for the purpose of marketing generic (non-distinctive) products, courts have refused to enforce them.

In 1923, the author Edgar Rice Burroughs registered his fictitious character Tarzan as a trademark; even after the copyright to the Tarzan story expired, his company used ownership of the trademarks relating to the character (which unlike copyrights, do not have a limited length) to control the production of media using its imagery and license the character for use in other works (such as adaptations). This

[56] Trade marks identify the goods and services of particular traders. Signs that are suitable for distinguishing products or services of a particular enterprise from that of other companies are eligible for trade mark protection". Retrieved 2012-12-22.

practice is a precursor to the modern concept of a media franchise.

Dilution. A trademark is *diluted* when the use of similar or identical trademarks in other non-competing markets means that the trademark in and of itself will lose its capacity to signify a single source. In other words, unlike ordinary trademark law, dilution protection extends to trademark uses that do not confuse consumers regarding who has made a product.

Instead, dilution protection law aims to protect sufficiently strong trademarks from losing their singular association in the public mind with a particular product, perhaps imagined if the trademark were to be encountered independently of any product (e.g., just the word Pepsi spoken, or on a billboard). Under trademark law, dilution occurs either when unauthorized use of a mark "blurs" the "distinctive nature of the mark" or "tarnishes it." Likelihood of confusion is not required.

Sale, transfer and licensing. In various jurisdictions a trademark may be sold with or without the underlying goodwill which subsists in the business associated with the mark. However, this is not the case in the United States, where the courts have held that this would "be a fraud upon the public". In the U.S., trademark registration can therefore only be sold and assigned if accompanied by the sale of an underlying asset.

Examples of assets whose sale would ordinarily support the assignment of a mark include the sale of the machinery used to produce the goods that bear the mark, or the sale of the corporation (or subsidiary) that produces the trademarked goods.

Licensing. Licensing means the trademark owner (the licensor) grants a permit to a third party (the licensee) in order to commercially use the trademark legally. It is a contract between the two, containing the scope of content and policy. The essential provisions to a trademark license identify the trademark owner and the licensee, in addition to the policy and the goods or services agreed to be licensed.

Most jurisdictions provide for the use of trademarks to be licensed to third parties. The licensor must monitor the quality of the goods being produced by the licensee to avoid the risk of trademark being deemed abandoned by the courts. A trademark license should therefore include appropriate provisions dealing with quality control, whereby the licensee provides warranties as to quality and the licensor has rights to inspection and monitoring.

Domain names. The advent of the domain name system has led to attempts by trademark holders to enforce their rights over domain names that are similar or identical to their existing trademarks, particularly by seeking control over the domain names at issue. As with dilution protection, enforcing trademark rights over domain name owners involves protecting a trademark outside the obvious context of its consumer market, because domain names are global and not limited by goods or service.

This conflict is easily resolved when the domain name owner actually uses the domain to compete with the trademark owner. Cybersquatting, however, does not involve competition. Instead, an unlicensed user registers a domain name identical to a trademark, and offers to sell the domain to the trademark owner. Typosquatters – those registering common misspellings of trademarks as domain names have also been targeted successfully in trademark infringement suits. "Gripe sites", on the other

hand, tend to be protected as free speech, and are therefore more difficult to attack as trademark infringement.

This clash of the new technology with preexisting trademark rights resulted in several high-profile decisions as the courts of many countries tried to coherently address the issue (and not always successfully) within the framework of existing trademark law. As the website itself was not the product being purchased, there was no actual consumer confusion, and so initial interest confusion was a concept applied instead. Initial interest confusion refers to customer confusion that creates an initial interest in a competitor's "product" (in the online context, another party's website). Even though initial interest confusion is dispelled by the time any actual sales occur, it allows a trademark infringer to capitalize on the goodwill associated with the original mark.

Several cases have wrestled with the concept of initial interest confusion. In Brookfield Communications, Inc. v. West Coast Entertainment Corp. the court found initial interest confusion could occur when a competitor's trademarked terms were used in the HTML metatags of a website, resulting in that site appearing in the search results when a user searches on the trademarked term.

In *Playboy v. Netscape*, the court found initial interest confusion when users typed in Playboy's trademarks into a search engine, resulting in the display of search results alongside unlabeled banner ads, triggered by keywords that included Playboy's marks, that would take users to Playboy's competitors. Though users might ultimately realize upon clicking on the banner ads that they were not Playboy-affiliated, the court found that the competitor advertisers could have gained customers by appropriating Playboy's goodwill since users may be perfectly happy to browse the competitor's site instead of returning to the search results to find the Playboy sites.

In Lamparello v. Falwell, however, the court clarified that a finding of initial interest confusion is contingent on financial profit from said confusion, such that, if a domain name confusingly similar to a registered trademark is used for a non-trademark related website, the site owner will not be found to have infringed where they do not seek to capitalize on the mark's goodwill for their own commercial enterprises.

In addition, courts have upheld the rights of trademark owners with regard to commercial use of domain names, even in cases where goods sold there legitimately bear the mark. In the landmark decision Creative Gifts, Inc. v. UFO, 235 F.3d 540 (10th Cir. 2000) (New Mexico), defendants had registered the domain name "Levitron.com" to sell goods bearing the trademark "Levitron" under an at-will license from the trademark owner. The 10th Circuit affirmed the rights of the trademark owner with regard to said domain name, despite arguments of promissory estoppel.

Most courts particularly frowned on cybersquatting, and found that it was itself a sufficiently commercial use (i.e., "trafficking" in trademarks) to reach into the area of trademark infringement. Most jurisdictions have since amended their trademark laws to address domain names specifically, and to provide explicit remedies against cybersquatters.

In the US, the legal situation was clarified by the Anticybersquatting Consumer Protection Act, an amendment to the Lanham Act, which explicitly prohibited cybersquatting.

It defines cybersquatting as "(occurring) when a person other than the trademark holder registers the domain name of a well-known trademark and then attempts to profit from this by either ransoming the domain name back to the trademark holder or using the domain name to divert business from the trademark holder to the domain name holder". The provision states that "[a] person shall be liable in a civil action by the owner of the mark ... if, without regard to the goods or services of the person, that person (i) had a bad faith intent to profit from the mark ...; and registers, traffics in, or uses domain name [that is confusingly similar to another's mark or dilutes another's mark]".

This international legal change has also led to the creation of ICANN Uniform Domain-Name Dispute-Resolution Policy (UDRP) and other dispute policies for specific countries (such as Nominet UK's DRS) which attempt to streamline the process of resolving who should own a domain name (without dealing with other infringement issues such as damages). This is particularly desirable to trademark owners when the domain name registrant may be in another country or even anonymous.

Registrants of domain names also sometimes wish to register the domain names themselves (e.g., "XYZ.COM") as trademarks for perceived advantages, such as an extra bulwark against their domain being hijacked, and to avail themselves of such remedies as *confusion* or passing off against other domain holders with confusingly similar or intentionally misspelled domain names.

As with other trademarks, the domain name will not be subject to trademark registration unless the proposed mark is actually used to identify the registrant's goods or services to the public, rather than simply being the location on the Internet where the applicant's web site appears. Amazon.com is a prime example of a protected trademark for a domain name central to the public's identification of the company and its products.

Terms which are not protectable by themselves, such as a generic term or a merely descriptive term that has not acquired secondary meaning, may become registerable when a Top-Level Domain Name (e.g. dot-COM) is appended to it. An example of such a domain name ineligible for trademark or service mark protection as a generic term, but which currently has a registered U.S. service mark, is "HEARSAY.COM".

Among trademark practitioners there remains a great deal of debate around trademark protection under ICANN's proposed generic top-level domain name space expansion. World Trademark Review has been reporting on the at times fiery discussion between trademark owners and domainers.

International law. Although there are systems which facilitate the filing, registration or enforcement of trademark rights in more than one jurisdiction on a regional or global basis, it is currently not possible to file and obtain a single trademark registration which will automatically apply around the world. Like any national law, trademark laws apply only in their applicable country or jurisdiction, a

quality which is sometimes known as "territoriality".

Territorial application. The inherent limitations of the territorial application of trademark laws have been mitigated by various intellectual property treaties, foremost amongst which is the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights.

TRIPS establishes legal compatibility between member jurisdictions by requiring the harmonization of applicable laws. For example, Article 15(1) of TRIPS provides a definition for "sign" which is used as or forms part of the definition of "trademark" in the trademark legislation of many jurisdictions around the world.

Madrid system. The major international system for facilitating the registration of trademarks in multiple jurisdictions is commonly known as the "Madrid system". Madrid provides a centrally administered system for securing trademark registrations in member jurisdictions by extending the protection of an "international registration" obtained through the World Intellectual Property Organization. This international registration is in turn based upon an application or registration obtained by a trade mark applicant in its home jurisdiction.

The primary advantage of the Madrid system is that it allows a trademark owner to obtain trademark protection in many jurisdictions by filing one application in one jurisdiction with one set of fees, and make any changes (e.g. changes of name or address) and renew registration across all applicable jurisdictions through a single administrative process. Furthermore, the "coverage" of the international registration may be extended to additional member jurisdictions at any time.

Trademark Law Treaty. The Trademark Law Treaty establishes a system pursuant to which member jurisdictions agree to standardize procedural aspects of the trademark registration process. It is not necessarily respective of rules within individual countries.

Community Trademark system. The EU Trade Mark (EUTM) system (formerly the Community Trademark system) is the trademark system which applies in the European Union, whereby registration of a trademark with the European Union Intellectual Property Office (EUIPO, formerly Office for Harmonization in the Internal Market (Trade Marks and Designs)), leads to a registration which is effective throughout the EU as a whole. The EUTM system is therefore said to be unitary in character, in that an EUTM registration applies indivisibly across all European Union member states.

However, the CTM system did not replace the national trademark registration systems; the CTM system and the national systems continue to operate in parallel to each other (see also European Union trade mark law).

Persons residing outside the EU must have professional representative to the procedures before EUIPO, while representation is recommended for EU residents.

One of the tasks of an EUTM owner is the monitoring of the later applications whether any of those is similar to his/her earlier trademark. Monitoring is not easy and usually requires professional expertise. To conduct a monitoring there is the so-called Trademark Watching service where it can be checked if someone tries to get registered marks that are similar to the existing marks.

Oppositions should be filed on the standard opposition form in any official

language of the European Union, however, the substantive part of the opposition (e.g. the argumentations) can be submitted only in the language of the opposed application, that is one of the working languages of the EUIPO, e.g. English, Spanish, German.

Well-known status. Well-known trade mark status is commonly granted to famous international trade marks in less-developed legal jurisdictions.

Pursuant to Article 6 *bis* of the Paris Convention, countries are empowered to grant this status to marks that the relevant authority considers are 'well known'. In addition to the standard grounds for trade mark infringement (same/similar mark applied same/similar goods or services, and a likelihood of confusion), if the mark is deemed well known it is an infringement to apply the same or a similar mark to dissimilar goods/services where there is confusion, including where it takes unfair advantage of the well-known mark or causing detriment to it.

A well-known trademark does not have to be registered in the jurisdiction to bring a trade mark infringement action (equivalent to bringing a passing off claim without having to show goodwill and having a lesser burden of proof).

As per the Trademark Rules 2017, India, an applicant needs to substantiate his claim that his trademark is having the "well-known" status.

He needs to furnish the documents in support of evidence of his rights & claims viz. use of trademark, any application for trademark, and annual sales turnover, and so on[57].

Protection of well-known marks. Many countries protect unregistered well-known marks in accordance with their international obligations under the Paris Convention for the Protection of Industrial Property and the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement).

Consequently, not only big companies but also SMEs may have a good chance of establishing enough goodwill with customers so that their marks may be recognized as well-known marks and acquire protection without registration. It is, nevertheless, advisable to seek registration, taking into account that many countries provide for an extended protection of registered well-known marks against dilution (Art. 16.3 TRIPS), i.e., the reputation of the mark being weakened by the unauthorized use of that mark by others.

A number of trademark laws merely implement obligations under Article 16.3 of the TRIPS Agreement and protect well-known registered trademarks only under the following conditions: 1- that the goods and services for which the other mark is used or is seeking protection are not identical with or similar to the goods for which the well-known mark acquired its reputation 2-that the use of the other mark would indicate a connection between these goods and the owner of the well-known mark, and 3 – that their interests are likely to be damaged by such use.

[57] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M.: MIET, 2002. P. 57-64.

2.2. The Emerging Knowledge-Based Economy as a Source of Economic Growth

Innovation-based growth, underpinned by investments in a broad range of knowledge-based capital (KBC), is central to raising long-term living standards. While investment in innovation has traditionally been proxied by spending on R&D. innovation-based growth relies on a much broader range of assets, such as employee skills, organisational know-how. databases, design, brands and various forms of intellectual property (Table 2.2.1). Indeed, investment in KBC has been increasing, and in some countries is larger as a share of GDP than investment in physical capital (Figure 2.2.1). This has implications for innovation and productivity growth and places heightened importance on a policy environment that promotes smooth adjustments of labour and capital inputs and entrepreneurial risk-taking.

Table 2.2.1. The classification of KBC assets and their possible effects

№	Type of KBC asset	Mechanisms of output growth for investor in the asset
1.	*Computerised information*	
	Software	Improved process efficiency, optimised vertical and horizontal integration
	Databases	Better market segmentation and appropriation of consumers' rent Optimised vertical and horizontal integration The use of information to improve logistics and production efficiency.
2.	*Innovative property*	
	Research & Development	New products and services Quality improvements to existing ones Better ways of producing output New technologies
	Copyright and license costs	Knowledge diffusion (inventions and innovative methods).
	New product development in the financial industry	More accessible capital markets Reduced information asymmetry' and monitoring costs
	New architectural and engineering designs	Fixed cost leading to production in future periods. Quality improvements, novel designs, enhanced processes.
3.	*Economic competencies*	
	Brand-building advertisement	Price premium Increased market share Changes in consumers' preferences
	Market research	Targeted products and services Increased market share
	Managerial ability	Faster and better decision making Improved production processes
	Workers training	Improved production capability of workers Increased skill levels
	Organisational capital	Faster and better decision making Improved production processes

Source: OECD Secretariat based on Corrado *et al*, (2005).

Unlike investment in tangible assets such as machinery and equipment, many knowledge-based assets (*e.g.* software) are non-rival to the extent that they can be simultaneously employed by multiple users without diminishing their basic usefulness. Thus, the initial cost incurred in developing new ideas - typically through R&D – does not get re-incurred as the latter are combined with other inputs in the production process. Hence, in economies where KBC is important, growth is less likely to be constrained by scarcity than in an economy dominated by tangible capital. Furthermore, privately created knowledge often diffuses beyond its place of creation, thus providing wider social benefits[58].

[58] C. Corrado, C. Hulten and D. Sichel, (2005), *Measuring Capital and Technology: An Expanded Framework, in Measuring Capital in the New Economy*, C. Corrado, J. Haltiwanger, and D. Sichel, eds., Studies in Income and Wealth, Vol. 65, Chicago: The University of Chicago Press.

Given the close links between KBC and growth, cross-country differences in investment in KBC take on heightened significance. For example, the available data suggests that the United States and Sweden invest more than twice as much in KBC as a share of GDP, compared with Italy and Spain. Moreover, these outcomes cannot be solely explained by differences in patterns of industrial specialisation.

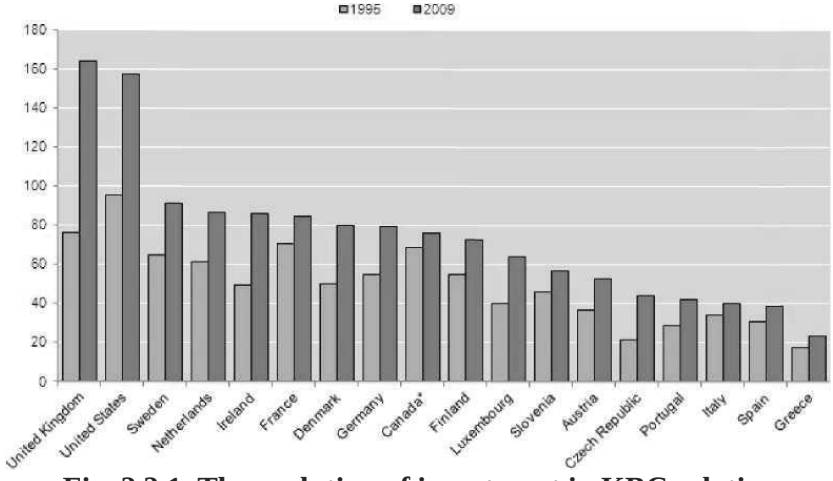


Fig. 2.2.1. The evolution of investment in KBC relative to tangible capital; 1995 and 2009 (unless otherwise noted)

Source: Corrado *et al.*, (2012).

Why do some countries invest more in KBC than others. From the firms' perspective, investing in KBC is a multi-stage process and much can go wrong along the way. Clearly, the ability to create new ideas is crucial. This underscores the need for an educated workforce and basic scientific research but also a business environment that fosters the entry of innovative start-up firms, as history shows that firms that ride one technological wave often fail to continue to do so in the subsequent one.

However, good ideas alone are not sufficient and firms must acquire complementary capital and workers to underpin their implementation and commercialisation. This requires a policy environment that promotes the reallocation of resources to their most effective use, which is particularly important given that the uncertain nature of KBC leads firms to scale-up innovative production methods only after they have shown success in smaller-scale experiments. Similarly, in the event of failure, policies that provide the ability to rapidly and cheaply scale down operations or facilitate exit are crucial, in order to motivate risk taking activity by the firm in the first place and to release resources to be used by more successful firms.

From the perspective of the economy as a whole, the gains from any firms' innovative efforts will be magnified when innovative firms can rapidly gain market share at the expense of unsuccessful competitors thereby boosting aggregate productivity. However, OECD economies vary significantly in their capacity to reallocate resources to underpin the expansion of the most successful firms.

One indicator of the efficiency of reallocation is the extent to which, all else

equal, it is the most productive firms that hold the largest market shares (Figure 2.2.2). This again reflects the extent to which labour and capital resources are reallocated away from less productive toward more productive firms over time. According to this metric, the United States and some Nordic countries are more effective at channelling resources to high productivity firms than some Continental and Southern European countries *(e.g.* see Europe-14 in Figure 2.2.2). Similarly, the ease with which firms that patent (one indicator of innovative capacity) can attract tangible capital – which is required to implement and commercialise new ideas - ts over four times higher in the United States and Sweden than for similar firms in Italy and Spain. These gaps are even larger for young firms, which are more likely to experiment with radical innovations that tend to have a larger productivity pay-off than incremental innovations.

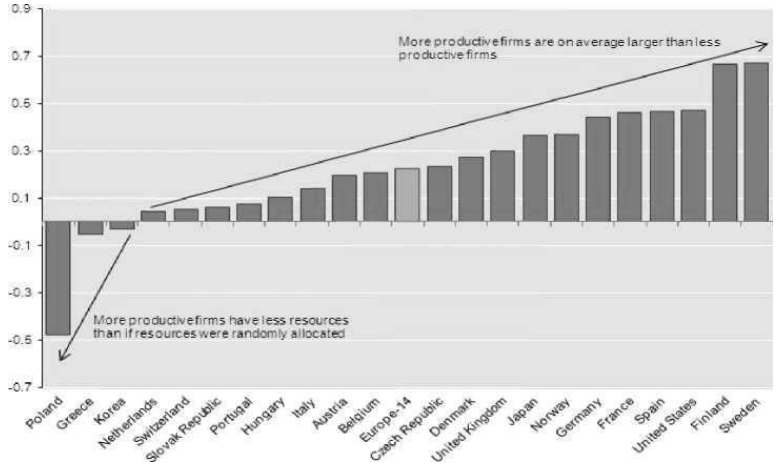


Fig. 2.2.2. OECD countries differ in their ability to allocate labour to the most productive firms

Source: Andrews and Cingano (2012).

The estimates show the extent to which the firms with higher than average labour productivity have larger employment shares. In most countries, the covariance between productivity and employment share is positive, suggesting that the actual allocation of employment boosts manufacturing labour productivity, compared to a situation where resources were allocated randomly across firms (this metric would equal zero if labour was allocated randomly). For example, manufacturing labour productivity in the United States is boosted by around 50% due to the rational allocation of resources. Europe-14 includes: Austria, Belgium, Czech Republic, France, Greece, Germany, Flungary, Italy, Netherlands, Portugal, Poland, Spain, Slovak Republic and Switzerland, and is obtained by aggregating the respective allocative efficiency indicators by each countries share in manufacturing sector employment[59].

[59] D. Andrews, and F. Cingano, (2012), *Public Policy and Resource Allocation: Evidence from Firms in OECD countries*. OECD Economics Department Working Papers. № 996, OECD, Paris.

Since difficulties in reallocation make it more difficult for firms to fully realise the fruits of their innovative effort, they may also reduce the incentive for firms to invest in KBC in the first place. Indeed, the countries that allocate resources more efficiently also tend to invest more in KBC, suggesting that policies which support reallocation also encourage innovative activity.

Well-designed framework policies can raise incentives to invest in KBC. Regulatory policies in product, labour and capital markets have a pervasive impact on KBC given their potential to affect each stage of the innovation process. Furthermore, reforms to these policies are an attractive way to enhance KBC-driven growth from a public finance perspective since they do not imply a direct cost to public budgets. Indeed, well-functioning product, labour and (early stage) venture capital markets and bankruptcy laws that do not overly penalise failure are associated with greater investment in KBC – a link that is corroborated by more detailed empirical analysis (see Andrews and Criscuolo, 2013). These benefits are partly realised through stronger competitive pressures and more efficient reallocation, which make it easier for successful firms to implement and commercialise new ideas and, by lowering the costs of failure, encourage firms to experiment with uncertain growth opportunities.

Reforms to anti-competitive product market regulations – such as the removal of administrative burdens on start-up firms as well as broader barriers to competition – can increase investment in KBC via:

- more entry of entrepreneurial start-ups, which in turn increases pressure on incumbent firms to invest in R&D and incorporate foreign technologies,
- improved management performance as a result of greater market discipline, which enhances the ability of firms to implement new technologies and sustain the innovation process. See Bloom and Van Reenen (2010) for a discussion,
- easier and cheaper access to labour and capital inputs, which – because of easier reallocation – raises the returns to investing in KBC. For example, a policy reform that would alleviate regulatory barriers in business services from the OECD average *(i.e.* France) to the low level in Sweden is associated with a 30% increase in investment in innovative firms,
- lower barriers to international trade and investment, which increase access to international technological transfer and raise the returns to innovation by expanding potential market size and facilitating the growth of the most productive firms.

The sensitivity of firm capital to changes in the patent stock varies according to the policy environment. All policy terms are statistically significant at at least the 10% level. For example, the sensitivity of firm capital to patenting is about three times larger when EPL is at the sample minimum *(i.e.* the US), compared with when EPL is at the sample maximum *(i.e*, Portugal).

2.3. The Patent System and the KBC Economy

The economic benefits of the patent system are derived from its roles in promoting innovation, and encouraging investment, economic growth, knowledge sharing and the efficient use of resources.

These aspects of the patent system are briefly discussed below. Innovation benefits the community by creating new and improved goods and services that meet social needs. For example, innovations in medical research may produce new diagnostic tests or treatments, which improve community health[60].

Patents promote innovation through the grant of limited monopolies, as a reward to inventors for the time, effort and ingenuity invested in creating new products and processes. The potential for financial returns adds an incentive to the traditional rewards of scientific innovation, such as academic recognition and promotion within research institutions.

Without the incentive provided by patents, private investors may be reluctant to invest, resulting in greater calls on government funding or a failure to develop and exploit new technology.

The role of patents as an incentive for innovation and investment in research was widely acknowledged in submissions, including by research and healthcare organisations. For example, the Children's Cancer Institute Australia for Medical Research stated that the patent system is: a cornerstone in driving innovation in medical research by enabling researchers to have protection of their intellectual property and the possibility of capitalizing on their inventions.

The involvement of industry in this process is also well-established and important. Intellectual property protection has been, and will continue to be, an essential component of the innovation process that drives medical research (Children's Cancer Institute, 2003)[61].

Similarly, the Department of Human Services Victoria acknowledged that the patent system has served Australia well and 'is essential to foster and encourage continuing innovation and research, which will lead to further enhancements in human health, including in the field of genetics' (Department of Human Services Victoria, 2004)[62].

However, patents do not always reward innovation and research investment equitably. In most jurisdictions, including Australia, where two researchers independently create the same invention, only the first to apply for patent protection will be awarded a patent over the invention.

This may discourage some researchers from embarking on a course of research that is already being pursued elsewhere, despite the possibility that they may do

[60]J. Rogozińska-Mitrut, 2019. *The Influence of the Social Innovations on the Competitiveness of the National Economy*.

[61]Children's Cancer Institute Australia for Medical Research, (2003), Submission P13, 30 September 2003.

[62]Department of Human Services Victoria, (2004), Submission P 111, 30 April 2004. See also Commonwealth Department of Health and Ageing, *Submission P79*, 16 April 2004.

better or more efficient work.

Investment and economic growth. Possessing a patent may help a company to grow by capitalising on the market potential of its inventions. Small companies may use patents to attract financial backing. In addition, patents stimulate the growth of national industry because local companies that hold patents can attract overseas investment and develop products for export[63].

Profits generated by patent exploitation can be invested in further research and development, which may stimulate commercial and industrial growth.

Patents also benefit Australian companies by providing a system for trading knowledge internationally through licence agreements. The grant of licences to international companies to exploit locally developed inventions provides returns to inventors and access to foreign markets. The grant of licences to Australian companies to manufacture inventions developed overseas can improve the skill and know-how within the Australian community.

However, patents may have adverse economic effects. Licence fees may drive up the price of goods and services that utilise the patented invention. There are also transaction costs associated with seeking the grant of a patent and enforcing patent rights.

Fees must be paid before a patent application will be examined or granted, and to maintain patent rights once granted. Asserting patent rights, or challenging those of a competitor, may be costly and difficult for small and medium-sized enterprises because claims of infringement may need to be pursued through the courts[64].

Patents may also have adverse effects on the balance of payments, especially for countries like Australia, which are net importers of intellectual property. This is because expenditure on licence fees or royalties for the use of patents owned by foreign entities may exceed the income earned from the use, by foreign entities, of local inventions.

Most Australian biotechnology patents are owned by foreign entities and Australian researchers generally pay licence fees to overseas companies to use these patented inventions in research (D. Nicol and J. Nielsen, 2001). Chapters 16 and 18 discuss the Australian biotechnology industry and international patent ownership.

Resource use and knowledge sharing. Patents promote knowledge sharing by requiring the details of the patented invention to be placed in the public domain in return for the exclusive right to exploit the invention. In the absence of this exchange, inventors might protect the details of new inventions through secrecy.

The disclosure requirements of the patent system are based on the idea that 'scientific and technical openness benefits the progress of society more than do confidentiality and secrecy'[65].

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[63] P. Drahos, (1999), *Biotechnology Patents, Markets and Morality*. *European Intellectual Property Review* 441, 445.

[64] Royal Society, *Keeping Science Open: The Effects of Intellectual Property Policy on the Conduct of Science* (2003), 13. See also L Andrews, 'Genes and Patent Policy: Rethinking Intellectual Property Rights' (2002) 3 *Nature Reviews Genetics* 803, 806. Processes for challenging and enforcing patent rights are discussed in Ch 9.

[65] J. Goldstein and E. Golod, (2002), *Human Gene Patents.* Academic Medicine 1315, 1315.

By encouraging knowledge sharing, patents reduce the duplication of research effort and encourage researchers to build on existing inventions. Researchers may study a patented product and find ways to improve upon it.

Access to patented inventions may also facilitate research that would not otherwise be possible. For example, access to a patented research tool may enable vital research into the causes of a genetic disorder and lead to the creation of a genetic test or treatment.

This research may not have occurred if the tool had remained secret. Due to the cumulative nature of much genetic research, knowledge sharing may be particularly important in this context[66].

However, patents may also inhibit research by discouraging knowledge sharing prior to filing for patent protection. The results of new research may be withheld until an inventor is in a position to apply for a patent and the invention is sufficiently well developed to ensure that the patent will be granted (D. Dickson, 1993)[67].

The patent system has been faced for more than ten years with an avalanche of patent filings, which puts into question its ability to fulfil its social mission of encouraging innovation and the diffusion of technology. This situation is due to the emergence of new technologies, the adoption of new and more aggressive IP strategies by the business sector, and progressive global harmonization of patent systems.

This book aims at providing an analysis of patent systems in general, and the European patent system in particular. Through an emphasis on the historic, strategic, and legal context of patent systems the first part of the book shows how patents progressively have been designed as an incentive mechanism which allows their holder to charge a mark up over the marginal cost through restricted competition. Patents also involve the disclosure of inventions, and hence encourage the diffusion of knowledge.

Over the past century patents have gradually become the currency of technology markets. The book demonstrates how the design of patent law and practice can benefit from economic analysis, regarding notably the patent subject matter (what should be patentable or not), the optimal inventive step, the scope of protection, and the duration. The second part of the book is devoted to the European patent system. Patenting procedures in Europe are complex, as national routes exist in parallel with the centralized procedure handled by the European Patent Office, triggering complex strategies by applicants in order to maximize their exclusive rights and reduce competition.

The recent development of various filing strategies and their impact on the granting process are examined in the light of factual evidence. The recent explosion of the number and size of patent applications raises the issue of quality maintenance. The book puts forward issues to be addressed by patent policy in Europe: putting

[66] D. Eliades, (2003), *Submission P24*, 30 September 2003; GlaxoSmithKline, Submission P33, 10 October 2003.

[67] D. Dickson, (2014), *UK Clinical Geneticists Ask for Ban on the Patenting of Human Genes*. Nature 391, 391. *The disclosure of an invention may render patent protection unavailable*: see Ch 5 and 6. Ch 14 considers issues relating to secrecy, publication and gene patenting.

quality of patents first, making procedures stricter for applicants, reinforcing the integration of the system at the European level, and inscribing the economic mission of the system in the European Patent Convention so that the case law would integrate economic concerns[68].

Ever notice how unrelated articles sometimes drive home a point beyond their focus? Let's look at several which unintentionally underscore the importance of patents, as well as the danger weakening our system presents to the nation.

The first story is "Trump wants to cut billions from the NIH. This is what we'll miss if he does," a response to President Trump's proposal to cut funding for the National Institutes of Health. The rebuttal highlights the impressive return on investment taxpayers receive as NIH supported discoveries turn into therapies protecting public health:

- over 27 years, 8.4% of NIH grants generate "patents for new drugs, medical devices, or other medicine-related technologies",
- a $10 million boost in NIH funding leads to a 2.3 increase in patents, each worth $11.2 M in 2010 dollars. The funding increase would yield $34.7 M in firm market value,
- NIH funded patents are cited by other patents at double the rate of private sector inventions. "Between 2003 and 2013, every patent generated by an NIH grant was cited, on average, by five future patents…".
- NIH funded institutions spur the creation of new biotech firms. "A $1 million increase in the average amount of federal R&D funding associated with an increase of 5–58 percent in the number of local biotechnology firm births a few years later,
- public sector research institutions (PSRI) generated ""virtually all the important, innovative vaccines that have been introduced during the past 25 years…",
- "46.2 percent of new-drug applications from PSRIs received priority reviews (at the FDA), as compared with 20.0 percent of applications that were based purely on private-sector research, an increase by a factor of 2.3",
- "and the public sector is particularly good at creating drugs to cure deadly diseases. Of the 153 approvals of drugs that began at public research institutions, 40 were for the treatment of cancer and 36 tackled infectious diseases, the report found".

However, this ignores a vital point: these inventions are only commercialized because private sector companies invest years of hard work and many times what the government spent on research turning early stage inventions into products. When these projects fail no one at NIH or the universities loses their jobs, but the company may go under or be forced to lay off its researchers.

We lead the world in the commercialization of government supported research

[68] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M.: MIET, 2002. P. 57-64.

because entrepreneurs believe the patent system can be relied upon to protect them if their gamble succeeds. If that trust is lost, the system falls apart. And we're being urged down that road, as the next story shows.

Many in Congress defending NIH's budget just signed a letter to the President urging him to misuse the Bayh-Dole Act (which injected the incentives of patent ownership into the federal R&D system) for the compulsory licensing of drugs deemed to be too expensive. Ironically, that would destroy the commercialization of NIH supported patents being used to defend agency funding. It is also one more blow to our beleaguered patent system, which leads to the next article.

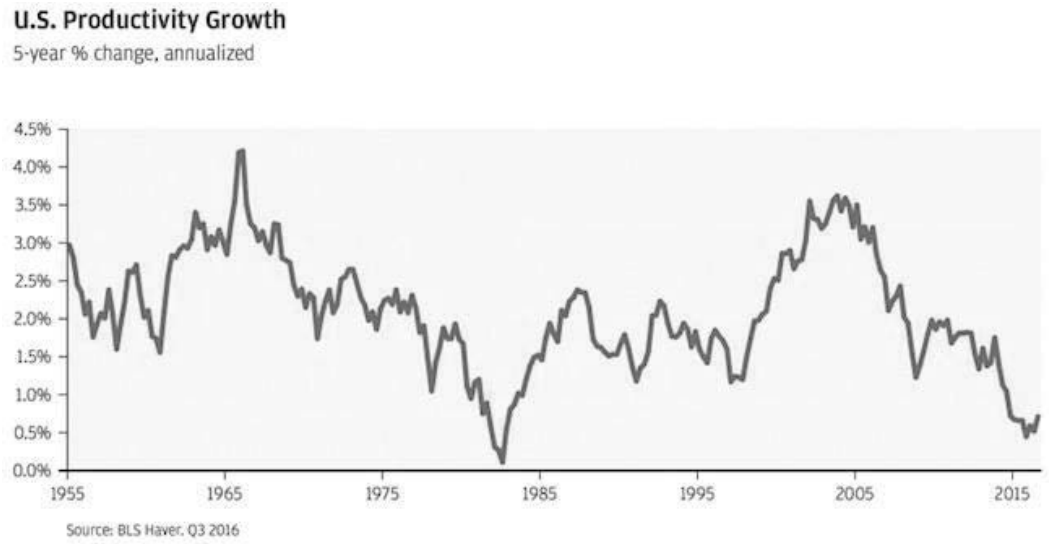

Fig. 2.3.1. How important is confidence in the patent system to our economy
Source: compiled by the author on the basis of materials (D. Eliades, 2003).

In "Our Patent System Needs More Than An IPR Fix", Chris Gallagher argues:

… PTAB's parlous impact on investment in our patent system is undeniable. Throwing patents out that window after costs are sunk developing their subject matter is counterproductive. And that is why the front end of PTO's patent examination assembly line also needs fixing even more. If post-grant PTAB is where patents "go to die," patents' statutory presumption of validity is useless.

Patent reformers say they should die, but if as the congressional patent reform narrative asserts PTAB is where so-called "bad patents" finally receive their well-deserved nullification, our patent system has lost its primary purpose. Yes, patents incentivize invention. But more important they protect investments in their subject matter's development and public availability.

Accordingly, job one of Lee's successor is returning "validity" to patents' fading statutory presumption of validity. This must happen early enough to incentivize support for upstream innovation investment now fleeing to China and the EU where ironically, patents are becoming more respected than in the USA.

Even worse, unscrupulous parties around the world know they can initiate post

grant reviews based on fraudulent or deliberately misleading information forcing hard pressed companies to accept infringement or divert scarce resources into fighting off endless reviews. When fraud or misconduct is detected, there's nothing the patent owner can do to hold abusers accountable for the damage they inflict.

Add to all this a string of court rulings against patent owners and it's no surprise why their confidence is waning. So how important is confidence in the patent system to our economy? A graphic in "Jamie Dimon: It's clear something is wrong with the U.S. economy" may provide a clue".

Look at the spike after 1980 with the enactment of the Bayh-Dole Act and *Diamond v. Chakrabarty* opened the door to the U.S. domination of the new field of biotechnology. Then in 1982 the creation of the Court of Appeals for the Federal Circuit restored confidence that patents could be effectively enforced.

Then look at the plunge after confidence began eroding around 2005. While there are many factors beyond patents affecting something as complex as the U.S. economy, the coincidence is striking.

Some believe they can introduce even more uncertainty into the system with impunity. Last year's patent "reform" bill would have tilted the field even more against patent owners. Others think the biopharma industry is now so dependent on NIH/university partnerships that if we undermine Bayh-Dole these alliances will continue unabated because companies have nowhere else to go. "Your Cancer Drugs May Soon Be Discovered in China" should shake that belief:

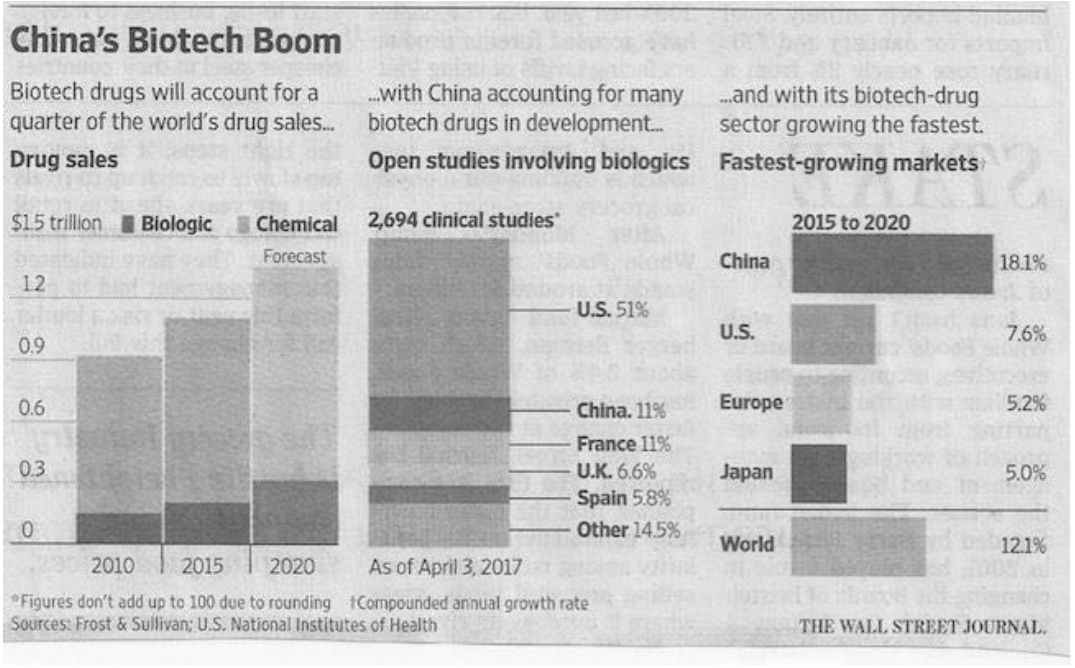

Fig. 2.3.1. how China's companies are licensing technologies and establishing major R&D centers in China

Source: compiled by the author on the basis of materials (D. Eliades, 2003).

China, long the world's supplier of cheap pharmaceutical ingredients and copycat pills is emerging as a major producer of new medicines: biotech drugs. After the U.S., China now boasts the second-largest number of clinical trials including biologic treatments-produced using biological matter… according to data from the National Institutes of Health.

The world's biggest drug companies have taken notice.

It then chronicles how our companies are licensing technologies and establishing major R&D centers in China. These charts explain why:

China is strengthening its patent system while adopting a Bayh-Dole policy for its research universities. If we stand idly by as our system deteriorates, innovative companies will seek greener pastures abroad.

While it's easy to despair, the good news is that we've been in this swamp before and found our way out.

That staff of the Senate Judiciary Committee in the 1970's patents were viewed with suspicion, falling under the jurisdiction of the Subcommittee on Antitrust and Monopolies (you can imagine how that went). The U.S. had an entrenched policy that inventions made with federal funding would be made available to any and all. These beliefs were deeply ingrained with vested interests fiercely defending them.

Yet a few Congressional leaders realized these policies were failing and concluded that restoring the incentives of the patent system, coupled with the decentralized management of technology away from Washington, was the better path.

They passed Bayh-Dole, which President Reagan immediately embraced. Combined with renewed support for the patent system, the U.S. enjoyed an economic renaissance, again dominating every field of technology.

The old arguments that patents inhibit innovation, and non-exclusivity with compulsory licensing leads to a brave new world are now in vogue.

We've stood at this fork in the road before. It requires courage to reject the easy path downward and restore the system which created our prosperity. If we lack the will, we have no one else to blame as we plunge deeper into the mire. That's the last place anyone wanting to drain the swamp while growing the economy should go.

2.4. Labour Market Reforms Encourage Experimentation With Uncertain Technologies

Employment protection legislation (EPL) that imposes heavy or unpredictable costs on hiring and firing slows down the reallocation process – which reduces the returns to investing in KBC – and by raising the costs of exit in case of business failure, makes it less attractive for firms to experiment with highly uncertain technologies.

Reforming EPL significantly increases the ability of innovative firms to attract resources that are required to implement and commercialise new ideas. For example, for firms in the United States where EPL is relatively lax, a 10% in the firm patent stock is associated with a 2.7% increase in investment, but this effect is round three times smaller for firms in Portugal where EPL is very rigid.

High and unpredictable job protection costs particularly handicap dynamic firms that operate in an environment subject to greater technological change and that place therefore a high option value on flexibility, given their tendency to experiment with uncertain technologies[69].

While labour market reforms are desirable in order to boost KBC, the recent experience of some European countries highlights that such reforms should be designed and implemented in a broad-based fashion. For instance, the asymmetric liberalisation of employment protection for temporary contracts, while leaving in place stringent regulations on permanent contracts may have adverse effects on the accumulation of firm-specific human capital (one form of KBC), to the extent that firms replace permanent workers with temporary workers, who are less likely to participate in job-related training.

Debtor-friendly bankruptcy laws can promote risk-taking but trade-offs emerge. Bankruptcy regimes can foster experimentation with risky technologies if they do not sanction business failure too severely. If the cost of winding-down a business is particularly high, risky entrepreneurial ventures might not be brought to the market to avoid incurring high exit costs in case of failure. Reforms to bankruptcy legislation that lower the cost to close a business can promote investment in more innovative business ventures, by reducing the expectation of entrepreneurs that they will be heavily penalised in case of failure. Such arrangements could, however, also discourage investment in KBC if credit supply is tightened as a result of reduced loss recovery in case of bankruptcy. Striking the right balance between these two forces makes the design of bankruptcy provisions complicated.

The swift reallocation of resources from failed ventures to other more effective uses will also be affected by the time required for the full completion of all legal procedures to wind up a business and the incentives to the use of out-of-court arrangements. In extreme cases, these legal procedures might take years to complete, thus undermining reallocation and the accumulation of entrepreneurial capital. Thus, by easing reallocation constraints, measures aimed at streamlining and quickening bankruptcy procedures can create conditions for increased investment in KBC. For more details on impact of legal systems on economic performance, see Palumbo *et al.,* (2013).

Financing KBC by nurturing the market for risk capital. Countries with more developed seed and early stage venture capital markets are more effective at channelling investment to young, innovative firms. The importance of risk capital markets stems from the fact that knowledge-based assets are difficult to collateralise – partly because they are less easy to define and transfer than tangible assets – which makes them less conducive to traditional debt and equity financing. Cross-country differences in the size of risk capital markets are significant, and reflect a number of policy-related factors:

- appropriate labour market regulations and bankruptcy legislation (see above) and lower rates of taxation on corporate incomes and capital gains

[69] J. Rogozińska-Mitrut, (2019), *The Influence of the Social Innovations on the Competitiveness of the National Economy*.

can foster risk capital markets,

- the existence of exit possibilities for risk capital investments *(e.g.* secondary stock markets such as the NASDAQ) increases the expected return to investors and entrepreneurs. Rules affecting initial public offerings and portfolio restrictions that bar, or limit institutional investors *(e.g.* pension funds) from investing in risk capital also loom large.

While government risk capital funds and favourable tax treatment of risk capital investments and returns are becoming increasingly common in OECD countries, evidence on their effectiveness is scarce.

Innovation policies. There is also scope for policies that raise private incentives to invest in KBC towards more socially desirable levels since knowledge spillovers across firms prevent firms from fully appropriating the returns from their innovative investments in absence of policy intervention. Intellectual property rights (IPR) provide firms with the incentive to innovate, but maximum effects are obtained when they are coupled with pro-competition policies. However, in some emerging KBC sectors where the innovation process is typically fragmented *(e.g.* software), the patent system may unduly favour incumbents at the expense of young firms, thus undermining incentives to invest in KBC. Empirical evidence from the United States suggests that the cost of litigation exceeded the profit from patents in the late 1990s in industries outside pharmaceuticals and chemicals. Indeed, the increasing emergence of "patent aggregators" that accumulate software patents with the sole objective of extracting rents from innovators may challenge innovation activities. While the patent system remains effective at promoting innovation in sectors such as pharmaceuticals and chemicals, the rising importance of the digital economy raises an important policy dilemma for governments, which is yet to be resolved in academic and policy circles.

Aside from setting appropriate intellectual property rights, there is scope for public finance policies that subsidise innovation-related KBC. The most frequent policies are tax incentives and direct support (e.g. loans, grants) for R&D (Figure 2.4.1), with reliance on the former increasing dramatically over recent decades in many economies.

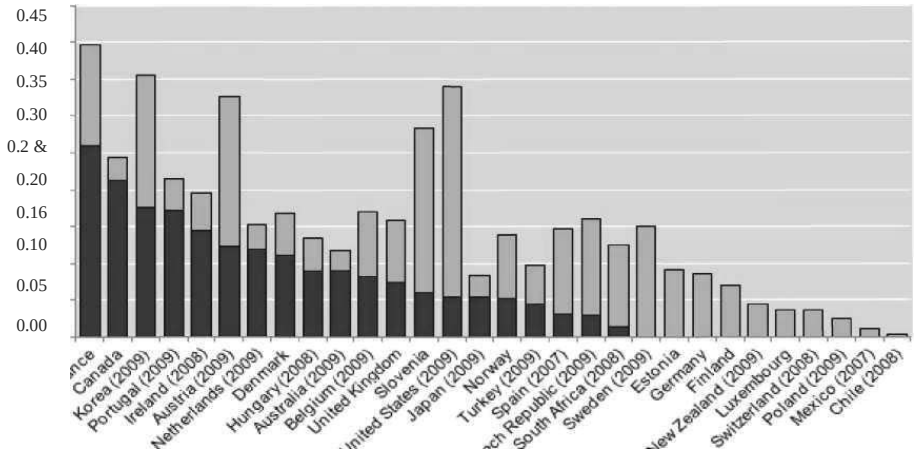

Fig. 2.4.1. Direct government funding of business R&D (BERD) and tax incentives for R&D

Source: OECD, Main Science and Technology Indicators (MSTI) Database, June 2012; OECD R&D tax incentive questionnaires of January 2010 and July 2011; OECD (2011) and national sources.

While both policies can be effective, their design features are crucial in order to minimise the cost to the tax payer and unintended consequences:

- it is important that R&D tax incentives are refundable or contain carry-over provisions so as to avoid overly favouring less dynamic incumbents at the expense of dynamic young firms. Many young innovative firms are typically in a loss position in the early years of an R&D project and thus will not benefit from the program unless it contains provisions for immediate cash refunds for R&D expenditure or allows such firms to carry associated losses forward to deduct against future tax burdens,
- recent improvements in the design of schemes that provide direct government support to R&D may explain why, in contrast with earlier empirical research, there is now clearer evidence of a positive impact on innovation[70]. For example, the structure of public support has become more focused on subsidies for commercial R&D activities and with matching grants (for private sector investments) being a more common feature of government funding programmes.

Countries ranked from highest to lowest R&D tax incentives (GDP). R&D tax incentives do not cover sub-national incentives. Direct government funding includes grants and public procurement of R&D and excludes repayable loans. Figures are not shown for Greece, Israel, Italy, the Slovak Republic, China and the Russian Federation, which provide R&D tax incentives, but cost estimates are not available. For the United States, direct government funding of R&D includes defence spending on R&D by the government in the form of procurement contracts or the

[70] B. Westmore, (2013), *R&D, Patenting and Productivity: The Role of Public Policy*. OECD Economics Department Working Papers, № 1047, OECD, Paris.

subcontracting by government agencies of non-classified projects to private firms. That is, it includes only R&D spending not directly performed by national or publicly funded institutions (e.g. military laboratories etc). If a project is conducted by the private firm in direct collaboration with the government, publicly funded institutions or universities, only the part that is done by the private firm and paid to her would be included.

Chapter 3. Intangible Technological Resources in Globalization Processes

3.1. Human Resources Technological Resources And Reputation

The resources of the firm are both tangible and intangible. Tangible resources are defined as any company property that has a physical existence. Therefore, tangible resource is the one that you can reach out and touch, which includes physical assets, such as plant, equipment and physical labour.

While intangible resources are defined as the assets that you cannot touch or see but that have value, which includes skills and knowledge about productive and managerial processes. These resources are employed to supply a heterogeneous range of services to the managers of a firm, to be used in the various activities that the firm undertakes. Thus, the output that any given unit of a tangible resource can produce is not dependent just on the production function but also on the intangible resources embedded in the inputs. Knowledge enables the productive capacity of a resource to increase over time. The tangible resources in a fast paced technology market could be financial resources and physical resources. The intangible resources in fast paced technology market could be human resources, technological resources and reputation. The tangible resources are the hard rock for a company's establishment, because the financial resources provide a place for the company and the equipment as well as the workforce allows the company to process and produce products. There is no doubt that all good companies in the fast paced technology market are based on sturdy tangible resources[71].

However, intangible resources are the key elements that make those companies in the fast paced market differ themselves from each other and become prosperity. Tangible assets can be purchased in the market, and more machines or workers can be hired at a price. However, intangible knowledge and skills reside within human capital and cannot be so easily purchased because they are acquired from training and within the firm and may only be valuable within its specific structures residing within individuals who can be hired. According to a study of Brookings's institute in 1982 (Webandmacro, 2012) showed the tangible assets represented the 62% of the value in the market of industrial organizations. Ten years later, in 1992 the proportion lowered until 38%, Financial indicators are still used to direct and to take decisions, but they just represent less than 10% of our value. The intangible resources are the most important sources of the organization that grant competitive advantages to other companies.

The organization that has an excellent operative process, knows their segment in the market and possess the knowledge to develop a unique product, and has the ability of motivating their employers, will have a guaranteed success. Therefore, concerning about those big or historical companies in fast paced technology market, the intangible resources are more important.

In the fast paced technology market, lots of first class global corporations are

[71]Human Resources Technological Resources And Reputation, (2019), https://www.ukessays.com/essays/marketing/human-resources-technological-resources-and-reputation-ma-rketing-essay.php

getting more and more competitive, however, some of the old brands which use to have good performance and reputation are abandoned by consumers. Tangible resources are playing important parts in all of those companies; however, they are not the key points that affect the companies' future. Take Apple company as an example, it was founded at 1976 by Steve Wozniak and Steve Jobs in USA. It operates in the computers business worldwide – manufactures hardware, software and peripherals.

In addition, Apple offers digital music services and products (digital music services – iPod music player and iTunes web music store). It is the most popular technology brand in these years and everyone whishes to have one of the Apple's product, no matter how expensive it is. The tangible resources of Apple Company include financial resources, because Apple is one of the big companies of PC and multimedia. Since Apple increased at the last four years its net incomes to $1,335 Milliard, they have ability to gain credit; organizational resources, because Apple has many systems for control. Since Apple controlled all aspects of the computer, it could offer customers a complete desktop solution, including hardware, software and peripherals that allowed customers to "play and plug". Apple's tangible resources also include physical resources, because Apple was founded in California and it is a global company with branch all around the world. They develop excellent computers with the best materials in the market. I believe that most of the first class global corporations in technology industry have the similar tangible resources as Apple company dose.

Take Nokia corporation as an example, it is a well-known brand which has a strong background for tangible resources. Its financial resources play a major role in the organization as it estimates the financial requirements for the development of new product. Nokia is having strong financial background. So for the developing the new product there will be no financial problems. These financial resources of Nokia help to attract the investors and lenders for the business. Physical resources are also the tangible resources of Nokia, physical resources are nothing but the manufacturing plant equipment, land and the mineral resources. Nokia is having largest manufacturing plant which includes the research and development sector, good equipment. So the process for developing the new product Nokia n-pad is easy. According to the background and facts, it is obvious that Nokia may have more and wider tangible resources than Apple have. It is because of these rich tangible resources that helped Nokia produce reliable and durable mobile phones and reached its business peak. In the other words, in the past decades, Nokia could dominate the technology market because Nokia had enough money and capitals to produce durable mobile phones that people trusted. At that time, Apple was not popular and the tangible resources were less than it of Nokia. However, in these days, it is Apple dominates the fast paced technology market instead of Nokia. Almost all the loyal customers who use trust Nokia abandoned it and become fans of Apple. It is obvious that although tangible resources are important for a companies' development, it is not the key resources that drives a company to be popular these days especially in fast paced technology market.

In the fast paced technology market, intangible resources are getting more and more important because it can effect a company's position in the technology market.

The intangible resources in Apple Company include human resources, innovation resources and reputation resources. Apple Company has a wide range of human resources because Apple's corporate located in the heart of Silicon Valley in Cupertino, California. It brings together the best and the brightest people in an attractive location. Some of the best schools in the country are within a short drive of Apple's main campus, including Stanford University, university of California at Barkley, and Santa Clara University. With so many schools nearby, they enjoy plenty of cultural and educational opportunities. Besides, the best graduates from those famous universities can easily apply a job in Apple Company. Apple Company has a wide range of innovation resources. Apple invented the PC, the graphical user interface etc. But then, the company had a decade in which it took a nap. Apple had a monopoly on the graphical users interface for almost ten years. Then, the monopoly expired. When Jobs came back he manages an innovation by hiring people who want to make the best products in the world. The key is to have people with passion for excellence. Apple now has scientific skills that allow them to innovate better and advance patents. In the previous decade Apple lost its reputation. Lots of suppliers thought that Apple is going to die. The feeling was that they couldn't rely on anything Apple said.

Only Jobs hard work rescue Apple from crash. Apple's reputation grew significantly in 2005, according to the annual reputation Quotient ranking. Apple climbed seven points in this year's survey, landing as the company with the 27th best reputation in the US. Among all of the intangible resource, the innovation resources are the most important resources for a company to be prosper, especially in fast paced technology industry. Latest technology creations always absorb countless consumers no matter how expensive the product is. That's why that almost everyone has purchased an iphone although it is much more expensive than the other brand mobile phones with the same configurations. Human resources contribute a lot in the innovation culture and spirit of Apple Company. Because of its location and Steve Jobs hired lots of talented employees, Apple Company has the ability to find out the most creative ideas to produce the latest high technology products. Besides, Apple Company has successfully built the image of its brand. In Apple's history, groundbreaking design has played a key role. The original Macintosh bore little resemblance to the heavy and unsightly IBM PC-compatibles of the day, while other attempts to stand out – such as the Macintosh TV and the Twentieth Anniversary Mac – were unfortunately never meant to be mass market products. It was only with the advent of the iMac and iBook after Steve Jobs's return to Apple that style and design came to the importance in Apple's hardware products. In short, Apple's product design elegance in both hardware and software plays an essential role in the company's brand message. It all makes a difference. Minimizing windows with smooth animation in Mac OSX, the pure white plastic used in the iPod and iBook, the clever packaging that comes with all of Apple's products – everything combines to support a message about the brand. Simplicity, attention to detail, ease of use, creative thinking, and an absence of jargon are all messages conveyed through these products. Steve Jobs has said that Apple's position in the computer industry makes it possible to design a product from scratch. By controlling both software and hardware,

Apple can integrate their products more tightly, providing an advantage over PC companies like Dell and Gateway. Even when Apple does offer a cross-platform product, the PC version isn't as good. Look no further than the iPod: the Mac version outshines its Windows-compatible counterpart thanks to its tight integration between the iPod hardware, the Mac OS, and iTunes.

Brand messages are supported by other aspects of the company's activities as well. The first-time visitor to the Apple Web site is left with an impression distinct to the Apple brand. The site is clear and easily navigable, and it manages to avoid clutter and technical terminology. Contrast this with the complex and confusing Dell Web site. With Apple, the impression you're left with matches the experience of the product.

Anyone who has received a new iPod will tell you of the beauty of the packaging, its simplicity and attention to detail tying in with the product itself. Buying from the Apple online store, the purchasing experience, the packaging, and finally the product itself and its functions, all fit into Apple's carefully constructed brand promise. That's one of Apple's major strengths – the company maintains its brand promise from the customer's research phase on the Web site, through the online store purchasing experience, and all the way to the point where he or she unpacks and starts using the product. Arguably, the Dell Web site risks making the consumer feel confusing by the site's complexity. The relationship between the consumer and the brand is of necessity rather than attraction. Consumers may use and find value at the site, but it is difficult to see how it could appeal to them or inspire brand loyalty. As a brand, Apple is strong, and the company's brand promise is currently matched by the user's experience online, with Apple's products, and in marketing campaigns. However, Nokia failed in rebuilding its brand. The design of the mobile phone is hulking, and its operating system Symbian that use to demonstrate the mobile industry is out of date and replaced by Android and Mac OS. That's why when people mentioned about Nokia, the world "classic" will bubble out because customers cannot feel creativity in Nokia's products. In the opposite, the image of Apple brand is high-technical, simple, fashion and friendly-use.

As a conclusion, according to the discussion above, it is obvious that in fast paced technology market, the intangible resources over weigh the tangible resources. The reputation, image of the brand, patents, innovation spirit and culture as well as human resource are the key resources that can help companies demonstrate the market[72].

Human Resources Reputation and Effectiveness. The compilation includes suchthemes as identifying the shortfalls of the science of HRM; predicting, understanding, and influencing the behavior of individuals in organizations; and the status of research on compensation in organizations. Organizational theorists have suggested that reputation is one of the few resources that can give firms a sustainable competitive advantage, because it is viewed as a non-tradable, non-substitutable, non-imitable, resource that can be managed.

[72] Human Resources Technological Resources And Reputation, (2019), https://www.ukessays.com/essays/marketing/human-resources-technological-resources-and-reputation-ma-rketing-essay.php

HR-firm performance linkage examines the impact of an overall set of HR practices on firm performance. This perspective advanced the literature from examining the effect of a single HR practice on performance, to examining a set of practices that work together synergistically. Another perspective explains the positive findings between HRM and firm performance by emphasizing the role HR plays in implementing strategies. To effectively implement a particular strategy, HR practices must "fit" with the strategic goals of the firm. The two studies indicate that HR reputation does have an impact on the larger overarching image of the organization. It is important to have an HR reputation of fairness, and to advertise this quality to important stakeholders.

It is important to examine the more intermediate linkages between HR reputation and firm reputation and performance. It would also be interesting to examine negative HR reputation signals, and their impact on the reputation of the organization. Employees are likely to recommend an organization for employment when that organization is fully committed to work-family policies.

As human capital continues to gain credence as a critical resource, organizations have viewed their HR departments as holding the key to unlocking this important resource. Thus, the power of HR has increased over the past several years, and should continue to grow. In light of the foregoing review and evaluation, and the strengths and limitations of prior work on HR reputation and effectiveness the authors have proposed some directions for theory and research in this area that they believe could result in useful and productive streams of work.

"Effectiveness Index" can be one of the tools to identify firms with very progressive or reputable HR functions. Also, the need to determine what might be the underlying dimensions of HR reputation, and, if multi-dimensional, are all dimensions equally important for effectiveness, or are they differentially weighted?

Firms bring about this publicity by taking non-conforming actions and proactively seeking to manage impressions to facilitate their own celebrity to the degree that celebrity increases access to critical resources such as human capital, capital markets, and raw materials, celebrity status for the firm increases a firm's competitive advantage. Many firms such as Johnson & Johnson, Starbucks, and Hewlett-Packard, frequently hit these lists year after year and are on several lists each year. Many of these firms are known for their ability to "partner" with the HR function to facilitate strategy execution, administrative efficiency, employee commitment, and innovation.

At such an early stage in the evolution of this area of scientific inquiry, it is not clear that HR reputation necessarily has only linear relationships with outcomes; such relationships could be non-linear in form. Perhaps there is an optimal level of reputation for the HR sub-unit, and that a 'more is always better' is not accurate.

From the clerical job of just an employee record keeper to a strategic human asset manager this article has evaluated status of theory and research on HR reputation and effectiveness, and recommends directions for future work. The article starts of by looking at the beginning the change chain in the HR function progression. Born from the industrial relations movement, personnel management was first examined in 1920 by Tead and Metcalf. And During the industrial

revolution, utilizing the scientific management of work (e.g., Taylor, 1895), companies began to quantify "… the most efficient method for performing each work task, piece-rate systems of compensation to maximize employee work effort, and the selection and training of employees based on a thorough investigation of their talents and skills"[73].

Starting from the first look at HR function more seriously in 1920 it has moved from the century focusing on the years which hold importance towards the shaping of HR functions as we see them today. In 1925 Craig & Charter adding to the chain proved that personnel management 1) became autonomous from the line managers and foremen, 2) turned an interest to psychology, 3) said a firm must be focused on leaders' ability to "…effectively deal with employees and earn their loyalty and support" As in 1926 Lewisohn noted, the inherent labor problems that exist between workers and organizations were not a matter of capitalistic dialectic incompatibility, but, rather, incongruence between "…the organizational and administrative practices of management." Thus, the core of a good organizational-employee relationship is recognizing and capitalizing on the mutual interests of maximum satisfaction and financial return.

More work was done by Follett and Tead in 1929 and further by Kaufman in 1993 which said "To obtain cooperation, trust, loyalty, and hard work among employees, firms must attempt to simultaneously fulfill the goals of the worker and the organization" As the number of personal policies continued to increase, so did the importance of human resources management (HRM). As HRM grew, even more laws and regulations were passed in the 1950s and 1960s that promoted equal and fair treatment for all able workers (Russ, Galang, & Ferris, 1998). However, it was not until the 1970s and 1980s, when U.S.-based companies realized that their technological processes were no longer a source of sustained competitive advantage (Pfeffer, 1994), that HRM was viewed as impacting on organizational performance.

As explained by Barney (1991), in his resource-based view of the firm, in order to remain profitable in the long run, organizations must have a sustainable competitive advantage. As organizations placed more emphasis on the human factor, the field of human resource management was formed from a result of various scientific fields of inquiry such as industrial relations and psychology (Dulebohn et al., 1995).

In the last 15 years, HRM has further justified its strategic importance, increasingly being viewed as a key resource organizations possess (Pfeffer, 1997)[74], and an essential link in firms' strategies (e.g., Arthur, 1994[75]; Huselid, 1995). As human resources are managed appropriately by matching unique internal processes with environmental opportunities and needs, HRM has the potential to be a source of

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[73] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M . MIET, 2002. P. 57-64.

[74] J. Pfeffer, (1998), *The human equation. Boston: Harvard Business School*. Playboy Enterprises, Inc. v. Welles, 279 F.3d 796 (9th Cir. 2002).

[75] M. Arthur, (1994), *The boundary less career*: A new perspective of organizational inquiry. *Journal ofOrganizational Behavior, 15,* 295-309.

competitive advantage over other firms in the industry. In turn, HRM has been held more accountable to contributing meaningfully to firm performance. Because human resource management is now seen as an important factor in organizational performance and effectiveness, the power and, as a result, the reputation of HR also has increased.

Reputation of the firm in the market is based on the Human Resource as an asset to the firm. By quoting; The study of reputation in the organizational sciences largely has been focused on reputation at the corporate level. Organizational theorists have suggested that reputation is one of the few resources that can give firms a sustainable competitive advantage, because it is viewed as a non-tradable, non substitutable, non-imitable, resource that can be managed (Barney, 1991; Kothaa, Rajgopala, & Rindova, 2001).

Work done by Reed & DeFillippi, 1990; Barney, 1991; Lado & Wilson, 1994; Huselid, 1995; Delaney and Huselid, 1996; Ulrich, 1997; Becker & Huselid, 1998; Boxall in 2003; Lawler & Mohrman in the year 2003; Colbert 2004; Hatch & Dyer, 2004; Bowen & Ostroff, 2004 showed that personal reputation is a collectively agreed upon perception by others, and that reputation exists in a vacuum of imperfect information. When an audience is attempting to gather information regarding an individual (or organization), reputation is relied on to "fill in the blanks." This is similar to corporate reputation theory in that personal reputation is based upon social norms, as opposed to market norms. Established upon the notion that reputation is related to social norms, current research suggests that to successfully acquire a reputation, an individual or organization must "stand out" from others in the field. Rindova, Pollock and Hayward (2006) reflected these beliefs in a recent piece devoted to celebrity firms, acknowledging the relationship between reputation and celebrity. Suggesting that reputation reflects a predictive measure, they argued that both celebrity and reputation are based on others' perception of some entity.

Similarly the department level reputation depends on the production of the department individuals respectively and collectively different departments form the reputation of the organization as a whole. This view is supported by work done in 2005 by Roberts. Research in CEO celebrity has shown that a leader's reputation may change the reputation of the company (Hayward, Rindova, & Pollock, 2004). Logically, the same process should apply to departments. If an HR department has a strong, powerful leader, the members of the department should feel an increase in power (Cialdini et al., 1976). Consistent support has been found for the HRM firm performance link in the literature, and with the continued development of theory, a richer understanding of how this relationship occurs can both advance the literature and facilitate improvement in practice.

The theoretical underpinnings of the literature examining the relationship between HRM and firm performance have developed from;

- examining specific sets of HR practices,
- examining a match between HR practices and strategy,
- examining the role of HRM in building and maintaining organizational resources and capabilities that contribute directly to a firm's competitive advantage.

The linkage between HRM and performance has be identified by the authors on the work done by Barney, 1991; Lado & Wilson, 1994; Ulrich, 1997; Becker & Huselid, 1998; Perry-Smith and Blum 2000; Boxall, 2003; Lawler & Mohrman, 2003; Ranft & Lord, 2000, 2002; Collins & Clark, 2003; Colbert, 2004; Hatch & Dyer, 2004; Bowen & Ostroff, 2004; Hatch and Dyer, 2004[76].

HR reputation does have an impact on the larger overarching image of the organization. It is important to have an HR reputation of fairness, and to advertise this quality to important stakeholders. Although only one of the signals from the study affected share price, there may be other advantages of HR reputation at the firm level that are just as important, such as performance, labor costs, and employee turnover. This theory is based on the work done by Wright, Ferris, Hiller and Kroll in 1995; Hannon & Milkovich in 1996 and Koys in 1997.

In the era of fast growing technology and change in almost every firm around the globe the need to develop and consider human resource as an integral part of any organizations success is the key as we read in so many journals and magazines such as "Times" and "Business Recorder" the stories of better human resource management success stories of successful companies, it does show that the importance of HR in any firm can not be ignored any more. This article was published in the year 2007 which is to me some what late because of the already changing trends in organization management. So I would have liked the article to be published before the beginning of this century as the boom in technology and industrial revolution has forced companies to review their HR policies and still there are many countries and firms around the world which lack the awareness of the importance of HR as an important mix in the success of their company.

Suggestions for future theory and research remains incomplete as many of the ideas merely seem to be repeated of what they have explained in the previous sections. For example: Just as celebrity status for a CEO or a firm has been shown to increase the breadth and volume of resources available to these actors, the popularity and celebrity of HR practices in an organization may increase the resources allocated to the HR function in those organizations. As resources increase, the power and influence of the HR function increase (Pfeffer, 1997). Research in CEO celebrity has shown that a leader's reputation may change the reputation of the company (Hayward, Rindova, & Pollock, 2004). First paragraph quotation is taken from the work done by (Pfeffer, 1997) comes in the article in the first part. And the second written in the conclusion part from (Hayward, Rindova, & Pollock, 2004). Both implying the same idea, supporting the conclusion by a repeating quote can affect the strength of the conclusion itself.

Human resource management has evolved into a strategic business partner linking organization goals to the internal and external customers of the company. This article contributes to the field of Human Resource Management vitally as organizations today are shifting and transforming into a global business and fostering local businesses. The importance to align the strategic goals with the HR efforts

[76] W. Hatch & H. Dyer, (2004), *Human capital and learning as a source of sustainable competitive advantage*. Strategic Management Journal, 25, 1155−1178.

remains vital to the success.

The course entitled management organizational policy is the study of how organizational strategies are made to run the processes and to make the firm as competitive as possible. This article throws light on Human Resource management's importance and how it thrived and evolved over the years. The most important asset in any firm today is considered to be the Human Resource and managing it properly is the key to success.

Increasingly, teamwork is seen as one of the main building blocks of successful organizations and much time, effort and resources are being invested in developing and managing cohesive teams (Katzenbach and Smith, 1994). The potential benefits of these investments are numerous and diverse. Perhaps the greatest is the achievement of organizational synergy where the output of the whole team becomes greater than the sum of the individual contributors and in so doing boosts the productivity and creativity of their units and functions. In addition, teamwork can benefit the company and its members in the following ways.

For many organizations, decentralization and delegation have been central features of their new management philosophy. Current thinking leads to the removal of as many levels as possible in an attempt to rid the organization of bureaucracy. This is expected to provide faster communication both up and down the organization with less chance of distortion. Another benefit of de layering is that individuals and groups can be more autonomous and responsive to customer needs (Wilson, 1994). Within the general policy guidelines of the organization, employees at the customer interface are 'empowered' to make decisions that previously would have to be referred to higher levels.

Finally, another application of the framework presented in this paper would be to investigate the relative influence of so-called 'best practices' on different organizational outcomes. Many of the HRM practices identified in the recent literature seem like fads because they often are implemented without much understanding of the underlying principles of human behavior as well as a tendency to do whatever is popular at the moment, regardless of whether it makes sense in the specific setting or organization (Pfeffer, 1997)[77]. It is this trendiness that makes the task of measuring and demonstrating the effective contribution of HR policies and practices of organizations so difficult. Yet, for many line managers, it is the ability to show that HR adds value, not the rhetoric, that forms the basis of policy making and which gives HR its place on company boards. If the HR policies and practices are misaligned, or no attempt is made to provide line managers with a framework to assess practices on an ongoing basis, the credibility and influence of the HR function will suffer. The framework put forward in this article may help to avoid these mistakes.

Linkage between Production and Effective HRM. The aspect of this model presenting the greatest practical difficulty is in specifying and measuring employee productivity. A couple of factors complicate this task. The one receiving the most

[77] J. Pfeffer, (1998), *The human equation. Boston: Harvard Business School*. Playboy Enterprises, Inc. v. Welles, 279 F.3d 796 (9th Cir. 2002).

attention in the past has been the problem of measuring productivity, and the more fundamental problem concerning the definition of productivity. At the simplest level, productivity can be defined in terms of quantity of output. Quality is also an important aspect of productivity, but it is the quantity definition of productivity that has received the most attention. The practical difficulty is that many measures of productivity (both quantity and particularly quality) are subjective measures, and thus not very amenable to simulation. Blue collar and routine clerical occupations are the ones most amenable to simulations at present, due to the relative simplicity involved in defining and measuring productivity. Due to the difficulty in determining acceptable objective performance measures, many organizations and studies rely upon subjective measures of productivity, but Blumer, H. (1969)[78] conclude that the measures are not interchangeable due to the low published correlations between objective and subjective performance measures. In practical terms, this means that the performance measures used by most organizations are useless for the purpose of simulation studies.

The model just illustrated and discussed makes it clear just how complex the human resource aspects of production can be, yet complexity is not a sufficient reason to warrant inclusion in models of production systems. It is only important to include human resources in production system models if biased or deficient conclusions would result from ignoring human resources. The discussion will thus turn to some examples that will highlight the importance of considering carefully the human resource implications of policy decisions. Finally, a brief example of an informal test of the model is discussed. In the example, a post hoc evaluation of an actual example is performed, with simulation results that are consistent with the actual outcome.

Leaders influence on organizational effectiveness. Most effects of human capital on firm performance are mediated by efficiency and innovative adaptation. Employees with strong skills and motivation are likely to be more productive, because they will do the work faster and smarter. Research shows that talented employees can improve efficiency and process reliability (e.g., Hatch & Dyer, 2004; Ichniowski & Shaw, 1999). Talented employees can also improve adaptation by helping to develop innovative products and services, by marketing them effectively, and by providing excellent customer service (Baer & Frese, 2003; Pfeffer, 1998; Vermeulen, Jong, & O'Shaughnessy, 2005).

Because efficiency and adaptation mediate the effects of human resources and relations on firm performance, the importance of human resources and relations increases when talented, dedicated employees are needed to achieve optimal levels for these other two performance determinants. Human resources are more important when operations are labor intensive, the work is complex and difficult to learn, successful performance requires a high level of skill and experience, and it is difficult to recruit and train competent replacements for people who leave. Examples of organizations likely to have such conditions include hospitals, consulting firms, law

[78] H. Blumer, (1969), *Symbolic Interactionizm: Perspectives and Method*. Englewood Cliffs, NJ: Prentice Hall.

firms, advertising agencies, research universities, and companies that rely on advanced manufacturing technology (Snell & Dean, 1992).

Human resources and relations are very important when the competitive strategy requires unique experts or celebrities to attract and retain customers (Grant, 1996; Pennings et al., 1998)[79]. If unusually talented employees are dissatisfied, they can often find jobs in competing companies or start their own company. Voluntary turnover of key employees can be important not only for the loss of unique skills, but also for the loss of their special external relationships with clients, suppliers, strategic partners, and others (Dess & Shaw, 2001; Leana & Van Buren, 1999; Pennings et al., 1998). Examples of organizations with high dependence on uniquely talented members include professional sports teams, advertising agencies, talent agencies, consulting companies, and investment banking firms.

Human relations and resources are less important when much of the work can be done by unskilled workers, there are many people who are able and willing to do simple repetitive work for low wages and benefits, and there are few labor laws or other limitations on how employees are treated (as in many third-world countries). Likewise, human resources and relations are less important when an organization needs few employees except for the headquarters staff (e.g., a chemicals company with highly automated processes, an internet services company, or a "virtual organization" for which nearly all functions are outsourced).

Leaders can improve the performance of an organization by influencing the performance determinants. One form of influence is the use of specific leadership behaviors in interactions with subordinates, peers, and outsiders. A second form of influence involves decisions about management programs and systems, and organizational structure. A third form of influence involves decisions about the competitive strategy for the organization. The three forms of influence must be used together in a consistent way for effective strategic leadership.

The Changing Role of HR Managers in Europe. European HR management appears to be a field in transition; external forces such as increasing demands for quality improvement, privatization and completion of the Single European Market are important influences affecting the nature and scope of HRM across European countries. Competitive pressures have added to the challenges created by the changes in the occupational and demographic make-up of the workforce. What are the implications of these developments for the HR function across Europe?

It is interesting to note that HR and non-HR managers attached a different degree of importance to the various skill and knowledge areas. In particular, HR managers rated organizational change skills, general business management, and knowledge of general Personnel HR techniques significantly higher in importance than non-HR managers. In contrast, non-HR managers attached more importance to consultation skills, improving employee motivation, and working in teams. These differences were most pronounced in the manufacturing sector. In fact, analysis of sector scores showed that respondents from manufacturing companies consistently

[79] R. Grant, (1996), "*Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration*". Organization Science, 7, 375-387.

rated the need for skills to improve employee motivation, teamwork, and cross-cultural communication higher than those employed in the service and public sectors.

These growing demands put the HR manager in a difficult position. If (as the EAPM findings indicated) HR managers are often perceived as too administrative and traditional, line managers may hesitate to allow them to rotate out of the narrow confines of their function into areas where they can gain broader business experience. In addition, what remains unclear is what will happen to the potential role overload and growing expectations on someone in the role of a hardworking HR manager who cannot do all that is required. The senior HR executive in a Swiss company put it candidly: 'It scares me to think that I might be expected to go out and run a business after twenty years in HR.

HRM Practices in small firms. According to the RBV, human resources (as distinct from human resource activities) are viewed as a potential source of sustained competitive advantage because value, rareness, inimitability and non substitutability is derived from the inherent heterogeneity, ambiguity and complexity of these resources and the conditions under which they are deployed (Wright et al., 1994). Value derives from the unique contribution of skills, knowledge, and cognitive abilities (for example) to achieving firm goals.

Research shows that training is an important HRM issue for many small firms, but formal training is less likely to be provided in these firms (Storey, 2004). Storey and Westhead (1997) provide two explanations for this. First, training is less likely to occur in small firms because of 'ignorance' of the benefit it can bring and second because the cost is too high for small firms (Storey, 2004; Storey &Westhead, 1997).

Importance of Corporate image and reputation. From the perspective of marketing, the impact of corporate image and reputation on consumer behavior is well recognized in spite of the lack of empirical evidence. Numerous authors assert that a good corporate image or reputation helps to increase the firm's sales and its market share (Shapiro, 1982), and to establish and maintain a loyal relationship with customers (Andreassen and Lindestad, 1998; Robertson, 1993; Yoon et al., 1993).

How is corporate image related to corporate reputation? A review of the past research in the field shows little empirical results except for some general statements. For example, Porter (1985) suggests that a good reputation may help a pioneer "rebuilding an innovative image in the industry, while Franklin (1984) proposes that corporate reputation is a global and final outcome of the process of building a corporate image.

Impact of Human Resource Management on Organizational Performance. Throughout the 1980s there were a number of variations along this theme of 'strategic fit' (Lengnick-Hall and Lengnick-Hall, 1988). One of the clearest expositions and developments of this theme was given by Schuler and Jackson (1987). In their model, HRM is seen as a menu of strategic choices to be made by HR executives intended to promote the most effective role behaviors that are consistent with the organization strategy and are aligned with each other. The model's starting points are the generic competitive strategies outlined by Porter (1985) – i.e. quality enhancement, innovation and cost leadership or reduction.

For example, Kravetz (1988) conducted a survey of 150 Forbes 500 companies to examine the relationship between 'Human Resource Progressiveness' (HRP) and a variety of financial measures drawn from Standard & Poor's Compustat Services, such as five-year growth in sales, five-year growth in profits, and P-E ratio for the latest twelve months. HRP was measured by asking the vice presidents of human resources of each company in the survey to complete a fifty-one item questionnaire on human resource policies and practices in the areas of communication, management style, career development, performance management, working hours and employee participation.

Finally, it is clear the contribution of even highly skilled and motivated employees will be limited if jobs are programmed or structured in such a way that employees do not get the opportunity to use their skills and abilities to improve their performance. Consequently, HRM practices can also create competitive advantage through provision of organizational structures, leadership and work conditions that encourage initiative and creativity among employees and allow them to find ways to improve how their jobs are performed. Delegation, cross-functional teamwork and participative management are examples of such conditions.

With the increasing demands of today's business environment, company executives are placing more pressure on the human resource function to perform better, smarter, faster, and cheaper, while providing more value added services. Now, in addition to supporting workforce requirements and general business initiatives, the activities of HR are increasingly focused on managing the broader human capital capabilities required to achieve and sustain a competitive advantage (e.g., succession planning, leadership development, performance management, cultural transformation).In order to accommodate this shift in focus, HR needs to rapidly align their priorities and resources to provide the wider range of expertise necessary.

3.2. The Theoretical and Methodological Aspects of the Intellectualization of the World Development

Intellectual capital is the leading capital that forms the basis of any organization at the present stage of development of a market economy. It specifies the pace and nature of the updating of market economy technology, production, and the like. His main function is to substantially increase the value of profit through the formation and implementation of the necessary for the organization of knowledge, things and relations. This provides it with highly effective business activities.

M. Eskindarov (2011) treats intellectual capital as a system of relations between different economic entities in relation to rational, sustainable its reproduction on the basis of progressive development of science in order to produce specific goods, services, income, raising the living standard of the population, solving the problems of unevenness of world and regional development on the basis of personalized economic interests of subjects.

L. Lukicheva[80] under the term "intellectual capital" proposes to understand the totality of intellectual assets and labor resources within a particular enterprise. Intelligent assets consist of information and intellectual resources and information and intelligence products (see Figure 3.2.1).

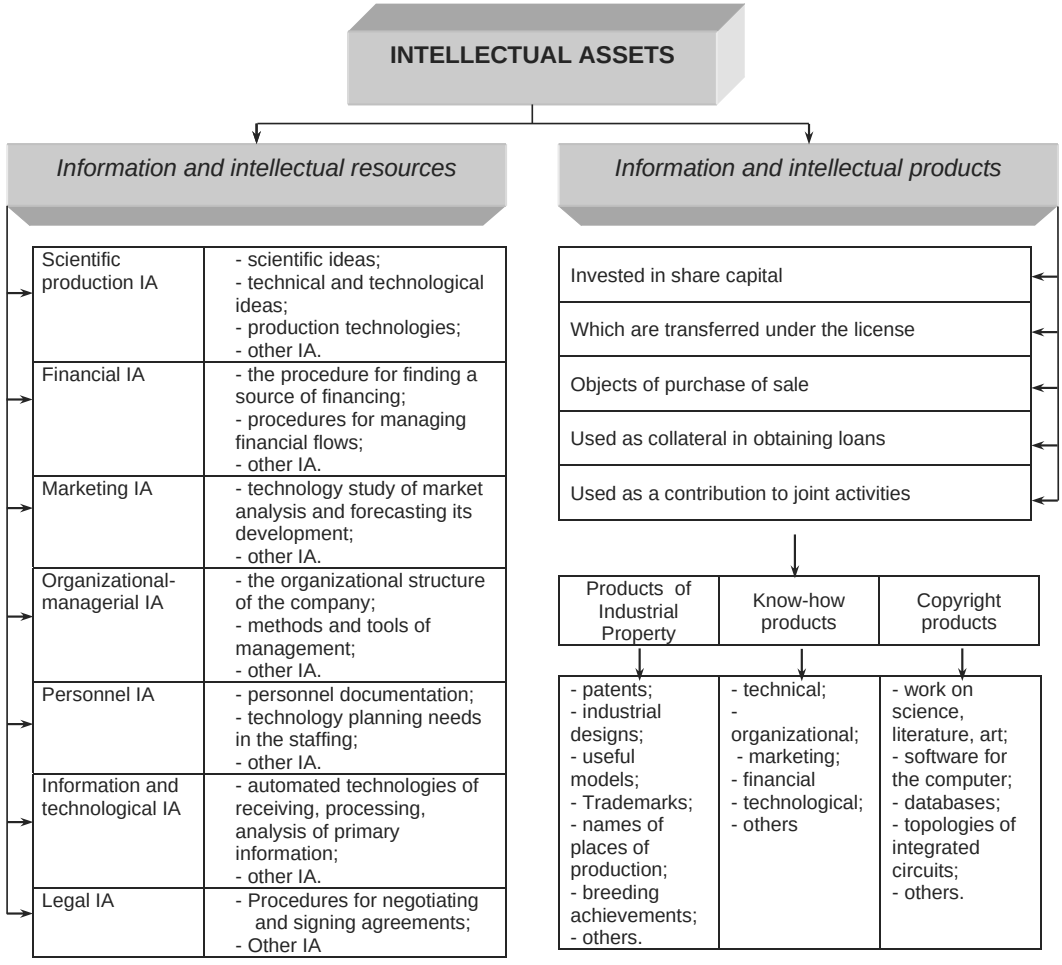

Fig. 3.2.1. Structure of intellectual assets

Source: compiled by the author on the basis of materials (Dretske F., 1981).

It can be alienated from their creators and have a real commercial value for the company and its counterparts. Accepting the first component of intellectual capital, it is necessary to draw attention to the fact that the second component, namely, labor resources, are only carriers of intellectual capital, and not the capital itself. In addition, the level of knowledge, skills, abilities and capabilities of employees can be

[80] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M. MIET, 2002. P. 57-64.

at a rather high level, but it can not be effectively evaluated and used to ensure the proper economic effect and the level of competitiveness of the organization.A. Bollinger and D. Smith consider intellectual capital as knowledge gained through research and experience. This is an individual's interpretation of information based on his own experience, skills and abilities. However, the authors of the data note that the aggregate organizational knowledge differs from the knowledge of individual individuals and represent a strategic asset of the organization.

Although terms often use information and knowledge as synonyms, there are clearly distinct differences between them. On the basis of the information, new approaches to the interpretation of events and objects are made, the hidden values of the links are unclear, that is, it serves as the necessary medium, material for the acquisition or formation of knowledge. F. Dretske (Dretske F., 1981) notes that information is a product from which knowledge can be obtained, and knowledge is derived from information.

Substantial research on the interpretation of intellectual capital through the prism of knowledge is given by scientists I.Nonaka and H.Takauchi[81]. On the basis of M. Polany's works, they distinguish formalized and non-formalized knowledge, which in various combinations form the intellectual capital of organizations. Formalized or codified knowledge relates to past events or objects that can be captured and transmitted by means of formal language. Informal knowledge is an implicit knowledge that is formed in a practical context by actively acquiring and systematizing the experience of labor resources. According to G. Bateson formalized knowledge possesses digital, but unformalized – analogue properties (Dretske F., 1981).U. Bukovich and R. Williams believe that the concepts of "knowledge" and "intellectual capital" are to some extent interchangeable. Intellectual capital is a knowledge of which organizations can profit. However, "organizational knowledge" or "organizational intellectual capital" does not always include a set of "personal knowledge" of employees, because the specific knowledge of individuals can both make up and do not form a value for the organization (Лукичева Л.И., 2007).

Thus, systematizing the results of the study, the definition of the concept of "intellectual capital" as a set of formalized and unformalized knowledge of the subject of activity used in the process of economic activity with the aim of maximizing profit or satisfying non-commercial interests can be formulated.

Developing the views of Edwinsson and Inozemtsev, structural and human capital are the constituent parts of intellectual capital (see Figure 1.3). Structural capital includes mainly formalized knowledge, in particular, methods and mechanisms for developing business structures, processes, formed databases, software, available information, distribution and other types of networks, distribution channels and supplies, etc. Human capital includes non-formalized knowledge such as organizational culture, reputation, competence, knowledge, skills, and staff skills. The result of the combination of structural and human capital is intellectual products

[81] I. Nonaka and H. Takeuchi, (1995), *The Knowledge-Creating Company*. New York. Oxford University Press.

that acquire their content and legal form through intellectual property, such as know-how, licenses, patents, rational proposals, etc.

At the macroeconomic level, the country's intellectual capital is formed from the intellectual capital of economic entities legally registered and operating in the country.

The result of the formation of intellectual capital in the world economy is the socio-economic, scientific, educational, cultural and other forms of civilization development, expressed through the intellectual potential of society – the ability of civilization to understand the factors of the internal and external environment, accumulation, use and transfer of knowledge, as well as the ability to form a high-quality workforce capable of creating, evaluating, protecting, commercializing and managing intellectual resources.

The intellectual potential of society is an important component for defining the human development index (HDI). At the initiative of the United Nations since 1990 HDI is calculated practically for all countries of the world. The results of calculations are systematically published in the scientific literature and reference materials. Countries with an HDI of 80 or higher are believed to have a high level of human development, from 50 to 79, to an average, below 50 – to a low.

The question of the effective formation of intellectual capital in the current conditions is substantially updated, both within the framework of the economy of the country, and, more globally, internationally. With the growth of scientific and technological progress and the high dynamism of foreign markets, intellectual resources are becoming a strategic asset that can provide the economy with sustainable competitive advantage, provided that they are knowingly and skillfully managing. Jane Barney highlights the following features of strategic assets: they are valuable; for them there are no substitutes; they are difficult to reproduce or copy; they are rare for competitors. Hence, highly developed countries use their own intellectual capital to develop new market opportunities, neutralize existing threats, as well as create strategic competitive advantages as sustainable factors of economic growth[82].

Institutional prerequisites for the formation of an intellectual economy, according to T. Stewart, are the following factors:

1) *the transition from physical labor to mental.* In the modern economy, the proportion of people who become "employees of mental labor" is steadily increasing. Information and knowledge are both the source material and the product of their activities. In intellectual companies, that is, in organizations where the share of mental work reaches 40 percent or more, employing 28 percent of all employees in the United States, but in the last five years they account for 43 percent of the newly created jobs. In addition, the intellectual content of the work increases, regardless of its scope. So a modern physician should have knowledge of the use of high-tech medical equipment, an engineer – on the use of the necessary

[82] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M. MIET, 2002. P. 57-64.

software, the worker of the enterprise - able to operate the production robotics, etc.,

2) *the increase in the cost of organizational intelligence.* Existing requirements for education point to the growing role of knowledge in creating value and material values. James Roche, an economist at California University of San Diego, has shown that labor productivity in the urban workforce increases by 2.8% in proportion to each additional year of study. In other words, if the training of one average employee of city A took place for 10 years and the second employee of the city B for twelve years, the output per employee in city B would be 5.6% higher. This is because, first, a more educated worker is able to work with higher efficiency, more efficient use of modern science and technology, and secondly, an educated workforce performs a qualitatively different job in which intellectual work predominates,
3) *convert information and knowledge into a special type of resource.* Information and knowledge differs from monetary, natural, labor and technical resources. Economists call them "public good" because they do not physically disappear, they exist independently of space and can be in several places at the same time. A special distinction between knowledge and other resources lies in the potential existence of boundless volumes of knowledge in the space. In addition, the cost of most science-intensive goods and services ("materialized knowledge") is sharply different from the structure of cost ("materialized subject"): the greater the product is immensely, the closer it to pure knowledge, the greater the gap between the cost of past periods and marginal costs,
4) *changing economic laws under the influence of the information environment.* In accordance with the law of demand and supply between what is produced by sellers and what buyers buy, there is a point of equilibrium. For example, in liquid and regulated financial markets, for example, should be observed close to the ideal equilibrium. Instead, the situation on them is constantly unstable due to the fact that the items of sale are increasingly transferred from the material sphere to the intangible – to information about the future state and value of intellectual property. Knowledge-based organizations modify another law of the economy – the law of declining yield. The theory argues that competition due to scarce resources reduces the marginal return on investment. In this regard, companies reduce investment to a level of average profitability in their industry, thereby stabilizing their structure. Nevertheless, in many cases, the economic activity of the information age is characterized by growth, rather than a decline in returns (Lukicheva L.I., 2007)[83].

What is the meaning of the current economic transformation? How does the character and tasks of the international and national economy change? What methods

[83] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works “Organizational and economic problems of management”; by ed. Yu. Aniskina. M. MIET, 2002. P. 57-64.

and tools does international business generate in its own intellectual capital: extract, store, update? How will global informatization and intellectualization in the near future be reflected in the structural reorganization of the world economy, which will affect all countries without exception, regardless of resource provision and territorial placement? Not every one of these questions can give a comprehensive and unambiguous answer. However, we can quite confidently state that radical changes are already taking place in the world economic space.

Large international corporations, which have long defined the economic and social development of many countries of the world, have largely lost their positions. An example is the fact that two thirds of companies listed in the 1954 largest list published by *Fortune* magazine either ceased to exist or were not so large as to remain on this list for sixty years in a row. Their place was taken by such organizations as a subsidiary of the Finnish company *Nokia* with an annual sales of about 160 million dollars. and a staff of five people. *Nike* is a manufacturer of shoes that does not produce it, and which mainly deals with research, manufacturing, design, marketing and sales – that is, knowledge-based services. *Netscape Communications* Corporation is a recognized pioneer and leader in developing software products for the global *Internet* network, which did not exist even fifteen years ago.

Most of the current economic problems are due to imbalances and inefficiencies in the production-technological structure. In this regard, the main disadvantage of the measures taken to improve the economic situation in Ukraine is the lack of a clear, promising state innovation policy, the main tasks of which are rational use of available resources, including intellectual collapse of outdated and reproduction of the newest productions, redistribution of freed resources into new spheres of the economy, etc. Realization of these prerequisites is possible only in the presence of a motivational and effective mechanism for the formation of a national intellectual economy. At the same time, the main condition is the need for constant creation and dissemination of innovations, which, in turn, is possible only in the context of raising the level of knowledge, skills and abilities of the human resources that are their bearers. On this stressed in the last century, Academician V.I. Vernadsky[84], that human progress in the future will take place in the field of knowledge and reason. Indeed, without these components, competitiveness can not be achieved either for companies or for countries as a whole.

As already noted, the scientific interest in the issues of intellectualization in the system of world economy is associated with the transition of developed countries to the construction of the so-called knowledge economy, or intellectual economy. The economy of knowledge differs from the previous social formations by its *features*.

Firstly, knowledge and products expressed in products and services form the bulk of the newly created value. This process is evolving due to the growth of knowledge-intensive production and the development of the market for intellectual goods and services. Intellectualization of modern technologies provides a sharp

[84] V. Vernadsky, *Collection of works: in 24 t/edited By Eric Mikhailovich Galimov*. M. Science, 2013. ISBN 978-5-02-038093-6.

increase in productivity. Already today, in industrialized countries, the share of employed in agriculture and material production does not exceed 20%. More and more significant intellectual products and services are occupied in international markets. According to expert estimates, the global market for intellectual goods and services is currently growing five times faster than traditional markets.

Secondly, in the intellectual economy, an increasingly important role belongs to the activity associated with the formation, storage, transfer and use of knowledge. A special role in this activity belongs to education, the nature and significance of which are radically changing. Beginning from the 60s of the XX century. the costs of education in all countries are beginning to grow at a much faster pace than in other sectors of the economy. In the vast majority of countries there was the so-called "education industry", which is funded mainly by the state and occupies a central place in a number of social expenditures, along with defense, health care and social protection of the population. In the world economy, education is seen as a form of investment in human capital, on which its quality and ultimate performance depend. The most complete modern trends in the education industry were revealed in *the concept of continuing education*. Already, the retraining of specialists in the United States allocated 15-20% of working time. It is believed that during the entire period of professional activity (about 40 years), a specialist should improve his qualification 5-8 times. The National Science Foundation of the United States, in particular, recommends that specialists allocate 10 hours a week for study literature in the specialty and 40-80 hours a year to participate in a form of continuing education.

Thirdly, in conditions of world competition, the competitiveness of market participants is of particular importance. In the activity of modern organizations, the emphasis shifts from long-term and medium-term planning, which in the 1950's was considered a prerequisite for success, the speed of response to market challenges. The main tools of competition in this situation are: first, the focus on the consumer, that is, the more complete consideration of his individual needs, and secondly, the continuous improvement of business processes on the basis of the development of innovation. Both the first and second components directly depend on the quality of the formation of intellectual capital on the micro- and macro-levels of management.

Consecutive links of scientific and technological progress, namely, mechanization, automation, robotization and informatization, are the technological forms of substituting intellectual labor for intellectual purposes. This leads to a change in economic agents, when industrial workers are gradually replaced by intellectuals of high qualification, professionalism, information and knowledge as a necessary overall organizational resource component. Production and consumption of knowledge also extends the scale of processes in which subject-object relations (production of material goods) are replaced by inter-entity interactions (services).

As evidenced by the best practices, the formation of an intellectual economy in the world economy is characterized by *qualitative features* (Лукичева Л.И., 2007).

The first feature is that the pace and scale of scientific and technological progress and, consequently, changes in the material base of production and the quality of labor resources, do not keep up with the growth of scientific and technological capabilities. In connection with the increase in the pace of innovation,

moral aging, the processes of merger of organizations, the speed of passing the organizational chain of knowledge becomes the basic criterion of the transformation of intellectual capital into economic success.

The second feature is the growth of transaction costs, which clearly outlined in the economy of industrialized countries in the 90 years in connection with the intensification of competition. Transaction costs – a relatively new economic category, actively introduced in the economic analysis in 1937, the Nobel Prize winner Ronald Coase. By their content, these costs are not related directly to production as such (ie, expenditures on raw materials, materials, wages, transportation, etc.), but with the costs associated with the search for information, the study of the market, the signing of contracts and control over their execution, protection of property rights including intellectual, etc.

The third feature is the formation of a new type of management activity - knowledge management (knowledge management). In modern conditions, revolutionary changes in production and information technologies form a new management function associated with the creation of appropriate conditions for the creation, use and development of intellectual capital. The process of knowledge management is based on the use of practical experience with the necessary modifications for the current circumstances. In practice, the implementation of this function finds expression in the systematic formation, renewal and application of new knowledge to maximize the desired effect at different levels of management[85].

The fourth feature is that, in a systematic restoration of knowledge and a rigid external competition, workers face the need for continuing education (lifelong learning – lifelong learning). Underlined by P. Drucker the need for a permanent change in organization became the main postulate of the so-called theory of organizational learning. Like individuals, organizations must also always be prepared to change their circumstances, especially during periods of rapid changes in economic and technological conditions. The more effective the organization learns, they perceive and analyze the various information, the higher the probability that they will strive for innovation and better understand the limits of their own innovation activities.

A characteristic feature of the intellectual economy is the rapid growth of the role of information for economic and social progress. Moreover, the growth of the role of not general information as such, but information confirmed by facts, laws of nature and society, the principles of their practical application, skills and capabilities of labor personnel, social relations, etc. That is, there is a powerful intellectualization of the whole economy, when knowledge obtains higher market value than goods that have a natural-material form. Thus, in the past, the volume of knowledge has doubled at such intervals: the first double took 1650 years (until the middle of the XVII century.); the second - 350 years (from the middle of the XVII century until the end of XIX century); the third - 50 years (from 1900 to 1950); the fourth - 20 years (from 1950 to 1970); fifth - 12 years (from 1970 to 1982); sixth - less than 9 years (from

[85] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works “Organizational and economic problems of management”; by ed. Yu. Aniskina. M. MIET, 2002. P. 57-64.

1983 to 1992, the amount of knowledge increased by 2.6 times).

In the conditions of the existence of complex economic ties, both in the national and international markets, organizational intellectual capital acquires not only theoretical but also practical value. As P. Drucker[86] rightly states: "Knowledge in the new understanding means real full power, a means for achieving social and economic results". In these conditions, there are radical changes in the criteria for assessing the effectiveness of the functioning of the national and international economy. Such criteria are the so-called "intellectual indicators" which, on the one hand, allow the most complete satisfaction of consumer requests, and on the other hand, to expand the possibilities of adaptation to the influence of factors of the environment that are in constant change.

At the beginning XXI century changes in the global economy occurred under the influence of three main processes:

1) the processes of *globalization*, connected with the simplification and expansion of interstate flows of material, financial resources, people, institutions, as well as with the strengthening of the influence of supra-state governing bodies (United Nations, Council of Europe, International Monetary Fund, World Intellectual Property Organization, etc.). Globalization, contributing to the increasing transparency of borders between countries, simultaneously expands the markets for resources, technologies, products and significantly exacerbates competition between goods and services manufacturers. After Ukraine's accession to the WTO, for many Ukrainian organizations, not only the external but also the domestic market can be difficult to access. At the same time, globalization creates opportunities for the rapid attraction of additional resources, the effective use of which by one or another institution can significantly improve its financial and economic situation, increase competitiveness and even lead the leaders,
2) processes of structural *transformation*, search and testing of transitional models on the way to optimal correlation between market and administrative regulators of the economy. In Ukraine during the last decade of the last century, during the transformation of the socio-economic structure and geopolitical structure, the network connections between the elements of the once united industrial and technological complex were destroyed for many years. Construction of the same new connections to this day is in the stage of formation and development. This led to a change in the environment for most domestic organizations, deprived of their stability and made them more vulnerable to competitors,
3) processes of *cognitivization* – expansion of scale, as well as socio-economic and political influence of the "intellectual economy", awareness of the importance of knowledge as the main resource for sustainable economic growth and national competitiveness. Since the beginning of the

[86] P. Drucker, (2000), *The Coming of a New Organization*. https://hbr.org/1988/01/the-coming-of-the-new-organization.

2000s, the process of intellectualization of national institutions has begun on many Ukrainian enterprises based on experience and new knowledge of technology development, as well as organization of production and economic activity. The situation on the domestic and foreign markets is such that domestic organizations can and should actively use their own intellectual potential in order to achieve leadership in the priority areas of the national and world economy.

In the world of intellectual economy, the key role in creating a new value is occupied by intangible assets and the multiplier effect of their application. Moreover, this effect increases in geometric progression. In his book "Corporate Longitude. Knowledge Based Navigation "Intellectual Capital Specialist Leif Edvinsson notes:" Why am I convinced that intellectual capital is extremely valuable and in the near future its value will only grow? All is simple, this confidence is based on the fact that today the world begins to live in intangible economics – an economy based on knowledge...". In the intellectual economy, what yesterday did not have any value can be valued, and vice versa, what yesterday was valuable, today or tomorrow, this value can completely lose. The nature of the competitive advantage has shifted from the sphere of material to the sphere of immaterial, from the visible to the invisible. The paradigm of the very nature of creating value changes. The driving force behind the development of the current economy is something that is hard to see. Intangible becomes a "new force" of economic development. Intellectual Property Association, the United States found that the "creative" sectors of the economy: communication, information, research, organizational, management, consulting is already estimated at 360 billion dollars. per year, which exceeds the cost of road, aircraft, space industry or agriculture. According to L. Edwinson[87], "intangible, intellectual capital becomes a new wealth of nations".

3.3. Globalization Processes Intellectualization of the Economy: An Analysis of Research by Scientists

The future is for the use of intellectual capital markets, both inside and outside organizations. "Developing market mechanisms are very important, because they create more efficient knowledge markets," – says Larry Prusak of the Institute for Knowledge Management[88]. The auctions of the decisions that make up the intellectual capital become the third generation of exchanges: humanity began to exchange raw materials in the millennium, then a few hundred years ago financial exchanges appeared, and today there is the formation of the third generation of exchange items – the exchange of knowledge.

The development of national economies of countries is determined by their economic growth – the long-term trend of increasing the real gross of domestic

[87] L. Edvinsson, M. Malone, (1997). *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Roots*. New York: Harper Collins Publishers, 1997.

[88] D. Cohen and L. Prusak, (2001), *In Good Company: How Social Capital Makes Organizations Work,* Boston: Harvard Business School Press.

product, which is reflected in the dynamics of the growth of national wealth. It should be noted that the share of knowledge in the national wealth of different countries is rapidly increasing. According to the World Bank, in the structure of the national wealth of the United States of America, the main productive assets (buildings, structures, machinery, equipment) occupy only 19%, natural resources – 5%, and intangible resources – 76%. In Western Europe, the figures are 23%, 2% and 75%. Of the total volume of science-intensive products, the United States accounted for – 39%, Japan – 30%, Germany – 16%. Since the components of the growth of the national wealth of the countries are closely interconnected, it is logical to conclude that the greater the share of natural resources in national wealth, the smaller the share is occupied by intangible resources, and, accordingly, the smaller the share of intellectual resources, the less economically developed is this country.

An example of implementing an effective concept for the formation of an intellectual economy at the national level is Sweden. The Swedish investment company Invest in Sweden Agency became the first national company to assess the impact of corporate intellectual capital on competitiveness and the overall state of the national economy. Sweden's experience and practice have shown that the intellectual capital of companies is easily transformed into the intellectual capital of the country. At the same time, its informative characteristics remain the same, but began to cover a number of specific for administrative-territorial formations of spheres of activity, namely:

1) the financial sector, through the assessment of GDP per capita, national debt, the average value of the national currency to other convertible currencies,
2) the market sector, through the assessment of corporate and state standards, in particular, honest business conduct, indicators of the service sector, trade balance indicators, balance of trade in intellectual property objects,
3) the human sphere, through the assessment of quality of life indicators, data on average life expectancy, child survival rates, health data, indicators of educational level of citizens, indicators of the educational level of immigrants, crime data, statistics on age composition of the population,
4) the process area, through the estimation of indicators of the share of public consumption in the structure of GDP, information about business leaders, data on information technology, including the number of personal computers connected to local networks, employment indicators,
5) areas of formation and development, through the estimation of expenditures on scientific research as a percentage of GDP, the number of most successful new business projects, data on trade marks, performance indicators of higher education institutions, etc.

Nowadays, the fourth technological revolution in automation and production programming has been completed and a new type of development of a society - an intellectual economy, has been processed by the countries such as China, South Korea, Singapore, the Netherlands, Finland, Denmark, Israel, which 40 years ago

were low-tech, scientific and technological development countries. They exported mainly raw materials and materials. Thus, in the 1960's, Finland's exports of 70% consisted of products from the timber industry, while about 70% of agricultural exports was in Israel's exports. Over the past decades, these countries have developed a new government policy, primarily related to the development of science-intensive industries and adequately implemented it. Today, more than 50% of exports in each of these countries is science-intensive products.

For some institutions, the Dutch Central Planning Office has a special unit (Economy Unit) specializing in special problems of the intellectual economy. Dutch initiatives include a long-term analysis of the role of knowledge in the country's economy, as well as research and other work on the formation of intellectual capital in networking and application of human capital. In Israel, data on the country's intellectual capital has been included in the list of official publications since 1998, where indicators on external debt, international events, openness for different cultures, language skills, learning efficiency, entrepreneurship, freedom of speech, risk-taking, venture capital, immigration and assimilation, the proportion of women in the professional workforce, book publishing, attendance at museums, alcohol consumption, scientific publications, etc. have been published. Rapid progress has been made in Denmark. In early 1998, a research project devoted to the problem of intellectual capital accounting was launched in this country in the framework of a wider initiative. In 2000, the Danish government published provisions on reporting on the state of intellectual capital and amended existing legislation aimed at supporting such initiatives. Another example of a country that effectively transforms its own economy is Singapore, where for decades a powerful system of structural capital, in particular for information technology and telecommunications, has been created[89].

It should be emphasized that already in developed countries, the concentration of most of the intellectual potential of humanity is observed today. This leads to the fact that advanced countries are preeminently able to determine the rules for the formation of a global institution of intellectualization of the world economy, as well as to differentiate socio-economic priorities of developed countries, developing countries and countries with a backward national economy. In the conditions of global intellectualization, there was a new tendency to increase the differences not only between centers and the backward part of the periphery of the world economy, but also within the leading countries according to the level of development of new sectors of the economy. Thus, information technology leadership belongs to the United States of America, where the share of information investment in the total investment has already reached 47% in 1999. Of the total number of Internet users in 333 million people. at the beginning In 2000, the US accounted for 50%, Europe - 20%, Japan – 8% . If in 1960 incomes of 20% of the rich world population exceeded the income of 20% of the poor by 30 times, now this exceeds 82 times. The share of 20% of the richest countries in the world accounted for 86% of world GDP, 82% of

[89] L. Lukicheva, (2002), *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu. Aniskina. M. MIET, 2002. P. 57-64.

world exports and 93% of Internet users. With the preservation and strengthening of such polarization tendencies of the countries as to the level of the development, creation, accumulation and distribution of intellectual resources, there is a danger of the monopolization by individual states of the global market of world resources and the transformation of other countries not only in technologically backward states, but also in intellectually peripheral.

The authors of the scientific theory of intellectualization of world economic development drew attention to the important role of intellectual capital, namely knowledge and skills of workers in the process of production, distribution and consumption, developed approaches to determining the effectiveness of investing funds in the systematic training of staff. Intellectual capital is formed on the basis of natural human talents, which purposefully develop by investing in their further development. Depending on the volume and sequence of investments, the return on capital increases, being reflected on the individual (individual), organizational (separate organization) and social (individual countries and the world economy as a whole) levels. Investments in the intellectualization of the economy determine the susceptibility of society to the new knowledge and technologies, create a motivation for development and scientific and technological progress. The accumulation of capital in the form of knowledge, skills and, ultimately, intellectual products is considered as the result of the education system, on which the innovation progress depends, and hence the ability of the economy to generate new ideas, applied sciences, intellectual products, etc.

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Further development of the theory of intellectualization of world economic development was expressed in the concepts of evolutionary development that arose in the early 1980’s.

Proponents of the evolutionary concept of development considered the growth of NTP as a variable internal nature. R. Nelson, S. Winter (Nelson R.R. and Winter S.G., 1982) and a number of other evolutionists focused not so much on the processes of production, distribution and consumption of goods, but on the evolution of

business entities, seeing it as evolutionary processes as the root cause of changes in the economic system as a whole. Intellectual innovations, discoveries and doctrines have occupied a central place in the system of mechanisms of evolution. Evolutionary theory was further developed in the concepts. The difference between these concepts, with a close proximity of positions, lies in different views on the functioning of the mechanisms of evolution itself.

Particular interest in the development of the scientific theory of intellectualization of the economy arose in the mid 1990's in major world corporations, where the problems of information processing became particularly acute. Moreover, managerial problems arose either due to lack of information or because of excess information because of the need for organizations to focus on relevant information capable of success. For the first time, the term "knowledge management" was introduced by Weick, K.E. (1995)[90], which identified three interrelated levels of knowledge management: business, perspective management and practical actions. The emergence of the theory of knowledge, the premise of which was the concept of M. Polani (Polanyi, M., 1966)[91], is connected, first of all, with the attempt to comprehend the essence of information and transform it into the intellectual property of corporations in order to create the preconditions for the formation of organizational competitive advantages.

In 1986 Romer conducted a new study, the main parameters of which were organizational knowledge. On the basis of the developed model, Romer formulated four basic signs of economic growth: technological progress is due to human activity; physical activity allows copying; in a market economy there is a large number of enterprises; knowledge is a blessing, many individuals can use them simultaneously, but the individual can temporarily receive monopoly rent for his own knowledge (Polanyi, M., 1966).

An estimation of the endogenous influence of science-intensive intellectual products on the pace of economic growth was carried out by J. Grossman and E. Helpman. By the example of the model of two states that carry out trade operations between them, the authors have shown that capital investments in the R & D sector of a country that has the appropriate scientific and technological advantage lead to an increase in the overall rates of economic growth in this country (Polanyi, M., 1966). Along with the above-mentioned model, almost simultaneously, a model of economic growth with the endogenous technological progress of F. Aghiona and P. Hovevitta appears. This model proves that economic growth is due to technological progress, which, in turn, is achieved through competition between companies generating and implementing promising product and technological innovations. The results obtained in the course of research on models of economic growth with endogenous technological progress are confirmed in many trends in the world economy, associated with the deepening of globalization processes (Polanyi, M., 1966).

Significant influence on the development of the theory and practice of the

[90] K. Weick, (1995), *Sensemaking in Organizations*. Sage.

[91] M. Polanyi, (1966), *The Tacit Dimension. London*: Routledge & Kegan Paul Ryle, G. (1949), The Concept of Mind. Chicago IL: University of Chicago Press Schon, D.A. (1983), The Reflective Practitioner. New York: Basic Books Spender, J.-C. (1996).

intellectual economy was realized by I.Nonaka and X. Takeuchi (Nonaka, I. and H. Takeuchi (1995)), who developed the ideas of M.Polani (Polanyi, M., 1966). Japanese researchers first linked the competitiveness and effectiveness of Japanese companies to their ability to create new knowledge, and use them to produce successful products or services. I.Nonaka and H.Takeuchi developed a model for the formation of "organizational knowledge" without putting the mechanism of knowledge creation in direct dependence on technological solutions, but portraying it as a process of intellectual modeling of the interaction of individuals within an organization with the environment.

Swiss scholars G. Krog and M. Aden in their studies paid special attention to the transfer of knowledge. The Krog and Aden knowledge transfer model showed the dependence of the enterprise profitability on the organization's ability to generate new knowledge and implement its intra-firm transfer. This relationship was deduced by P. Straussman, which linked profit growth with the creation of "knowledge capital". Strassman has shown that increasing the informational and intellectual level of workers contributes to the increase of knowledge, which forms, in the end, excessive value added[92].

One of the propagators of the idea of intellectualization processes is P. Drucker, who in his article "The Birth of a New Organization" wrote: "In order to maintain competitiveness or even survive, companies will have to turn into an organization consisting of knowledge workers" (Drucker P., 2000). In his opinion, any international organization in modern conditions should be ready to abandon outdated knowledge and learn how to create a new way of systematically improving all kinds of activities, finding new ways to use intelligent products, and constantly innovating as a system process. Drucker noted that in the twentieth century. the productivity of workers has increased by 150 times, but the productivity of knowledge workers has decreased over the past 70 years. In his opinion, the growth of the efficiency of the use of intellectual capital should become one of the main tasks of the formation and development of the intellectual economy.

The need for a continuous change of organization became the main provisions of the theory of "organizational learning," which gained its popularity after the publication of P. Seng's book "Fifth Discipline". Senge has had an emphasis on optimizing basic learning processes (university education) to form inside the organization the ability to systematically "organize learning" (Senge, P., 1990). The author distinguishes five technological components of the "educational organization", in particular: system thinking, personal skills, identification of intellectual models of development, the formation of a common point of view, the ability to group learning. Of the five named "disciplines" Senge emphasizes, first of all, the importance of "system thinking" which, in his opinion, "binds theory and practice" and includes all other tasks of the organization[93].

Concerning the use of the term "intellectual capital," he was first used by J. Galbraith in 1969 in a letter to M. Kaletsky.

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[92] I. Nonaka and H. Takeuchi, (1995), *The Knowledge-Creating Company*. New York: Oxford University Press.

[93] P. Senge, (1990), *The fifth discipline.* New York: Doubleday.

He became widespread in popular science literature at the end of the twentieth century, after the Swedish insurance company Scandia published its annual report in 1993 stating data on the state of the intellectual capital of this organization. Nevertheless, the key role played by T. Stewart, no doubt, was the publication of the article "Fortune", "Intellectual capital – the main wealth of your company", and subsequently published the book "Intellectual capital: the new wealth of organizations". And although some scholars of the present day criticize these works, calling them journalistic rather than scientific ones, one can't but note the fact that they have made a kind of breakthrough in the minds of both world and national scientific thought.

Subsequent studies of the content and structure of intellectual capital are associated with such researchers as P. Sullivan, L. Prusak, K. Swbi, T. Fortyun, L. Edvinsson and others. In 1996, L. Edvinsson (2005) and P. Sullivan (2000) formulated the idea that the success of any company is to transform their created innovations into intellectual assets for which property rights can be obtained, that is, in the objects of intellectual property. The source of these assets is the activity of human intelligence, and the totality of intellectual property defines the hidden values of the organization and ensures its high market value. At the same time, the researchers pointed out the main task of corporate management, which is transformation of human resources into the intellectual property of companies. Thus, L. Edwinsson (2005) and P. Sullivan (2000), under the intellectual factors, understand the knowledge that can be converted into value; S. Fortyun – the sum of all knowledge of employees, which gives the company the advantages of the market; L. Prusak is an intellectual material of a firm that is formalized and assembled into a single system for implementation in the company's assets. K. Sweibe devoted his studies to the development of methodological approaches to the quantitative calculation of intangible assets[94].

At the end of the twentieth century, Debra Amidon, author of "Innovation Strategies for the Knowledge Economy" ("Innovation Strategies for the Knowledge Economy") has developed a concept of innovation based on knowledge (knowledge innovation), the main idea of which is "the creation, evolution, exchange and application of new product ideas and services in the interests of ensuring: 1) the success of the enterprise (from the standpoint of profit and not only); 2) the viability of the national economy; 3) the progressive development of society as a whole". Another concept that emerged at the beginning of the twenty-first century, owned by the professor at Stern University of New York Baruch Lev, who notes that the stability and duration of the organization's existence (its survival) may only be secured by investing capital in intangible innovations, namely, in intellectual property. Leo highlights three essential components of the process of innovation: 1) opening/learning (in the process of developing new products and processes); 2) implementation (the establishment of intellectual property rights protected by law); 3)

[94] D. Cohen and L. Prusak, (2001), *In Good Company: How Social Capital Makes Organizations Work, Boston*: Harvard Business School Press.

commercialization (the final result of the innovation process should be the rapid offer of new products or services to the market and income generation over the cost of investment).

The research of Amidon and Lev showed that the starting point for the intellectualization of the economy at different levels should be the constant search for new prospects for the use of intellectual resources. It is in this way that innovative companies and leading countries of the world create products and services, which usually simply do not have direct competitors. A similar strategy should be applied to all modern economic systems without exception, and consider the future as an intellectual asset that needs systematic use, which needs to be constantly striving and always cultivated.

A new feature of the global economy is technological integration. According to M. Jansiniti and J. Uetz, technological integration has a more significant impact on firms' competitiveness than on improving managerial techniques, leadership qualities of staff or the benefits of organizational structure. Preconditions for the development of technological integration of companies are the processes of deepening economic integration. The expansion of free trade areas has removed the barriers between innovative goods and innovative services among the member countries of integration groups, created the preconditions for the development of new forms of scientific and technological exchange. Free trade zones are an innovation-friendly environment for the innovation activity of the three main levels: nano-, micro- and meso levels.

The global level of intellectualization of the world economy requires the formation of a single focal point and a significant weakening of the level of national sovereignty. These economic steps necessitate harmonization and unification of national laws, and thus require the formation of supranational governance and control bodies in the field of intellectual development. At the same time, the characteristic feature of the new millennium is the formation of new and expanding existing international institutes that regulate the transfer of high technologies, provide protection of intellectual property, form information base patents, research investment in the research and development of international companies, etc.

International institutions are usually established on a commercial basis and work closely with companies, universities, and national institutions. Examples of such international organizations are the World Economic Forum (WEF), the Internet Distribution Patent Office (DIPS), the European Business and Innovation Centers Network (EBN), the World Intellectual Property Organization (WIPO), the Global Strategic Forum (GSF), etc.

Creation of international institutions regulating transactions in high-tech markets, international consulting companies in the field of development of strategies for innovation development of the states, etc., is the answer to the current demands of the development of the global world economy. In the context of the globalization of world economic development, competition and a successful strategy (countries, international organizations) are needed to gain competitive innovation benefits. Full integration into the world's intellectual systems is impossible without adequate investment of innovation potential of the country, as well as mechanisms that ensure

the development, implementation and dissemination of innovations in the process of international scientific and technological exchange.

In our opinion, the formation in the global economy of the global institute of intellectualization of world economic development, testifies to the need for all countries that wish to be direct participants, and not observers of the creation, distribution and consumption of material and intangible goods in the world, in the shortest possible time to intellectualize the priority areas of their own national economies and implement the standards, norms and rules already in force on the international intellectual property market. Those countries that will become participants in the expansion and development of international institutions of intellectualization of the world economy, in fact, will receive a monopoly right to the formation of a global socio-economic geopolitics.

In this case, the conceptual provisions for the formation of the global institute of intellectualization of the world economic should be:

1) development of the institutional system of the world intellectual economy,
2) ensuring the institutional framework for the development of the intellectual property market on the basis of the implementation of international standards,
3) distribution and optimization of activities of international organizations in the field of intellectual property,
4) unification of the international institution of professional appraisal activities in the field of intellectual property.

As it might be seen from the above-mentioned provisions, the main emphasis should be placed on the formation of intellectual property institutions as the final result of the intellectualization of the economy, since intellectual property objects themselves are subject to a sufficiently clear assessment, analysis and management activity.

So, the intellectual capital of the country is formed from the intellectual capital of business entities legally registered and operating in the country.

The intellectual potential of society is reflected through the ability of the society to realize the factors of the internal and external environment, accumulation, use and transfer of knowledge, as well as the ability to form a high-quality workforce capable of creating, evaluating, protecting, commercializing and managing intellectual resources.

The author’s definition of the term "intellectualization of world economic development" is the process of materializing new ideas, knowledge, skills and abilities of humanity expressed in the creation and effective management of intellectual property objects in order to ensure global economic equilibrium in the global economy.

Studies have shown that already developed countries have concentrated most of the intellectual potential of humanity. This can lead to the fact that the advanced countries of the world will begin to take on their own interests to define the policy of the global institute of intellectualization of world economic development, and also to have a significant influence on the priorities of the rest of the world.

In the conditions of global intellectualization, there was a new tendency to increase the differences not only between centers and the backward part of the periphery of the world economy, but also within the leading countries according to the level of development of new sectors of the economy. Thus, there is the danger of the monopolization by individual countries of the world market of intellectual resources and the transformation of the rest of the countries not only in the technologically backward states, but also in intellectually peripheral.

3.4. Technological Documentation as an Intangible Technological Resources

Technological resources are systems and tools required to effectively produce or create a product or service. These include energy, information, people, tools, machines, capital and time. Technological resources aid production processes and service delivery in companies and organizations. The most important resource of technology is people. Without them, no product would be formed, and no service would be delivered. People develop tools and machines, which are used in production such as software and hardware. Their innovative tools increase the end user's convenience and drive development, construction, delivery and purpose[95].

Energy is another one of the most important technological resources. Most forms of technology rely on energy for power. Machines driven by energy are an invaluable resource in industries that rely on continuous and mass production. Moreover, energy is used in households and businesses to power various necessities and conveniences.

Information is also an important technological resource. Introduction of highly efficient technological devices has resulted in increased information sharing across the globe. Many people can access updated and accurate information using various devices such as cellphones and computers. As such, people have greater access to more information. Furthermore, computers provide a safe and economical storage of information for companies, organizations and individuals.

Advancement in technology has seen the introduction of highly sophisticated tools and machines. For example, car manufacturers have introduced robots in their manufacturing and assembly lines. This has reduced the turnover time for a new car, leading to increased production and sales in some companies. Increased capital is important; it is required to purchase the resources that are required for production. Examples of capital include money, land and equipment.

Time is an additional resource important to technology. It determines quantity of production and the volume of labor required. Proper coordination of technological resources helps an organization or company to create products and deliver services efficiently and effectively.

Internet. The Internet was created essentially to enable and facilitate communications among connected systems at the local, state, national and

[95] What is "technical documentation", (2019), https://www.transcom.de/transcom/ en/technische-dokumentation.htm.

international levels. The concept for the Internet, also called the World Wide Web, was developed in the early 1970s by the United States Defense Advanced Research Projects Agency, or DARPA. The agency launched a research campaign to find effective ways to link computers to facilitate the exchange of information.

Although DARPA proposed the idea for the Internet and provided the basic concepts for its use, it took many more years for the Internet to gain traction and be used on a wider scale by civilians and government officials. There was an emerging use for the Internet in the late 1980s. It was used by the public, and accompanied with support services, provided by private firms, to facilitate use. Internet technology is the ability of the Internet to transmit information and data through different servers and systems. Internet technology is important in many different industries because it allows people to communicate with each other through means that were not necessarily available.

The Internet is essentially a large database where all different types of information can be passed and transmitted. It can be passively passed along in the form of non interactive websites and blogs; it can also be actively passed along in the form of file sharing and document loading. Internet technology has lead to a wealth of information available to anyone who is able to access the Internet. It has allowed people who were accustomed to textbooks and libraries to learn anything they could want from the comfort of a computer.

Internet technology is constantly improving and is able to speed up the information highway that it has created. With the technologies powering the Internet, speeds are faster, more information is available and different processes are done that were not possible in the past. Internet technology has changed, and will continue to change, the way that the world does business and how people interact in daily life.

Web Technology. Web technology is the establishment and use of mechanisms that make it possible for different computers and devices to communicate and share resources. Web technologies are infrastructural building blocks of any effective computer network. Web technologies are infrastructural building blocks of any effective computer network: local area network, metropolitan area network or a wide area network, such as the Internet. Communication on a computer could never be as effective as they are without the plethora of Web technologies in existence.

Communication Between Computers and Devices. Computers and other network devices need to communicate. A mechanism must make it possible for a computer to communicate with another computer on the same network or another network. The mechanism must ensure that a message moves from the sender to the recipient, enabling the receiver to retrieve the message, send feedback and acknowledge reception or failure of communication.

Markup Languages. Markup languages like HTML, CSS and XML are part of Web technology. These languages tell computers in text how to format, layout and style Web pages and programs. Two types of markup languages include procedural markup and descriptive markup. Additional types of languages include CGI and HTTP.

Programming Languages. Programming languages include Perl, C#, Java and Visual Basic .NET. These languages are used by Web developers to create websites

and applications. Each language has pros and cons, and most developers know several different types to help them achieve their goals.

Web Servers. Web servers are comprised of two components, the hardware and software. The hardware includes HTML documents and other data. The software servers include the HTTP server, which is used to communicate between the computer and the Web server. There are two types of Web servers, which are static and dynamic servers.

Databases. Websites require a database management system, usually referred to as a database. Databases are used as a vault for Web server data. There are several different types of databases available, like MySQL, Microsoft Access and Oracle. The most popular types of data are JSON, XML and CSV. All of these different types of data store data in different ways.

Business Applications. A variety of Web technology is vital to the function and success of many businesses. These include online appointment scheduling programs, websites and a way for customers to chat with representatives. Also, Web technology makes it possible for businesses to collect data on their customers to further customize their services.

Different Sides of Web Technology. There are client sides to applications and, conversely, there is the server side. The client side is what most people see when they use technology on a day-to-day basis. This includes whatever you see on your computer, laptop or tablet when using the Internet or various applications. The server side is what is happening behind the scenes, and it's where all of the coding for the site or application is stored. Similarly, people see the front end of all of the Web technology, which shapes the way websites and applications look. The back end is made up of databases and various processes that are only known to the developer and business.

Computer Networking. According to About.com, computer networking is the practice of connecting two or more computers or computing devices to share data and resources. Networks are created with a combination of computer hardware and software. A computer network is built upon essential pillars, such as a network card, router and protocols. In any network, users share resources from one device to another, create and store files in one computer and access them from other computers connected to the network. A connected network also allows for the connection of printers, fax machines and scanners to one computer in the network, so that other computers within the network are allowed to use the devices available as well.

There are three main types of networks: local area network/LAN, wide area network/WAN, and wireless local area network/WLAN. LAN serves a small group of people in a small area such as a single home, small office building or school. Client server or peer-to-peer networking methods may be employed. WAN covers huge geographical areas, such as across states, cities and even across the world, employing leased communication lines. The world's largest WAN is the Internet. A WLAN does not use physical media or wires to connect the server with hosts. It transfers data over radio transceivers.

The increasing reach of communication has contributed to advancements in the field of networking as well as in its related industries like software, hardware,

manufacturing and integration. Therefore, most households can access one or more computer networks.

Technological Documentation. It is a set of graphic and textual documents that defines the production process used for the manufacture and repair of items and that contains data for the organization of the manufacturing process. In machine building, the Uniform System of Technological Documentation (ESTD) has been established by state standards and is part of the Uniform System of Technological Preparation for Production (ESTPP). The ESTD defines the interrelated rules and circumstances pertaining to procedures for developing, formulating, compiling, and circulating technological documents that are produced and used by all machine-building and instrumentation plants. The major function of the ESTD standards is the establishment of unified rules for the formulation and use of technological documentation at all plants; the ESTD also ensures standardization of the terms and documents used in various types of work and permits the exchange of technological documents between plants without the need to formulate documents twice. This ensures completeness of document sets and eliminates duplicate formulation and issuance by different plants.

General-purpose technological documents include route sheets, flow charts, standard equipment charts, production instructions, and data statements for shops, equipment, and materials and are produced for all types of work. Route sheets are the principal technological documents. They are composed for all stages in the preparation of working documentation, contain a description of the production process for the manufacture or repair of an item during all operations in a definite sequence, and specify equipment, instrumentation, materials, and labor expenditures. Flow charts give a graphic, or schematic, representation of the technology for the manufacture of an item. Data on parts, assembly units, and materials are entered on standard equipment charts. The operational methods or methods for control of a production process, directions for the use of equipment or instruments, and safety measures are specified in production instructions. Shop data statements contain information on the routing of items through the manufacturing plant’s shops. Equipment data statements contain a listing of the accessories and tools necessary for manufacturing an item. Materials data statements are detailed and summary statements of materials expenditure rates.

In addition to general-purpose documents, specialized documents are composed for certain types of operations. They include operational instructions, in which a production process is divided into individual operations, and specialized production charts for such operations as casting, cutting materials, and laying out.

What is "technical documentation". "Technical documentation" is the generic term for documentation with regard to a product. People mainly associate the term with the documents and information that are passed on to the public by the manufacturer:

- user instructions,
- operating instructions,
- servicing instructions,
- installation manuals,

– software manuals.

The "German professional body for technical communication and information design" has a wider definition. The term ‘technical documentation’ refers to different documents with product-related data and information that are used and stored for different purposes. “Different purposes” mean: Product definition and specification, design, manufacturing, quality assurance, product liability, product presentation; description of features, functions and interfaces; intended, safe and correct use; service and repair of a technical product as well as its safe disposal.

This broader view, in which all documents that are generated during the product life cycle are viewed as part of the technical documentation is certainly justified. After all, the aim is to make available the technical know-how and product history for subsequent users of the information (be they engineers or operators, patent agents or public prosecutors specializing in product liability.

The focus for service providers in the field of technical documentation is, however, mainly on documents that are required after the production process – by sales people, system integrators, installation staff, operators, service technicians, waste disposal companies etc. The reasons are simple:

Great demands are placed on the documents in terms of comprehensibility and clarity (with respect to the specific target group), graphical design, adherence to standards/directives / public laws, linguistic correctness etc.

The documents are passed on to the public, i.e. are part of the public presentation of the manufacturer. For the design of the documents, relatively little manufacturer-specific knowledge and know-how – especially no company secrets – are normally required. Instead, a lot of experience with the tools and target media is required, what becomes particularly apparent in case of an online publication such as help system (WinHelp, HTMLHelp, JavaHelp or "simply" DHTML-Help).

This combination of basic knowledge required, experience of fulfilling the requirements and of documentation-specific specialist knowledge, an "absolute must" combination if you consider the reasons for outsourcing stated above, is available from one particular profession: the technical writer / technical editor. These professionals are the mediators between the manufacturer/designer and the decision maker/user, either within the company or as service provider. By the way, at Transcom we often prefer the more general term "‘technical communication’" instead of ‘technical documentation’ because it presents the scope of our services in a more accurate way.

Instructions versus directions versus manual versus handbook versus Often, there is still confusion about whether something should be called operating instructions, user manual, user guide, user directions, operating manual etc. pp. The standards for technical editors and the law makers are also not consistent in their terminology. Let’s try to sort it out from a linguistic point of view:

- **"directions"** is derived from "to direct": Here it is the superior who directs the subordinate, i.e. the boss directs the staff member (or parents their child). Hence, user directions can only be given internally (within the company). Accordingly, the user direction is the document that details the

procedures for a specific workplace. It takes into account the specific demands and requirements within the company. This makes it clear that user directions cannot be supplied by the manufacturer of the product: the manufacturer has no knowledge of the company internals of the user,

- **"instructions"** is derived from "to instruct". Somebody capable of something already instructs someone else who wants to learn just this. Here two entities meet eye-to-eye, e.g. manufacturer and user. Therefore, the instructions are the document that communicates, how to employ and use the product. When "instructing" however, you do not really communicate any theory, i.e. the description of the product is – strictly speaking – not part of the instructions. The term "instructions" is independent of the publishing medium, it does not tell you whether it comes on paper or online,
- **"user instructions" or "user manual":** The first word of each group already says it – it is about using the product. Because "manual" is usually associated with a "book", "user manual" is the book, in which the usage is described. The publication medium is specified. On the other hand, the term "user instructions" is media independent,
- **operating instructions / operating manual:** Here again it is all about the first word in the phrase – it is generally about the operation. This is more general than just using something; it starts with transport and storing, is then followed by installation and commissioning up to using the product, continues with cleaning, service and repair and ends up with dismantling and disposal. A document describing operating should therefore be correspondingly comprehensive (not forgetting the safety information).

Of course, the operating instructions may be separated into its individual parts, i.e. one document for each — transport/storing, installation etc. Also, the separation may follow the different participant rolls (target groups: System integrator, user/operator, administrator, service technician etc. All these distinctions are centered on the content of the corresponding document. The question of the medium used to publish the document is not answered.

Publication media Technical documentation is not confined to a specific publication medium. It may be distributed on paper (as a bound book, in a ring binder, stapled brochure, lever-arch file, loose-leaf binder, etc.) as well as PDF file, online help, web pages or similar on CD or on the internet.

Because technical documentation today is often published on different media simultaneously (as manual enclosed with the product and as PDF file or set of web pages on the internet) it makes sense to select a description that does not specify the publication medium[96].

The technical documentation is required for the certification of products and on-site assessment of compliance with industrial safety by certification bodies and inspection authorities. For technical documentation is a set of documents used to

[96] What is "technical documentation", (2019), https://www.transcom.de/transcom/en/technische-dokumentation.htm.

design, build, deploy, maintain and evaluate the technical facilities. For systems shall be deemed civil construction and industrial equipment, machinery, computer programs and devices.

The technical documentation may be of two types: constructive or technology. Construction documentation including user manual, specification, installation serial, test plan. Technological documentation describes the technological cycle of the plant and its maintenance.

To obtain various permits and certificates are often required extensive technical documentation, meeting the requirements of Russian law. This creates several difficulties, especially for foreign producers, as draft, add to or refine the missing documentation and translate it into Russian language may take some time. In an emergency, the experts Rustandard in collaboration with experts of the certification we can help solve this problem in the shortest possible time. We can offer our assistance in preparing the following documents:

- User's Manual,
- Technical specifications (ТУ),
- Technical passport,
- Test Plan.

Manual – is a document that contains the technical data of a device, describing its structure, working principle and its characteristics (functions). Includes information on its proper use in accordance with safety standards, information on maintenance, overhaul and testing, as well as disposal and recycling of the device and its components[97].

Technical specification – is a document which constitutes an integral part of the technical documentation of a device. A technical specification can not say the opposite of what was identified by national and international standards. The technical specifications are approved according to the standard GOST 2114-95 and GOST R 51740-2001.

Technical passport – is a document (book) that contains information on the warranty offered by the manufacturer. It includes essential features and technical specifications, information on disposal and recycling of the product / device and its components, information on certifications made.

The technical passport is required for obtaining permission to use (NTG).

Test plan – is a document that describes the object to be tested, the purpose of testing and procedures to be followed. The test plan is approved in accordance with the standard GOST 19301-79.

[97] V. Kasatkina, (2011), *Intellectualization of the economy: a theoretical analysis*. dis. ... Cand. econ Sciences: 08.00.01; [Place of protection: Under the Financial University under the Government of the Russian Federation at FGOBUVPO]. Moscow, 2011, 175 p.

Chapter 4. Access to Knowledge

4.1. Seven Main Categories of Substantive Issues (Copyright, Patents, IP Enforcement, IP Alternatives, Access to Government Information, Internet Regulation Media Diversity)

There are seven main categories of substantive issues – Copyright, Patents, IP enforcement, IP alternatives, Access to government information, Internet regulation Media diversity. The term "intellectual property rights" is being used here as shorthand for two particular legal rights over information: copyright and patent rights. However, the limitations of this term are acknowledged, since copyright and patent rights vary markedly both from each other, and from rights to other forms of property, particularly in that their use is CPTech (the Consumer Project on Technology, now Knowledge Ecology International).

Knowledge is essential for so many human activities and values, including freedom, the exercise of political power, and economic, social and personal development. The A2K (Access to Knowledge) movement takes concerns with copyright law and other regulations that affect knowledge and places them within an understandable social need and policy platform: access to knowledge goods.

Copyright. Copyright is a limited monopoly right granted by the government to the authors of literary, artistic, dramatic and musical works[98].

Performers, phonogram producers and broadcasters of such works are granted related rights (also called "neighbouring rights" – but often loosely considered as forms of copyright).

Whereas copyright is a form of intangible property that can be assigned, moral rights are recognised in many countries as a separate class of right that adheres in the author only, such as the right to attribution and to preserve the integrity of the work.

The monopoly granted by copyright is the right to control of various uses of the work. In the earliest copyright legislation, this right only covered copying the work, and lasted for just 14 years.

But since then, copyright has been extended to provide the rights holder with exclusive rights over the adaptation and performance of the work, or a substantial part of it, and – since the W1PO Internet Treaties of 1996 – the exclusive right to make it publicly available. The term of protection has also been lengthened, with many countries now protecting copyright for 70 years after the author's death, or even longer.

The *Berne Convention for the Protection of Literary and Artistic Works,* to which almost all countries are signatories, sets the minimum standard and duration of copyright protection (its counterpart for related rights is the *Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations*). The Convention provides that copyright protection automatically subsists in all protected works, without the need for registration, and that it lasts for at least 50 years from the death of the author (or 50 years from publication, for

[98] Access to Knowledge: A Guide for Everyone, (2010), *Compiled and edited by* F. Noronha and J. Malcolm. Cover design by A. Carter. Production by J. Malcolm. First published 2010. Second edition 2010. 134 p.

corporate authors).

Patents. Patents differ from copyright in that copyright can only limit the use of a particular form of expression of an idea, whereas patents can protect the underlying idea. Of course, not all ideas are covered. The idea must:

- cover a patentable subject matter (be a useful man-made process or product),
- be novel (not known to the public before),
- involve an inventive step (or be non-obvious).

As an example of the practical differences between patent and copyright protection, if a copyright work is independently conceived by two different authors, then no breach of copyright has been committed although the two works may be very similar. But if an invention that is protected by a patent is independently conceived by another inventor, the second inventor is still bound by the patent despite perhaps having had no knowledge of it.

The treaties that set minimum standards for patent law are the *Paris Convention for the Protection of Industrial Property,* and the WTO *Agreement on Trade-Related Aspects of Intellectual Property Rights* (TRIPS). Under TRIPS, patent protection must be available in all fields of technology, and subsist for a minimum period of 20 years.

Another significant difference between copyright and patent law is that there is (yet) no equivalent provision as in the Berne Convention whereby a patent registered in one country will automatically receive protection in other countries. Rather, in general a patent must be registered in each jurisdiction in which protection is sought.

IP enforcement. Perhaps the most active front in the access to knowledge movement is not a positive one, such as the promotion of new copyright flexibilities or alternative licensing models, but a reactive one, against a range of intrusive and consumer-unfriendly mechanisms for enforcement of IP rights, that Eire being pushed by IP owners particulcirly from the entertciinment industries.

Graduated response. One of the top items on the wish lists of the music and motion picture industry lobbyists has been for ISPs to implement a “three strikes” code for file sharers – with legislative backing, if they can get it. Such a code, which in its generalised form has become known as a “graduated response” mechanism, would require Internet Service Providers to warn their customers when they are accused by a copyright owner of having downloaded a copyright-infringing file. A second warning would be given if the offence is alleged to have been repeated, and following a third alleged offence, the customer’s Internet access would be terminated for as long as one year.

Border measures. Various initiatives are in place to strengthen the role of customs officials in enforcing intellectual property laws. The draft ACTA treaty, provides a new, higher benchmark for measures to be taken at national borders against IP infringements.

The provisions will likely apply to the import, export, and transit of goods across borders, though there will probably be some sort of *de minimis* exception that will save airline passengers from having their laptops or MP3 players seized because they contain copyright-infringing files. Nonetheless, even when applied to

commercial shipments only, the application of measures such as these has created concern. For example in 2008, consumers were placed at risk of illness or death when Dutch customs authorities seized a legitimate shipment of generic medicines en route from India to Brazil, on the grounds that they were wrongly suspected of being counterfeit.

Criminal enforcement. Another trend in IP enforcement is the expansion of the range of IP infringements that constitute criminal offences. The USTR Special 301 Report regularly criticises countries for failing to criminalise IPR violations, and even some acts that are not *per se* violations – such as bringing a camcorder into a movie theatre. US free trade agreements also require other countries to further criminalise infringements; for example, Australia was required to criminalise wilful commercial-scale infringements, the decryption of programmecarrying satellite signals, and the possession and use of devices for circumventing TPMs, and to raise the level of penalties[99].

Digital rights management. Digital rights management (DRM) is the practice of controlling the uses that consumers make of copyright digital material, using technological protection mechanisms (TPMs). It includes the use of proprietary file formats that won't work when you try to shift them from one device to another (for example, Microsoft's WMVmedia files), equipment that refuses to allow content to be copied (for example, any high definition video equipment with an HDMI plug), and media which is designed to make it impossible for consumers to make copies for private use or backup (such as BluRay discs).

Worse, often DRM systems are used for purposes that are quite extraneous to copyright law. For example, almost all DVDs come with a region code that prohibits them from being played on DVD players from another region. It is not a breach of copyright to play DVDs from one region in another, yet for patently anti-competitive reasons, the movie industry uses technology, in conjunction with a quirk of copyright law, to prevent consumers from doing so.

IP alternatives. "IP alternatives" is another hybrid concept, which is used here to refer to a range of different strategies for ensuring adequate access to knowledge for the community, through mechanisms that are not market-based. In fact, in a strict sense, they are not really *alternatives* to the intellectual property system, as some of them – for example free and open source software licensing, and Creative Commons – actually depend upon copyright law in order to function.

Another mechanism for disseminating knowledge is collective licensing, of which there are various forms, some being market-based and others not so; for example, legislation can provide for a compulsory licence to be issued for copyright or patent-protected material, enabling the public to access this material without the need to negotiate with the IP holder in a market.

Access to government information. Access to government information is important not only for the value of the information itself (as in the case of census data and the like), but also as a guarantee of democratic transparency (in the case of

[99] Access to Knowledge: A Guide for Everyone, (2010), *Compiled and edited by* F. Noronha and J. Malcolm. Cover design by A. Carter. Production by J. Malcolm. First published 2010. Second edition 2010. 134 p.

information that forms part of the political process).

Amongst the principal means by which access to government information is assured are freedom of information legislation, regulations or policy providing for the open and accessible publication of public documents, and rules that allow for public access to parliamentary, executive and judicial fora of deliberation. Institutional guarantees of the independence of the media, such as freedom of the press, are also important.

Internet regulation. The Internet is integral to ensuring access to knowledge, and therefore regulation of the Internet has a direct bearing on the objectives of the movement. Some of the tactics used by rights holders to interfere with access to knowledge over the Internet include graduated response, notice and take down procedures such as the American Digital Millennium Copyright Act (or DMCA, something similar to which would be mandated by ACTA), and DRM (for example on videos downloaded from the iTunes Store).

The need to regulate the Internet to restrain its use in terrorism activities, or in the production and dissemination of child pornography, is often used as a pretext for the introduction of wider filtering and censorship measures, as well as privacy-infringing (and often secretive) monitoring of the activities of Internet users.

Media diversity. One of the most important international institutions for the promotion of media diversity has been UNESCO (the United Nations Educational, Scientific and Cultural Organisation). UNESCO is noted for the 1980 MacBride report[17] which aimed to establish what was dubbed a New World Information and Communications Order (NWICO) which would provide more balanced coverage of the developing world by mass media. This report was seen as advocating for interference with the freedom of the press by the United States, the United Kingdom and Singapore, which temporarily withdrew from UNESCO in protest; a blow from which the organisation is still recovering.

A variety of actors play an influential role in shaping the A2K debate, both positively and negatively. These include intergovernmental organisations, civil society organisations, the private sector, and government.

Intergovernmental organisations.

WIPO. The World Intellectual Property Organisation (WIPO) was created in 1970 to take over the role of its predecessor, the Berne-based United International Bureau for the Protection of Intellectual Property or BIRPI. French for Bureaux Internationaux Reunis pour la Protection de la Propriete In- tellectuelle, the BIRPI was set up in 1983 to administer the Berne and Paris Conventions.

It was the signing of the Convention Establishing the World Intellectual Property Organisation in Stockholm on July 14, 1967 that led to the birth of WIPO three years later. In 1974, WIPO became a specialised agency of the United Nations, with a mandate to "administer intellectual property matters recognised by the member States of the UN".

Article 4 of the WIPO Convention describes WIPO's role – to "promote the development of measures designed to facilitate the efficient protection of intellectual property throughout the world and to harmonise national legislation in this field." The Article also mentions that WIPO is to "encourage the conclusion of international

agreements designed to promote the protection of intellectual property".

Headquartered in Geneva, WIPO enjoys a source of income unlike that of other branches of the UN. Instead of being dependent on the contributions of member states, over 90 per cent of its income comes from the collection of fees by the International Bureau under the intellectual property application and registration systems, which it administers. This includes the *Patent Co-operation Treaty,* the Madrid system for trademarks and The Hague system for industrial designs.

The agency currendy has 183 member states and administers 23 international treaties dealing with various aspects of intellectual property, including the Berne Convention on copyright, the Paris Convention on patents, trademarks and registered designs, and the Rome Convention on copyright and related rights. The WIPO Internet treaties (that is, the *WIPO Copyright Treaty* (WCT) and the *WIPO Performances and Phonograms Treaty* (WPPT)), which came into force in 2002, extend these earlier instruments in light of new digital technologies including the Internet.

WIPO performs most of its work through specific committees. Some of these committees include the Standing Committee on Patents (SCP), the Standing Committee on Copyright and Related Rights (SCCR), the Advisory Committee on Enforcement (ACE), the Intergovernmental Committee (IGC) on Access to Genetic Resources, Traditional Knowledge and Folklore, and the Working Group of the Reform of the Patent Cooperation Treaty (PCT).

WIPO makes decisions by consensus. Each member state has only one vote regardless of population or contribution to funding. This re suited in developing countries being able to block plans by their developed counterparts to expand intellectual property treaties through W1PO. This resistance was evident in the 1960s and 1970s when developing countries blocked expansion plans such as universal pharmaceutical patents.

WTO. To get around this stand-off, developed countries led by the United States in the 1980s moved the discussion on intellectual property standardsetting out of WIPO and into a forum where the developed countries are better able to get their way - the General Agreement on Tariffs and Trade (GATT).

GATT eventually evolved into the World Trade Organisation and the American "forum shifting" strategy led to the enactment of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

The inclusion of IP norms in a global trade agreement arose from the Uruguay Round of the GATT negotiations between 1986 and 1994, following strong corporate lobbying by multinational pharmaceutical, software and entertainment industry groups[100].

The TRIPS convention largely incorporates the substantive content of the WIPO-administered conventions, but with the important difference that it treats non-compliance as a barrier to trade, and enables the WTO to impose sanctions on member countries in breach. It also provides for the resolution of disputes between

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nations through the WTO.

The Development Agenda. By 2001, the backlash against TRIPS from the developing world had gained traction, and in that year, the Doha Declaration on TRIPS and Public Health confirmed the existence of flexibilities to TRIPS that allow developing countries to issue compulsory licenses for pharmaceutical patents to address public health concerns.

The adoption of the Doha Declaration was another contributing step towards the emergence of a coordinated movement against the IP maximalist agenda of developed countries, as pushed by powerful IP exporting industries. It was also the beginning of a close link between the IP agendas of the access to medicines movement and the A2K movement.

A further watershed in this process was the eventual adoption in September 2007 of a "Development Agenda" for WIPO. The Develop ment Agenda had its genesis in a proposal offered by Argentina and Brazil on the "Establishment of a Development Agenda for WIPO".

This proposal came out of the Geneva Declaration on the Future of the World Intellectual Property Organisation and was co-sponsored by Bolivia, Cuba, the Dominican Republic, Ecuador, Egypt, Iran, Kenya, Sierra Leone, South Africa, Tanzania and Venezuela.

Together with Argentina and Brazil, these countries argued that the various degrees of intellectual property rights protection should reflect the level of development of any given country. The proposal, often referred to as "Item 12" due to its place on the meeting agenda list, was also supported by India, albeit in a separate but similar statement.

"The term 'development' as used by these (developed) countries, including in WIPO, means quite the opposite of what developing countries understand when they refer to the 'development dimension'," said India's representative to WIPO, Debabrata Saha with regards to the Development Agenda proposal.

Saha added: "If you share the perspective of the developed countries, 'development' means increasing a developing country's capacity to provide protection to the overwhelmingly developed country owners of IP rights!".

On 4 October 2004, the WIPO General Assembly agreed to adopt the Argentina and Brazil proposal. Civil society groups too quickly rallied around this proposal, drafting their Geneva Declaration on the Future of the World Intellectual Property Organisation that year, followed by the draft Treaty on Access to Knowledge in 2005.

The Development Agenda itself contains 45 recommendations in six clusters, which include the promotion of a development-oriented IP culture, the preservation of the public domain, and the exchange of experiences on open collaborative projects. To date five meetings of WIPO's Committee on Development and Intellectual Property (CDIP) have been held, and a number of reports produced towards the implementation of the Development Agenda's recommendations. Part of this ongoing work includes research projects on IP and the public domain, IP and competition policy, and IR information and ICTs, the digital divide and A2K.

Perhaps the most significant outcome of WIPO's Development Agenda so far

has been the discussion of new minimum copyright limitations and exceptions by its Standing Committee on Copyright and Related Rights (SCCR). The addition of this initiative to the committee's agenda was moved by Chile, Brazil, Uruguay and Nicaragua in 2008, elaborating on an earlier Chilean proposal.

The limitations and exceptions to be studied by the SCCR include those for education, libraries, archives, innovative services and persons with disabilities. The first concrete proposal in this area is a *Treaty for Blind, Visually Impaired and Other Reading Disabled Persons,* tabled by Brazil, Ecuador and Paraguay in May 2009.

Civil society. This section is intended to provide an overview of some of the groups within organised transnational civil society who are active in various sections of the A2K movement. It does not aim to be complete, but just to highlight some of the central actors and to suggest how they may usefully be categorised.

Amongst the groups further to the periphery of the A2K movement, that have been omitted from this section, include farmers' groups (advocating for the right to seeds), the access to medicines movement, ICT user groups, civil liberties and human right organisations, independent media, privacy groups, pirates and hackers, and ICT for development activists.

Digital rights groups. The A2K movement overlaps with the digital rights movement, though the two movements do remain distinct. The A2K movement is concerned with the dissemination of knowledge both online and offline.

Traditional hard copy textbooks (or photocopies from them) are still the main source of learning material for the vast majority of the world, and this is an important area for A2K activism but falls outside the concern of the digital rights movement. By the same token, there are some concerns of the digital rights movement, such as digital surveillance and encryption, which Eire mostly peripheral to the A2K movement.

Notable digital rights advocacy groups at the regional and global level include:

- Electronic Frontiers Foundation,
- EuropeEm Digital Rights Initiative,
- Open Rights Group,
- Foundation for a Free Information Infrastructure,
- Public Knowledge,
- Foundation for Peer to Peer Alternatives,
- Association for Progressive Communiations,
- Students for Free Culture,
- Center for Democracy and Technology.

Open source and open content communities. The open source and open content communities are central to the A2K movement, though once again the views and objectives of the communities do not entirely coincide.

One of the main points of difference between them is that some activists from the open source and open content communities oppose measures to make proprietary-licensed copyright works more widely available, on the basis that this reduces the comparative advantage of freely-licensed works in the marketplace.

For example, Jimmy Wales of Wikipedia has complained that relying on the

fair use copyright exception “discourages us from creatively looking for a way to enlarge the commons”.

The broader A2K movement on the other hand welcomes measures to improve the accessibility of both proprietary and openly-licensed works.

Having said that, A2K does depend upon content licensed under open source and open content licences as a key platform in broadening affordable access. As such, the following institutions are key stakeholders in the A2K movement:

- Creative Commons,
- Open Source Institute,
- Free Software Foundation,
- Open Knowledge Foundation,
- Wikimedia Foundation.

Consumer groups. The mainstream consumer movement has more recently become actively engaged in the A2K movement. The objectives of the two movements in furthering access to knowledge for consumers are in general closely aligned, however there are some tensions. Principal amongst these is that there has been a long history of consumer advocacy against counterfeiting, because of the high risk of defects in counterfeit consumer goods.

Whilst this remains good policy, it is important that it does not lead consumer groups to internalise the values of industry in regards to intellectual property enforcement in other Eneas, such as agciinst the piracy of culturEil and knowledge goods, which is not such a core problem for consumers.

Another reason why the consumer movement has not historiccdly been fully congruent with the A2K movement is that some consumer organisations require capacity building to assist them to question the power dynamics of the proprietary media and content industries, and to promote alternatives such as open source and open access content.

In these respects, Consumers International’s A2K programme is helping to bring the global consumer and the A2K movement closer together. Without derogating from the fine work of Cl’s members at a national level, here are a few of its members with a long track record of advocacy for A2K at a global and regional level:

- Knowledge Ecology International,
- Trans Allantic Consumer Dialogue,
- BEUC - the European Consumers’ Organisation.

Libraries and archives. Libraries and archives are also vital contributors to the A2K movement, though with their own particular set of priorities that overlap with, but do not fully encompass, those of the broader movement.

Amongst the specific issues to which the advocacy activities of libraries and archives are targetted are copyright limitations and exceptions for lending and archival, technological protection measures (TPMs), unfair contractual terms attached to electronic resources, public lending rights (which are special fees paid in some countries to compensate authors for the sales revenue lost by reason of public lending), database rights, orphaned works, and open access:

- Electronic Information for libraries,
- International Federation of Library Associations,
- Bibliotheca Alexandrina,
- The Internet Archive,
- Project Gutenberg.

Academia. Finally, there would be no A2K movement at all without the involvement of academia. Although the lines of the A2K movement had been drawn a few years earlier, for many it was the first international conference on Access to Knowledge at Yale University in 2006 that marked the birth of the movement. This annual conference has since remained a fixture for A2K activists and scholars alike. Important academic centres for the A2K movement are:

- Yale Information Society Project,
- Berkman Center for Internet and Society at Harvard University,
- The A2K Brazil project at Fundagao Getulio Vargas Rio de Janeiro Law School,
- The African Copyright and Access to Knowledge project managed by the Wits University LINK Centre.

Private sector. Although the commercial interests of the private sector Eire genercdly in favour of strong intellectuEil property protection, the entire sector cannot be chciracterised as opposing access to knowledge.

Mciny are Eilso strategic cdlies of the movement. For exEimple, the free Emd open source softwEire community would be considerably smellier if not for the support of commerciEil firms such as IBM, Oracle and Novell.

Moreover, research has revealed that the private sector benefits enormously from copyright flexibilities, such as the "fair use" exception under US copyright law. Thus, some private sector coalitions, such as the Computer and Communications Industry Association (CCIA), have become firm supporters of the A2K movement. This section provides a very brief overview of some of the most central private sector actors on both sides of the movement.

IIPA. The IIPA, or International Intellectual Property Alliance, is a coalition of US-based trade associations representing the interests of copyright holders.

It was formed in 1984 and its members are the Association of American Publishers, the Business Software Alliance, the Entertainment Software Association, the Independent Film and Television Alliance, the Motion Picture Association of America (MPAA), the National Music Publishers' Association and the Recording Industry Association of America (RIAA). Each of these is itself a membership-based organisation of industry participants such as publishers of books, software and music, and movie studios (Access to Knowledge: A Guide for Everyone, 2010).

The IIPA represents the interests of its members in international and regional intergovernmental institutions such as WIPO, the WTO and APEC, as well as in domestic policy setting activities such as the Special 301 Report process, and the development of FTAs (free trade agreements) between the United States and other countries. It was largely through the efforts of the IIPA that the WIPO Internet treaties were established so early in the Internet age, in 1996.

IIPA members such as the RIAA and MPAA, and their local subsidiaries or affiliates, Eire also active in shaping IP policy. The RIAA is pEirticularly notorious for its CEimpEiign of lawsuits over file shciring, not only against compEmies such as the publishers of file shEiring softwEire, but also agEiinst many thousEmds of individuEil Eilleged file shsirers.

This unpopular and generally unsuccessful campaign of litigation was officiEilly discontinued in 2008, in favour of a focus on "graduated response" – style enforcement.

Microsoft. Microsoft, as the world's dominant software publisher since the early 1990s, is notable for its history of opposition to some of the measures used to advance access to knowledge, including free and open source software and open standards.

On the former count, Microsoft ran a "Get the Facts" campaign from 2004 to 2007 which directly attacked the GNU/Linux operating system platform, and has sued vendors of free and open source solutions for patent infringement, including the TomTom GPS company for its use of the Linux kernel implementation of Microsoft's FAT filesystem (the lawsuit was settled in 2009).

Other open source distributors, including Novell, which markets SuSE Linux, have entered into licensing deeds with Microsoft in order to avoid a lawsuit.

In relation to Microsoft's position on open standards, the company is known for its policy of "embrace, extend and extinguish," whereby it would appear to embrace an open standard, but then introduce its own proprietary extensions to the standard with which other implementations would not be interoperable, resulting in Microsoft's implementation extinguishing those of competitors by reason of the former's dominance in the market.

In other cases, Microsoft has simply developed its own standard in order to compete against a more open one, as in the case of its Office Open XML (ISO/IEC 29500), which was introduced in response to the success of the XML-based open standard for office documents, the Open Document Format (ISO 26300:2006).

In response to anti-competitive behaviour of Microsoft, competition commissions in both Europe and the United States have initiated action.

Amongst the outcomes of these actions have been the requirement that Microsoft share interoperability information with its competitors, the decoupling of Microsoft's Windows Media Player from the European version of the operating system, and the introduction of a "browser ballot" screen to provide European users with a choice of Web browser to use with Microsoft Windows.

Google. Another important transnational actor in this issue area is Google, which in October 2008 reached a $125 million settlement agreement with publishers over its Google Book Search service, for which Google partnered with libraries to scan millions of books into a full-text index.

The initial settlement was rejected by the court in the face of objections raised by certain groups, amongst them the US-based Consumer Watchdog, that the terms of the settlement unduly favoured Google over other information intermediaries in its access to digitised books. A proposed new agreement was put forward in November 2009, final approval of which remains pending (Access to Knowledge: A Guide for

Everyone, 2010).

Google is generally considered a friend of the access to knowledge movement. It has donated $2m to the American University of Washington for its research into the industry-driven agenda to strengthen IP enforcement practices, and regularly sponsors open source software development through its "Summer of Code".

On the other hand, Google has been criticised for its privacy practices. The company was ranked "hostile to privacy" in Privacy International's 2007 Consultation Report (which led to a bitter war of words between the parties), and in May 2010, Google was embarassed by the revelation that it had been collecting network payload data (including snippets of private emails) from unsecured private wireless networks while collecting data for its Street View service.

4.2. Fairer Laws and Enforcement Practices

The ratcheting up of IP protection adversely impacts almost all the rights of consumers. The right to basic goods and services, especially access to education, healthcare and food are reduced by IP protection. The right to choose is reduced when IP laws create monopolies; permit market segmentation, and differential pricing. The consumer rights to access information and education are severely reduced when information and knowledge are made into private property that yields its owners the right to seek rent. The right to a healthy environment is compromised when there is a loss of biodiversity and crop varieties because corporations that find it more profitable to move away from the rich variety of agricultural species to a limited range control the food chain.

This chapter begins by providing an outline of copyright and patent law, and describing some of the ways in which these laws and the ways in which they are enforced can impeded access to knowledge. The chapter then goes on to look at intellectual property enforcement practices, which can cut across copyright and patents[101].

Copyright. The *Berne Convention for the Protection of Literary and Artistic Works 1886* is the first international treaty on copyright. The UK mooted the idea of international cooperation and the early members were mainly Western European countries (Belgium, Germany, France, Spain, Switzerland, Tunisia and the UK became members in 1887). The US only became a member of the Berne Convention in 1989. The first Asian country to become a member was Japan in 1899. The majority of the developing countries formally adopted the Berne Convention well into the 20th Century.

Copyright originally protected only works that were in text form. The Berne Convention expanded the works covered by copyright to include many new areas such as cinematography, drawings, paintings, architecture, sculpture, engravings, lithography, maps, plans, sketches, illustrations, photographs, art works and music.

[101] Access to Knowledge: A Guide for Everyone, (2010), *Compiled and edited by* F. Noronha and J. Malcolm. Cover design by A. Carter. Production by J. Malcolm. First published 2010. Second edition 2010. 134 p.

TRIPS in 1995 and the WIPO Copyright Treaty in 1996 expanded protection to software and databases.

The scope of the right itself has also been expanded. In the 19th Century, the copyright owner enjoyed little more than protection against verbatim copying of the work. The Berne Convention expanded this by granting the copyright holder the right to authorise reproduction, translation, adaptation and communication to the public by broadcasting or loudspeaker. TRIPS added to this, the right to authorise commercial rental in respect of computer programs and cinematographic works. The WIPO Copyright Treaty expanded the right of communication to the public to include communication through the Internet.

WIPO Copyright Treaty adopted this, but set this as a minimum requirement. Countries were therefore free to set a higher duration than these minimum requirements. The US and the EU expanded copyright protection to life of the author plus 70 years. In the case of Mexico, copyright duration is the life of the author plus 100 years.

Copyright law and developing countries. The only attempt to streamline the Berne Convention to take into account the needs of developing countries was made at the Stockholm conference in 1967. The attempt eventually failed and the only agreement in this regard was reached in Paris in 1971, where a watered down set of exemptions for developing countries were included as an Appendix to the Berne Convention. Due to the stringency of the conditions attached to them, few developing countries have made use of this Appendix.

Developed countries using their influence at the WIPO and through bilateral and regional trade agreements to further their trade and commercial interests have further expanded copyright protection for owners. The space available to developing countries to adopt policy options suited to their development needs have consequendy been reduced. Each of the international treaties and FTAs served to further reduce the options that can be used to enhance access to knowledge and facilitate education.

In particular, the TRIPS Agreement committed all the member countries of the World Trade Organization to adhere to the Berne Convention and the Appendix (except for the moral rights provisions of the Berne Convention) and this regardless of whether they were a party to the Berne Convention.

The Berne Convention, the TRIPS Agreement and the WCT each provide a different set of flexibilities for developing countries. The exact mix of flexibilities available to a country therefore depends on the treaties to which it has become a party[102].

A country not a party to any of the international treaties is free to fashion its copyright law in any manner it chooses. However, the vast majority of the developing countries in the world have signed on to at least one of the international treaties. In total, 80 countries have signed the Berne Convention and TRIPS while 52 are parties to all three.

Copyright flexibilities. Exceptions to copyright are particular classes of work

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which are ineligible for copyright protection, and limitations to copyright are particular uses to which works may be put without infringing the exclusive rights of the copyright owner. Together, exceptions and limitations are referred to as flexibilities. They are better known in the United States as "fair use" rights (though strictly this describes only one of the exceptions available under US law), in the UK and other common law countries as "fair dealing" rights, and in much of the rest of Europe and other civil law countries as "private use" rights. A better collective term for all of these rights may be "user rights" or "public rights".

Neither the Berne Convention nor the TRIPS Agreement set out flexibilities in detail (except cursorily with a mandatory exception for quotations in article 10(1) of Berne). Instead, both set out a set of criteria which any flexibilities introduced at a national level must meet, known as the "three step test". This test requires that copyright flexibilities must:

1) be confined to certain special cases,
2) not conflict with a normal exploitation of the work,
3) not unreasonably prejudice the legitimate interests of the rights holder.

In the case of the Berne Convention, these conditions only apply to exceptions to the right of reproduction, but under TRIPS they apply equally to the rights holder's other exclusive rights such as performance and broadcast.

If a WTO member country's law provides for flexibilities that do not meet these standards, they may be subject to trade sanctions under TRIPS. For example, a WTO complaint was brought by the EU against the USA over an exception which allowed for free-to-air broadcasts to be played in restaurants and shops. The exception was found not compliant with the three step test.

The EU Copyright Directive (2001/29/EC) further limits permissible copyright flexibilities to a defined list of narrow limitations set out in article 5 (with a grandfathering clause to allow other flexibilities extant in 2001 to remain on the books). Only one of the listed flexibilities is mandatory, namely transient or incidental copying as pent of a network transmission or legal use.

Fair use. Most countries have implemented the three step test by enacting piecemeal copyright exceptions for specific purposes or specific classes of consumer, such as the educational, library and disability exceptions described above.

But there is an alternative approach, first and most famously found in the copyright law of the United States, which allows for any use of a copyrighted work that can be described as "fair", considering the purpose and character of the use, the nature of the work, the amount and substantiality of the portion used, and the effect of the use upon the potential market for or value of the work.

There are many uses of copyright materials that are allowed under US law as "fair use", that would not be allowed under the more specific exceptions of other countries. These include new and innovative uses of copyright works, such as the production of audio and visual collages or "mash-ups", as well as more prosaic uses such as transferring music to an MP3 player, or recording your favourite television show to watch later. Businesses, too, can benefit from fair use – for example, the way in which an Internet search engine operates, by providing short excerpts from Websites and thumbnail pictures of images, relies on this exception.

The fair use exception of US law is not perfect. Because it is by nature so imprecise, it is difficult to be certain whether a given use falls within the exception or not (in fact, fair use rights have been more cynically described as "the right to consult a lawyer"). However fair use can usefully operate as a "catch-all" exception, to ensure that consumers do not become unwil l ing infringers when copyright laws fall behind (Access to Knowledge: A Guide for Everyone, 2010).

Amongst the other countries that have adopted a fair use exception modelled on that of the US are Israel and the Philippines, with Malaysia being expected to adopt one in 2010.

Criticism. One popular view is that the purpose of copyright is to mEiximise revenues for copyright industries such as publishers, movie houses and retailers, which makes sense to regulators as a source of growth and foreign exchange. But, in fact, the purpose of copyright is to encourage creativity and the diffusion of creative works. Copyright should therefore not be an industrial subsidy, but a tool for access to knowledge. If copyright law gets in the way of creativity and access, it is frustrating this purpose.

Lea Shaver of Yale University's Information Society Project, argues that in assessing copyright law our touchstones should be access, affordability and participation. Our tools to uphold these values can be framed in terms of consumer protection, human development and human rights.

Copyright shapes affordability and access because as the scope of rights expands, the more control is centralised and the less competition. It also shapes participation, because under current law the amateur who wants to build upon existing works is at a disadvantage, and risks running afoul of others' rights.

Distribution of copyright materials, and the ability to shift them between media and devices, is now much easier and cheaper them before. Yet copyright protection is ever increasing, and this cannot be justified by the need for additional incentives for creativity. Rather, it reflects the problem of rent-seeking ("the Disney effect" – so termed for the extension of the copyright term to avoid Disney's loss of its early Mickey Mouse assets).

These negative impacts fall most heavily of all on developing countries. Developing countries are net importers of copyright material. They are in no position to be magnanimous in protecting the rights of copyright owners. Yet, they are bowing to pressure and granting more protection and rights to copyright owners than they need to by their treaty obligations. This has grave implications for the access to knowledge of their people. By increasing the restrictions and excluding the limitations and exceptions, they are permitting for less and less information to be freely available in the public domain. Such curtailment serves the interests of a privileged few at the expense of the millions in need.

Norm setting at WSIS. The World Summit on the Information Society (WSIS), held in 2003 and 2005, brought together civil society and private sector actors to observe (and to a limited extent, influence) the development of an intergovernmental accord on the principles and actions necessary for building an inclusive information society. The form in which the theme of access to knowledge and information was addressed in the WSIS output documents was as one of 11 main action lines in the

Geneva Plan of Action, in which it was declared in 2003 that "ICTs [information and communications technologies] allow people, anywhere in the world, to access information and knowledge almost instantaneously. Individuals, organisations and communities should benefit from access to knowledge and information".

The force and specificity of the recommendations flowing from this principle were in many respects diluted by the imperative to agree them by intergovernmental consensus; thus for example whilst an earlier negotiating text had lauded the benefits of free and open source software (FOSS) to promote access to information, US and EU objections saw this reference removed from the Geneva text in favour of a direction that a variety of software models, including proprietary software, should be promoted.

Frustrated with the limitations of the official WSIS output documents, civil society produced its own alternative summit paper, with stronger recommendations on the promotion of access to information and knowledge. A third WSIS summit had ben held in 2015.

Norm setting at WIPO. Given that copyright is intended to strike a balance between the interests of rights holders and users, there is a marked disparity between the detailed specification in international law of the exclusive rights to be granted to copyright holders, and the omission of any such specification of the flexibilities to be reserved to the public. This has led to the proposal by Brazil, Chile, Nicaragua and Uruguay of a broad work programme for WIPO's Standing Committee on Copyright and Related Rights on copyright limitations and exceptions dealing with:

- education,
- libraries and archives,
- innovative services,
- persons with disabilities.

In each of these areas, WIPO has commissioned studies, and in the one area the work has proceeded to a norm setting stage. This is the case of the limitations and exceptions for persons with disabilities, in respect of which a proposal was tabled in May 2009 by Brazil, Ecuador and Paraguay fora *WIPO Treaty for Blind, Visually Impaired and other Reading Disabled Persons,* based on text drafted by the World Blind Union.

This would be the first international instrument to set new minimum limitations and exceptions to copyright law, thus introducing a new note of balance into international IP norm-setting that has been sorely lacking until now. The treaty would serve two purposes: firstly to set a minimum level for copyright exceptions in this area for all WIPO members, and secondly to legalise the cross-border transfer of adapted copyright works. As expected, developing countries have been most favourable to this proposal, with the EU the most strongly opposed.

The EU proposes instead a non-binding recommendation to address the needs of blind users. A2K activists have put the position that it is unfair and unbalanced for rights holders to be privileged to have minimum standards of copyright protection upheld in international law, where the public is denied that same level of protection for its interests in the copyright system, through minimum flexibilities.

Digital locks. One of the biggest impediments to A2K that was introduced by

the WIPO Copyright Treaty was in Article 11, which requires signatories to provide legal remedies against the circumvention of technological protection measures (TPMs) or systems for "digital rights management" (DRM). TPMs and DRM can be colloqially described as "digital locks", since that is essentially what they are: locks on knowledge in digital form.

Digital locks pose problems. They are being used not only to prevent unauthorised access to copyrighted material but also to deny access to material that rightfully belongs in the public domain. For example, both the TRIPS Agreement and the WCT provide that copyright protection does not extend to the data or material contained in compilations of such data or material, but TPMs and DRM are being used for example to control access to such material to only users who pay a fee. They can also be used to deny access to educational material that is in fact allowed by copyright exceptions.

This is not to say that there is no place at till for digital locks. There are limited cases in which these technologies can prove useful for users and content owners alike, such as allowing for digital movie rental. However rather them being bolstered by additional TRIP-plus legislative protections, such uses should stand or fall in the market place alongside non-encumbered alternatives, and should not be allowed to prevent users from exercising their user rights or from accessing works that are in the public domain.

There are early signs of an intemational consensus that the use of digital locks has gone too lar. A WIPO-commissioned scoping paper on the public domain has recommended that the WCT be Emended to prohibit a *technical* impediment to reproduce, publicly communicate or making available a work that has fodlen into the public domain.

Brazil has introduced such a provision into its new copyright bill, that would pentilise myone who "hinders or impedes" lair use rights or obstructs the use of work that has already fallen into the public domEiin. But it has gone a step further in that it would also require that any system of digital locks have "time-limited effects that correspond to the period of the economic rights over the work, performamce, phonogram or broadcast".

The Brazilian provision, as with a similar Indian amendment also introduced this year, will also permit digital locks to be bypassed to faciliate the exercise of user rights such as fair use or fair dealing under copyright law.

These new, consumer-friendly limits to the overreaching effects of digital locks conform to a series of recommendations that the Trans-Atlantic Consumer Dialogue (TACD) made in 2005, and to similar recommendations made by Cl this year.

Legality of temporary copies. The Berne Convention does not require protection for copyright works "unless they have been fixed in some material form", and even the EU Copyright Directive expressly exempts transient or incidental copying as part of a network transmission or legal use. Nonetheless, the United States has been pushing for other countries to include protection for copies made in the temporary memory of a computer. Provisions requiring the protection of such temporary copies have been included in all its recent free trade agreements, including those with Australia, Bahrain, Colombia, Morocco, Oman, Peru, Singapore and South

Korea.

This is highly problematic for A2K activists, because browsing any content on the Internet automatically creates a temporary copy of that content in the memory of the computer by which it is accessed. It is impossible to conceive that Internet users should be expected to clear the copyright status of all the content they access online before a temporary copy of it is made in their computer memory.

Even more ironically, the provision may not be in line with US law after all. The *Cablevision II* case (decided after the FTA language had already been promulgated far and wide) deviates from previous precedents that suggested that a right protected by copyright is infringed when a copy is made in a computer's temporary storage.[15] The decision is pending an appeal to the Supreme Court.

Patents. This section covers some of the problems with the patent system, focussing on three areas of patentable "inventions" that have created impediments to A2K and related consumer interests: software patents, pharmaceutical patents and agricultural patents. One of the problems common to all these areas is that there is no requirement that a patent holder actually use the patent themselves. This has led to a situation in which many patent holders don't actually create anything useful themselves, but simply use their patents to earn money from others who want to do useful work in the same area. If their patents are broad or numerous enough, they can also use them to warn off competitors from attempting to compete with them in a certain field, or they can use their patent portfolio as a bargaining chip to cross-license with their competitors, allowing each of them to share the market while crowding out smaller competitors (Access to Knowledge: A Guide for Everyone, 2010)[103].

Software patents. Although patents have existed for centuries, they have only more recently become applicable to computer software. This has given rise to intense debate over the extent to which software patents should be granted, if at all. Important issues concerning software patents include:

- where the boundary between patentable and non-patentable software should lie,
- whether the inventive step and non-obviousness requirement is applied too loosely to software,
- whether patents covering software discourage, rather than encourage, innovation.

Negative effects of software patenting include the risk of some fundamental standards of computing and the Internet becoming encumbered, and the free development of open source software being stifled.

The first of these negative effects has been highlighted by the opportunistic attempts of many patent holders to lay claim to some of the fundamental building blocks of the infrastructure of the Internet. Unisys, for example, only begem to enforce its patent for the LZW compression algorithm used in GIF format graphic

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files after those files became a de facto standard image format for the World Wide Web. (That patent has since expired in the United States in June 2003).

British Telecom went even further, attempting to lay claim to the concept of hyperlinks that Eire fundcimentEil to the Web. Its clciim, based on a 1989 patent that was originEilly applied for in 1976, was rejected by a New York District Court in 2003. But most patent claims never get to court, and are settled. In the case of free Emd open source softwEire projects that do not have the resources to settle on monetciry terms, the usual result is that the project is simply shut down.

The second of the above negative effects is illustrated by the closing off of certain avenues of softwEire development from the open source software ecosystem; for example, font rendering on Linux is generally inferior to that on proprietary operating systems not for technicEil reasons, but because the most efficient algorithms for font rendering are (or were until this year) patent-encumbered. In fact so many patents for computer software have been granted, particularly in the United States, that developing an application without infringing software patents has become a very hit and miss affair.

There are a number of high profile examples where the patenting of a data exchange standard has forced another programming group to introduce an alternative format. For instance, the PNG format was largely introduced to avoid the GIF patent problems, and Ogg Vorbis to avoid MP3. If it is discovered that these new suggested formats are themselves covered by existing patents, the final result may be a large number of incompatible formats. Creating such formats and supporting them costs money, creates inconvenience to users and even threatens to split the Internet into several partially incompatible sub-networks.

Patentability of software. The largest number of software patents are those registered in the United States. Under United States law, it was decided in 1998[20] that a method of doing business (or a software program) will be patentable so long as it produces a useful, concrete and tangible result, rather than just being an abstract idea. However in June 2010, the *Bilsky vKappos* decision handed down by the US Supreme Court rejected this broad test, whilst leaving the exact scope for the patentability of software unclear. The test now being used by US trademark examiners looks to whether the invention is tied to a particular machine or apparatus, or transforms a particular article into a different state or thing. Many if not most software inventions that could be patented before, can probably still be patented under this test (Access to Knowledge: A Guide for Everyone, 2010).

The European Patent Convention, a pre-EU instrument dating from 1974, actually expressly excludes “computer programs ... as such” from the classes of patentable subject matter, on the ground that patents are directed towards technical inventions, not commercial methods. Even so, the European Patent Office (EPO) has managed to interpret the qualifier “as such” in such a narrow way, that software patents would be granted so long as they contained an inventive step with a “technical ef-feet”. Such a patent is described by the EPO not as a “software patent” but as a “computer-implemented invention”: an invention whose implementation involves the use of a computer, computer network or other programmable apparatus,

the invention having one or more features which are realised wholly or partly by means of a computer program.

In some jurisdictions, computer software can unequivocally not be patented. Most recently, in 2010, New Zealand has taken steps to make software unpatentable.

Several patent holders have offered royalty-free patent licences to free and open source software developers. Companies that have done this include IBM, Microsoft, Nokia, Novell, Red Hat, Sun Microsystems and Unisys. However such actions have rarely appeased the free and open source software communities for reasons such as fear of the patent holder changing their mind, or problems with some of the licence terms.

Phamaceutical patents. Patents on pharmaceuticals are also problematic for the consumer movement and other civil society activists, not least of all health NGOs such as Medecins Sans Frontieres (MSF). Patent holders take advantage of their monopoly rights by charging high prices for medicines, including those for diseases that affect a large number of people. They pressure developing countries to prevent local manufacture or the parallel import of cheaper generic versions of drugs from countries where they are not patented.

Problems with the patent system have become obvious over recent years:

- millions of poor, each year, die – often from preventable diseases – in different parts of the globe as they cannot afford to buy medicines they badly need. “Why are millions dying in the Global South of diseases there is medicine for?” asks the Change- maker.Org website,
- one-third of the world’s population lacks access to essential medicines. It has been argued that much of the premature death and disability associated with infectious disease could be avoided if poor people had access to affordable medicines. Yet those most in need are least able to afford treatment.

One view on the abuse of pharmaceutical patents is that perhaps patents were the wrong mechanism for funding pharmaceutical production all along. For Knowledge Ecology International (KEI), one of the leading consumer NGOs actively campaigning on access to medicines, the biggest concern in 2010 is creating an alternative incentive for research and development in drug development. This is currently being discussed at the World Health Organisation.

Members of the European Parliament have taken up this issue and established a new Working Group on Innovation, Access to Medicines and Poverty-Related Diseases. Another front in the fight against the proprietisation of health, in which progress was achieved in March 2010, was the striking down of US patents over isolated human gene sequences. The overruled patents formerly prevented patients from undergoing affordable tests for genetic problems that could expose them to the dangers of breast and ovarian cancer. The decision is under appeal. Whilst on the one hand the access to medicines campaign is tangential to the A2K movement, on the other it is seen as having been successful example of consumer advocacy with broader lessons for the movement, because it united an A2K conceptualisation of the problem, with the human rights framework of state accountability, which pointed toward a solution.

Agriculture patents. The seed is the basic unit of agricultural production and the basis of life itself. Its self-reproducing quality has long prevented it being sold on an industrial scale: why would a farmer purchase seeds when she can just replant those harvested from the previous crop? Indeed, for millennia, farmers have saved harvested seeds for resowing and exchange. Seeds are carefully selected on the basis that the plants producing them possess desirable traits – such as high yields, disease resistance or drought tolerance.

This enables ongoing development of crops adapted to local conditions. In most of the developing world, seed breeding continues to be carried out by farmers. However, scientific and technological advances in the early 20th century opened the way for private companies to become major players in industrialised country seed markets.

Farmers now have to buy the seeds they wish to plant. Similarly, patents over seeds and patents for new plant varieties have resulted in farmers having to pay high prices for proprietary seeds. Farmers are not being allowed to save and replant the seeds they produce; they have to buy fresh seeds for each new planting season. This has created a new dependency. Corporations now control the food chain. These corporations Eire also only interested in a few commerciEil VEirieties and consequently there is immense loss of biodiversity.

A significEint contributing factor to the gradual corporate dominance of seed breeding was the development of hybrids. Hybrids offer farmers uniform crops (well-suited to mechEinised, industricil agriculture) and - often - higher yields. Crucicdly, as hybrids only produce true hybrid crops once, a fcirmer WEmting to continue producing those crops has to buy new seeds each year – thus ensuring a relatively stable market for commerciEil hybrid producers.

Intellectual property rights (IPRs) on seeds are accused of interfering with traditional farming and cultural practices, them powering women and making farmers more vulnerable to market fluctuations. IPRs on seeds are said to contribute to loss of genetic and cultural diversity and to increased corporate concentration, which could result in environmental degradation and undermine long-term sustainability of food supplies.

Agricultural patents and food security. In October 2009, the UN expert on food SEiid that the "current intellectual property rights regime is suboptimal for global food security". Returning from a country mission in Brazil, the UN Special Rapporteur on the right to food, Prof. Olivier De Schutter, presented in New York his report on the relationships between intellectual property (IP) rights and the right to food. He called Members of the UN General Assembly to develop seed policies that encourage innovation, promote food security and enhance agrobiodiversity at the same time (Access to Knowledge: A Guide for Everyone, 2010).

"The current intellectual property rights regime is suboptimal to ensure global food security today. It is unfit to promote the kind of innovation we need to cope with climate change", said De Schutter, who underlined the importance of seed policies which "respect, protect and fulfill" the right to food of the most vulnerable groups.

This was the first time a UN independent expert analyses the intellectual property regime under the right to food framework, part of international human rights

law.

"Climate change means more extreme and more frequent climatic events. This will severely impact agricultural systems". In this context, said De Schutter, "seed policies should not just aim to improve yields. They should also raise the incomes of the poorest farmers working in the most difficult environments. They should help build resilience to climate change. And they should stem the loss of crop genetic diversity."

According to the UN food expert, there are currendy two ways for farmers to access seeds: informal seed systems where seeds are stored from one year to the other and exchanged locally; and commercial systems marketing improved seeds which are certified by public authorities. Increasingly, the former disappear due to their neglect in agricultural policies, while globalisation and the current IP rights regime strengthen the second at Emaccelerated pace.

Betting on farmers as innovators also makes economic sense. "Real improvements for the most vulnerable groups – those who are hungry – can sometimes be cheaper than multi-million research programmes and high tech biotechnologies. Investing research efforts in orphan crops – crops that have been neglected in research for decades – proves to have exceptional returns on investment." With $10,000 only, a Peruvian researcher has been able to improve oca, an Andean tuber which is the basic foodcrop for nine million people, but which scientists had neglected. Within two years, he was unfair advantage of, the genetic resources and traditional knowledge and technologies of developing countries.

Biopiracy allegedly contributes to inequality between developing countries rich in biodiversity, and developed countries served by pharmaceutical industry exploiting those resources.

Many developing countries have drawn political and ethical analogies between perceived biopiracy and intellectual piracy, claiming that whilst the developing world is often guilty of disrespecting copyright, patents and other intellectual property, the developed world is often guilty of disrespecting the ownership of indigenous biological resources.

The failure to address issues related to traditional knowledge and bioresources even whilst ratcheting upward the protection granted to new inventions doubly jeopardises developing countries. The obvious questions are "If a company takes a seed from a fanner's field, adds a gene and patents the resulting seed for sale at a profit, what reason is there for not compensating for the original seed? If the traditional knowledge of a particular community is the basis for a development that is granted intellectual property status and protection, what is the compensation to be granted the community that is the source of the traditional knowledge or resource?

IP enforcement. A growing push towards stricter enforcement of IP laws is unfairly penalising consumers in many countries. This programme, led by developed country governments at the behest of copyright industry lobbyists, is being pursued in various and overlapping global, regional and national fora. These include ACTA, as well as initiatives within the World Health Organisation, the World Customs Organisation, APEC, the G8 and the Global Congress Combating Counterfeiting and Piracy. Domestic legislation has been introduced in nations as varied as the US and

Kenya, and industry initiatives that compliment these broader efforts.

A growing push towards stricter enforcement of IP laws is unfairly penalising consumers in many countries. This programme, led by developed country governments at the behest of copyright industry lobbyists, is being pursued in various and overlapping global, regional and national fora. These include ACTA, as well as initiatives within the World Health Organisation, the World Customs Organisation, APEC, the G8 and the Global Congress Combating Counterfeiting and Piracy. Domestic legislation has been introduced in nations as varied as the US and Kenya, and industry initiatives that compliment these broader efforts.

This section will examine how intellectual property laws are being enforced through four complementary mechanisms: anti-piracy laws, intemational trade measures, enforcement by intermediaries, and enforcement through the criminal law. We will not specifically consider in this chapter what might, until recently, reasonably have been assumed to be the primary mechanism of enforcement of private IP rights: civil legal action. Whilst this remains a key mechanism of enforcement for certain IP rights (for example, software patents), exclusive rights holders are increasingly calling on the public sector and intermediaries to do their enforcement work for them, thereby avoiding the cost and inconvenience associated with the need to enforce their rights privately through the legal system.

Enforcement through piracy laws.

Anti-Counterfeiting Trade Agreement. The Anti-Counterfeiting Trade Agreement is a plurilateral (involving more than two sides or parties) agreement currently under negotiation by a small number of countries outside of WIPO and the WTO. It would create a new globed institutional framework for intellectual property enforcement.

ACTA isn't really a treaty against counterfeiting. It uses that name, but in fact the most problematic aspects of the agreement under negotiation have nothing to do with counterfeit goods. Rather, they are designed to crack down on the transfer of digital information, making it easier for intermediaries (such as customs officers, ISPs or internet service providers, and copyright owners) to snoop on consumers exchanging such information, and imposing new criminal penalties in case they have breached someone's copyright by doing so.

ACTA's provisions go too far. They would allow a practice that already exists in some countries called "three strikes" or "graduated response", which means banning users from the Internet if they are alleged to have been sharing copyright files. They may also allow customs officers to go rooting through a traveller's laptop computer or MP3 player looking for copyright-infringing files, and allow ISPs to disclose their users' information to copyright owners without need of a warrant; provisions that infringe consumers' human right to privacy. And these are just the tip of the iceberg.

ACTA has been controversial not only for its content, but for the secretive manner in which it has been negotiated. Following considerable public pressure including numerous public petitions, the first public draft of the text was released in April 2010, only after five years of closed-door negotiations. Beyond this single text, what little we know of the content of the treaty has either been leaked, or has come

from a few very terse briefing papers prepared by some of the friendlier negotiating countries. Even a Freedom of Information request in the United States was denied on the ground that the negotiations were a matter of national security! In contrast, while consumer groups (and even the European Parliament) have been left in the dark, privileged industry insiders have been briefed on the negotiations by the United States government.

There are four sub-chapters to the chapter of the draft ACTA text titled *Legal Framework For Enforcement of Intellectual Property Rights* which indicate the main substantive Eneas to be covered:

- Civil Enforcement,
- Border Measures,
- CriminEil Enforcement,
- Intellectual Property Rights Enforcement in the DigitEil Environment.

There ara also an *Institutional Arrangements,* which sets out plans to establish a new ACTA Committee, to meet once per year, that could become a competing body to WIPO and the WTO. Its role would include supervising implemention of the agreement, and resolving disputes that arise under it.

It has been widely speculated that the reason for the ACTA negotiating countries establishing a new body is because of the difficulty that those countries would face in raising the bar of IP protection within WIPO or the WTO, due to the power of numbers that developing countries hold within those organisations, and the cross-cutting application of WIPO's Development Agenda to all its norm-setting activities.

Once the most powerful countries – such as the US, EU and Japan – do sign ACTA, they can force its provisions onto smaller developing countries by using it as a bargaining chip in exchange for trade concessions on agricultural goods. This has been a notorious tactic, particularly of the US and EU, who have forced poorer countries to sign Free Trade Agreements (FTAs) including onerous new copyright and patent provisions that exceed the TRIPS minima.

ACTA has also been said to provide a current example of "policy laundering", in that the IP enforcement measures it mandates would likely be politically unpopular if they were first introduced at a domestic level, and their negotiation as a treaty avoids the need to do so. Because they are agreed at an intergovernmental level first, each state that signs the agreement can later claim that the implementation of its provisions in national law was simply a matter of international obligation.

Anti-Counterfeiting legislation in the East African Community (EAC). Campaigners in Africa warn that a number of recent measures – the *Anti-Counterfeit Act of 2008* in Kenya, the *Counterfeit Goods Bill* in Uganda and now the *EAC Anti-Counterfeits Bill* – would cause public health problems by limiting local production and importation of generic medicines.

Sangeeta Shashikant, a legal advisor with the non-profit international network Third World Network (TWN), was reported as having told the Inter-Press Service that the EAC bill seems to treat every generic medical product as a counterfeit. "The definition states (counterfeits) are substaintially identical copies of the protected goods (produced) without the authority of the owner of the intellectual property rights

of the protected goods. This is dangerous for countries that depend on generics in the healthcare system," she said. "The definition states (counterfeits) are substaintially identical copies of the protected goods (produced) without the authority of the owner of the intellectual property rights of the protected goods. This is dengerous for countries that depend on generics in the healthcare system," she said (Access to Knowledge: A Guide for Everyone, 2010).

Border measures. The use of customs authorities as agents to enforce IP rights dates back only to 1978 in the USA and 1986 in the EU, when those countries first introduced laws to allow seizure of pirated goods on import. These provisions have since been extended to permit the seizure not only of goods that infringe trademarks, but also those that infringe copyright or patents, whether or not the goods are "pirated" in the sense that they claim a misleading origin. This trend has since escalated to the global level. A heavy-handed initiative of the WCO called SECURE, which was designed to set global customs standards to counter IPR infringements, including a mandate for strengthening national laws, was disbanded in 2009 in favour of a dialogue mechanism that would not include policy-setting activities.

However, this has only raised the profile of a similar taskforce called IMPACT (International Medical Product Anti-Counterfeit Taskforce), for which the World Health Organisation (WHO) functions as the Secretariat, and which is causing similar concerns.[42] This continues a pattern of forum shopping by rights holders that has been evident throughout the history of the A2K movement – for example the shift from W1PO to the WTO, and again to ACTA.

Why are border seizures a problem? Largely this is because border authorities are unqualified to assess IP claims, Emd that they do so away from the public oversight of the legal system. Where as a court hears IP dispute in the presence of both parties and cam deliberate on difficult issues such as the interpretation of fair use and fair dealing defences, a customs officer can seize and detain goods without any such due process (Access to Knowledge: A Guide for Everyone, 2010).

A case in point occurred in 2008 when Dutch customs authorities seized a legitimate shipment of generic medicines *en route* from India to BrEizil, notwithstanding that the medicines were patent protected in neither country. This seizure, which potentially endamgered the health of Brazilian consumers, is now the subject of a WTO dispute.

Enforcement through trade measures. One of the key ways in which developed countries push their high standards of IP protection onto developing countries is through bilateral free trade agreements. A free trade agreement (FTA) is a trade treaty between two or more countries. Usually these agreements Eire between two countries and are meant to reduce or completely remove tariffs to trade. According to the World Trade Organisation there are more than 200 FTAs in force.

The United States has FTAs in effect with 17 countries, and the EU with 11 countries and blocs. Through its FTAs, the US in particular has consistently imposed TRIPS-plus levels of protection on other countries such as Australia, Chile, Jordan, Morocco, Peru, Singapore and South Korea, most notably the extension of the default copyright term from 50 years to 70 years, as well as US-style implementation of the obligations of the WIPO Copyright Treaty, protection for temporary copies, and a

broader range of civil and criminal IP offences.

Special 301 Report. Another mechanism by which the US government pushes TRIPS-plus standards of IP enforcement onto other countries is through its Special 301 Report. This is a global survey, conducted by the US Trade Representative (USTR) pursuant to section 182 of the Trade Act of 1974 of the United States, that takes the nature of a "report card," rating other countries on how closely they adhere to the USTR's standards of protection and enforcement of intellectual property law. Those countries that the USTR considers to fail its standards most egregiously are highlighted on a "Priority Watch List". In the 2010 priority watch list are countries like Argentina, Canada, Chile, Costa Rica, India, Indonesia, Mexico, People's Republic of China, the Philippines, and the Russian Federation.

The USTR's standards are not based on the treaty obligations of the countries concerned. Amongst the criticisms levied against countries in the 2010 Special 301 Report are China's efforts to promote "indigenous innovation" and its provision of electronic access to journals through public libraries, Canada's refusal to implement the controversial WIPO Internet Treaties which include legal protection for digital locks (DRM) on knowledge goods, India for "the perception that IPR offenses are low priority crimes", Malaysia for failing to criminalise the use of camcorders in movie theatres, Spain for aUowing peer-to-peer file sharing in exchange for a private copying levy paid by consumers, and numerous countries for failing to grant extra rights to holders of pharmaceutical patents to protect the results of their health tests.

These standards have been shaped by the written submissions of the world's most powerful lobby groups of copyright and patent owners – the Pharmaceutical Research and Manufacturers of America (PhRMA) and the International Intellectual Property Alliance (IIPA). Their submissions were respectively 224 and 496 pages long in 2010, and in past years, claims horn these submissions have often been adopted by the USTR for direct inclusion in its report.

As a response to the Special 301 Report, Cl has published its IP Watch- list, surveying 34 countries for the most recent edition and ranking them not by how well their IP laws and enforcement practices serve IP's exclusive rights holders, but by how well they serve the interests of consumers, including those from developing countries. None of the countries surveyed by Cl in 2010 scored the top mark, for affording their consumers fair treatment in copyright law overall. Particular concerns included enforcement practices that infringe upon consumer rights, and compulsory copying levies that offer poor value for money. However, the Cl report also revealed some best practices that could turn the situation around for consumers, if only they were more widely implemented.

Effect on developing countries. In consequence of condemnation and pressure from the United States both through the Special 301 Report and through bilateral channels, consumers particularly in developing countries have suffered as those countries have been forced to abridge provisions of their domestic law that had been passed for consumers' benefit, or to redirect resources from other areas into the protection of the interests of US-based rights holders.

A 2006 study by Cl, covering 11 countries in the Asia-Pacific region, found that all 11 countries studied had either expanded the scope beyond what they are

required to do or given copyright owners more rights than necessary under the relevant international instruments. Citing this study and others, a 2010 treatise found that: Some countries faced pressure in advance of their first efforts to draft, debate and implement TRIPS-related IP reforms. Once TRIPS-related reforms were in place, many countries subsequently faced additional pressures to repeal, modify or strengthen provisions in their laws. Most countries also faced international pressures in the area of administration and enforcement of laws, including regarding the practical use of flexibilities included in their national laws.

Enforcement by intermediaries. As noted earlier, a growing trend is for countries to adopt what are called "three strikes" or "graduated response" programmes, which amount to the termination of a user's Internet access in response to a repeated allegation against them of sharing copyright files without authorisation. Graduated response systems can be legislated across the entire industry, or they may be voluntary, based on agreement between content owners and ISPs (as for example in Ireland).

France was the first country to introduce a legally-backed graduated response regime, despite a successful constitutional challenge to a previous version of the law which would have allowed sanctions to be applied against alleged copyright infringers, before any judicial authority had ruled on such allegations. The revised version of this HADOPI law, which requires such a ruling, remains in force. Other countries that have adopted graduated response laws, or are in the process of doing so, are New Zealand, South Korea, Taiwan and the United Kingdom.

Graduated response is problematic in part because the penalty it provides is wholly disproportionate to the alleged offence, as it means that user is also cut off from their social networks, their government, their banking, their family... it is, in short, a gross infringement of their human right to communicate. Indeed, the results of a global BBC survey, released in 2010, reveal that almost four in five people around the world believe that access to the Internet is a fundamental right.

It is also indiscriminate, because the action taken affects not only the alleged offender, but often an entire household (or in the event of an offence committed using a public Internet connection, an even greater number of perhaps unrelated users). In the case of private graduated response regimes, this penalty is imposed without the due process safeguards that the law would provide under a legislated system.

Graduated response programmes can also raise privacy issues, in that aside from terminating the Internet connection of a subscriber, the ISP may also be asked by the content owner to disclose the personal information of the alleged offender.

In a number of European countries attempts to implement a graduated response programme have led to court cases to establish under which circumstances an ISP may provide subscriber data to the content industry. Using such ISP subscriber information the content industry has sought to hold the end-user responsible for all illegal activity connected to his or her IP address. (An IP address is assigned to all Internet-connected computers, but will often change as many ISPs allocate them from a pool of addresses as needed) .

In 2005 a Dutch court ordered ISPs in the Netherlands to not divulge subscriber information because of the way the Dutch content industry group had collected the IP

addresses. However, in April 2008, the Bundestag (German parliament) approved a new law requiring ISPs to divulge the identity of those alleged of infringing on a commercial scale.

Enforcement through criminal law. Another means by which IP laws are being more aggressively enforced is by expanding the range of infringements that attract criminal penalties. Indeed, some acts that are not IP infringements at all are being targetted with criminal sanctions. This agenda is being pushed through a variety of parallel mechanisms including ACTA, FTAs, and the Special 301 Report, as well as at a national and regional level (Access to Knowledge: A Guide for Everyone, 2010).

In Europe. The second Intellectual Property Rights Enforcement Directive of the European Union, or IPRED2, would have expanded the existing IPRED to include new criminal measures aimed at ensuring the enforcement of intellectual property rights. The draft IPRED2 was widely criticised on the basis that its scope was far broader than the current international standard for criminal IP enforcement in the TRIPs agreement. In the end the proposed directive failed, largely on the grounds that the subject matter of the proposed directive fell outside the European Community's competence (as defined in the EU treaties).

However with the expansion of EU powers under the newly ratified Treaty of Lisbon, IPRED2 could soon be resubmitted by the EU Commission. Language from IPRED2 on aiding and abetting infringement has also made its way into the current ACTA text.

In the *United States*. In March 2010 Public Knowledge, Electronic Frontier Foundation, American Association of Law Libraries, Medical Library Association, Special libraries Association, andUS PIRG argued that the U.S. government should restrict its actions enforcing intellectual property law to those "violations that cause the greatest harm in clearly settled areas of law." In addition, the groups said that IP enforcement overseas should be consistent with other foreign policy objectives, such as those related to freedom of speech and economic development. "Overly broad enforcement" of "expansive IP laws" could harm those other goals, the groups said.

In Asia-Pacific and Oceania. Upon the amendment of Australia's copyright law in compliance with the United States-Australia FTA to raise criminal penalties for various copyright infringements, an Australian Federal Court judge observed: The determination of the appropriate penalties for criminal offences is a matter on which views differ. In a political climate in which "law and order" issues play well, Parliamentarians are often influenced to increase maximum penalties by community sentiment. It is, however, unlikely that there is an able, on a summary conviction in a Local Court, to imprisonment for a term three years longer them that applicable to almost any summary conviction in the same Court under State law. The most plausible explanation for these extremely unusual arrangements is that they are designed to accommodate the arguments of copyright owners that severe criminal penallies are needed to deter piracy.

Although not under direct pressure from a Free Trade Agreement, Malaysia has introduced amendments to its copyright law in 2010 that would introduce a number of new offences. These include provisions to criminalise the simple possession of a single copyright-infringing item, as well as the operation of a camcorder in a movie

theatre, and would even impose liablity for the landlords of premises in which infringing items are sold. New US-style statutory damages provisions are also planned.

4.3. Alternative Ways of Sharing Knowledge

The A2K movement combines a reactive or responsive agenda, and also a proactive or positive agenda. Until now, most has been written about the responsive agenda, which includes adding new exceptions to copyright law that allow for more "fair uses", opposing enforcement practices such as cutting accused users off from the Internet, and fighting the extension of content owner's rights through using technology like DRM.

In this monography we will turn to the positive agenda that involves the promotion of alternatives to market-based models of copyright or patent-protection, such as the open source movement, open access publishing, and Creative Commons, as well as collective licensing schemes and libraries[104].

Public domain. The public domain is intellectual property designation for the range of content that is not owned or controlled by enyone. These matericils Ene "public property", and available for enyone to use freely for any purpose. The *public domein* is most often discussed in contrast to works whose use is restricted by copyright. Under modem law, most original works of Art, literature, music, etc. That works covered by copyright from the time of their creation for a limited period of time (which varies by country). When the copyright expires, the work enters the public domein.

It is estimated that currently, of all the books found in the world's libraries, only about 15% are in the public domain, even though only 10% of all books are still in print; the remaining 75% are books which remain unavailable because they are still under copyright protection.

The public domain also contrasts with patents. New inventions can be registered and gran led patents restricting others from using the inventions without permission from the inventor. Like copyrights, patents last for a limited period of time, sifter which the inventions covered by them enter the public domain and can be used by anyone.

The effect of a work passing into the public domain is that the former copyright owner no longer holds any of the economic rights that formerly attached to the copyright (though moral rights do still apply in certain jurisdictions). In other words, there is no longer any impediment to the work being copied, shared or remixed.

There are a few issues that surround the public domain that are of concern to the A2K movement – apart from the most concerning of all: that the public domain is no longer expanding, due to the repeated extension of copyright terms. One of the other issues of concern is that in some jurisdictions, it is not legally possible for an

[104] Access to Knowledge: A Guide for Everyone, (2010), *Compiled and edited by* F. Noronha and J. Malcolm. Cover design by A. Carter. Production by J. Malcolm. First published 2010. Second edition 2010. 134 p.

author to dedicate a work to the public domain ahead of expiry of the copyright term. This ironically detracts from the freedom of both the author and the public at once. A recent report to WIPO has recommended that this issue be redressed by all WIPO member countries (Access to Knowledge: A Guide for Everyone, 2010).

Another issue is that of access to public domain works. Often, public domain works are held by libraries or archives that may not be willing to provide free access to the public, regardless of the copyright status of the work. For visual works, this is sometimes justified on the basis that a faithful reproduction of a two-dimensional image attracts its own copyright protection. This principle arguably holds in the UK and possibly in other common law jurisdictions such as Australia, but is not good law in the USA. The Wikimedia Foundation's position on this questionable principle has been strongly expressed: To put it plainly, WMF's position has always been that faithful reproductions of two-dimensional public domain works of art are public domain, and that claims to the con trary represent an assault on the very concept of a public domain. If museums and galleries not only claim copyright on reproductions, but also control the access to the ability to reproduce pictures (by prohibiting photos, etc), important historical works that are legally in the public domain can be made inaccessible to the public except through gatekeepers.

Another even more objectionable assault on the public domain is found in Egypt, where one must pay a licence fee to the Ministry of Culture to use public domain material commercially. Italy has recently introduced a similar provision. Even the United Kingdom has a like provision that essentially grants a perpetual term of copyright, but, oddly, this is limited to a single work – *Peter Pan?*

Open licensing.

Free and Open Source Software (FOSS). FOSS is an acronym for "free and open source software", encompassing both of the common terms for what was originally known as "free software" prior to the term "open source" being coined in 1998. Importandy, the software is free in more than one sense. Free or open source software is in the FSF's words not only free in the sense of "free beer," but also in the sense of "freedom," encompassing:

- the freedom to run the program, for any purpose (freedom 0),
- the freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this,
- the freedom to redistribute copies so you can help your neighbour (freedom 2),
- the freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.

Although it is not required in order to satisfy this definition, certain open source software licences, most notably the GNU General Public Licence (GPL) which is used by a majority of all open source software, require any work copied or derived from software covered by the GPL to be distributed under the same licence terms. This characteristic is referred to by the FSF as "copyleft," as a play on "copyright," in that it requires those who base their own works on copyleft-licensed software to forgo the exclusive rights that copyright law gives them to copy and

modify their works, and to share those rights freely with the community.

More significant than the freedoms associated with open source software are the larger cultural and organisational consequences to which their exercise gives rise. These include the widespread voluntary service that members of the open source community provide in coding and documenting the software projects to which they contribute, and the typical high quality, timeliness and innovation of their output.

Eric Raymond, a hacker himself, has famously described the difference between the development methodology for proprietary software and that for open source software as that between "the cathedral and the bazaar," in his essay of that name. To be built like a cathedral, in that context, is to be "carefully crafted by individual wizards or small bands of mages working in splendid isolation, with no beta to be released before its time," whereas the bazaar style of development was epitomised by the Linux kernel development process, which seemed to resemble a great babbling bazaar of differing agendas and approaches (aptly symbolised by the Linux archive sites, who'd take submissions from *anyone*) out of which a coherent and stable system could seemingly emerge only by a succession of miracles.

The same phenomenon of "peer production" has begun to propagate beyond software development into other fields. For example, hundreds of contributors put in many hours each week to the Wikipedia project, producing the most comprehensive encyclopaedia ever written. The licensing model employed by Wikipedia is equivalent to that of open source software, although the material licensed may be more accurately described as "open content," and the licence used is from Creative Commons, to which we turn next.

Creative Commons. Creative Commons is an organisation formed in 2001, which was inspired by the free and open source software movement, to create and promote a series of licences to promote the free use of creative works. These licences have proved exceptionally popular, with millions of pages of Web content being licensed under a Creative Commons licence, as well as thousands of books, photographs, videos, music, and comics. Creative Common licensing is also being used by the Wikipedia project, by the Australian government for most of its new publications, and by the US government for non-governmental materials.

There is not only one Creative Commons licence, but several formed from the combination of the following conditions (Access to Knowledge: A Guide for Everyone, 2010):

- attribution - You let others copy, distribute, display, and perform your copyrighted work - and derivative works based upon it - but only if they give credit the way you request,
- share-alike - You allow others to distribute derivative works only under a license identical to the license that governs your work,
- no derivatives - You let others copy, distribute, display, and perform only verbatim copies of your work, not derivative works based upon it,
- non-commercial - You let others copy, distribute, display, and perform your work – and derivative works based upon it – but for noncommercial purposes only.

The combination of these terms creates six main licences: CC Attribution, CC

Attribution Share Alike, CC Attribution No Derivatives, CC Attribution Non-commercial, CC Attribution Non-commercial Share Alike, and CC Attribution Non-commercial No Derivatives. A2K activists would like to see more governments introducing policies to promote the use of Creative Commons licensing, particularly for materials produced by the public administration (in jurisdictions where copyright subsists in such materials at all). There are also concerns to be addressed about the intersection between Creative Commons licensing and collective management of copyright. Another such issue is that some copyright collectives (for example in Australia and Germany) actually collect money for the use of free, Creative Commons-licensed content (such as Wikipedia articles). Different activists have different approaches to this anomaly: Wikipedia would prefer that the levy across *all* licensed works be reduced based on the proportion of them that are Creative Commons licensed, whereas others have advocated the exclusion of Creative Commons works from the collective's licensing scheme.

An important turning point for Wikipedia occurred in June 2009 with its transition to a dual-licensing model. This was facilitated by the agreement of the Free Software Foundation to include a clause tailored for this purpose in version 1.3 of the GNU Free Documentation Licence, under which Wikipedia was originally licensed. As a result all content previously written for Wikipedia, and all future articles, will also be licensed under the more flexible Creative Commons Attribution Share Alike licence. This enables contents to be more easily shared between Wikipedia and other similarly Creative Commons-licensed publications.

Open Educational Resources. Open educational resources (OER) are learning materials that are freely available for use, remixing and redistribution. Thus, OER is a specific application of Creative Commons (and similar) licensing. The term "open educational resources" was first adopted at UNESCO's 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries funded by the William and Flora Hewlett Foundation.

Open educational resources include:

- learning content: full courses, course materials, content modules, learning objects, collections, and journals,
- tools: software to support the creation, delivery, use and improvement of open learning content including searching and organisation of content, content and learning management systems, content development tools, and online learning communities,
- implementation resources: Intellectual property licenses to promote open publishing of materials, design-principles, and localisation of content.

Open access publishing. "Open access" is sometimes used to denote that materials are free to access online, but not to modify. This is typically a requirement of academic publishing, in which it is usual to keep an article's content static and to associate it with a fixed author. It may thus be distinguished from "open content," which refers to materials that are free to access, copy and modify, under something like a CC Attribution Share Alike licence.

Some publications described as "open access" might not in fact be truly openly licensed, in that it may not be permitted to further redistribute unmodified copies of

the works, which is a minimum requirement of even the most restrictive Creative Commons licence. It is preferable to describe such content as "free access" rather than "open access", indicating merely that the content may be accessed without charge or password restrictions (Access to Knowledge: A Guide for Everyone, 2010).

The increasing popularity of open access publication of journal articles has accompanied the confluence of two factors. First, the cost of subscription journals has been increasing exponentially, by around three times the rate of inflation since 2000: a 2010 survey found the average price range for a year's subscription ranging from $1,094 to $3,792, depending on the discipline.

Second, this does not reflect the underlying costs, which are low. Authors do not get paid for writing journal articles - most are publicly-funded scholars. Neither do referees typically get paid for reviewing articles for publication. Moreover, articles can be distributed online for virtually no cost.

Hence there has been a growing movement placing pressure on journal publishers to allow, at minimum, for authors to self-archive their own articles on their own Websites or on institutional or communal archives. Some research funding bodies now mandate that the research they fund be published in such archives. Beyond this, a range of new journals have emerged that publish all their content on an open access basis. The costs of running such journals are in some cases bourne by the hosting institution, and in other cases subsidised by authors.

In developing countries. Improving access to subscription-only journals is now possible through, for example, the WHO's Health InterNetwork Access to Research Initiative (HINARI), which works with major publishers to enable developing countries to access biomedical and health literature. More than 6,400 journals are available free to health institutions, workers and researchers in 108 countries.

Similarly, the Access to Global Online Research in Agriculture (AGORA) programme, set up by the UN Food and Agriculture Organisation, has enlisted major publishers to provide 107 developing countries with access to more than 1,200 journals in food, agriculture, environmental science and related social sciences.

There are also many open access journals, including those in the Public Library of Science (PLoS), as well as others listed in the Directory of Open Access Journals (DOAJ), a project set up by Lund University libraries in Sweden. African institutions can contribute electronic journals to these sites to promote and disseminate their research.

Open course materials. Similar factors have driven the development of open course materials. Consumers International conducted research in 2006 that revealed that an $81 textbook costs the equivalent of $913 to an Indonesian student (based on GDP per capita adjusted for Purchasing Power Parity). This results in a high prevalence of unauthorised photocopying of course materials, to which the OER movement offers an alternative.

One notable project for the development of open course materials is the Open Course Ware project, which was inaugurated by MIT but has since extended to other institutions. The Wikimedia Foundation offers its own Wikiversity and Wikibooks, and there are even now fee-free (but unaccredited) universities that make use of OER for tuition: University of the People[36] and Peer 2 Peer University.

The Free Technology Academy is one attempt to bridge the gap between such unaccredited learning institutions using OER, and officially accredited university courses. It is a consortium formed by the Open University of Catalonia (Spain), the Open University of the Netherlands and University of Agder (Norway) and led by the Free Knowledge Institute (FKI). In January 2010 it began placing its educational materials online, and providing low-cost tuition based on these resources, which could be used for credit in a full university course: The use of Free Software (also referred to as Open Source Software or Libre Software) is rapidly expanding in governmental and private organisations. However, still only a limited number of ICT professionals, teachers and decision makers have sufficient knowledge and expertise in these new fields. The Free Technology Academy aims to address this gap by providing high level courses that fit into larger Master Programmes at the participating universities.

Collective licensing. An intellectual property owner who holds the exclusive right to control copying and related uses of work can either exercise those rights personally, or licence them to others through contracts. In many cases, it is impractical for rights holders to conclude individual contacts with users of their works, either because there are too many users (as in the case of a karaoke venue in which hundreds of patrons publicly perform songs), or too many works to be licensed from too many rights holders (as in the case of a radio station that might play thousands of different tracks per week). In these cases, various forms of collective licensing are used. This section will examine some of the most important cases.

*Orphaned work*s. Orphan works are those that are still protected by copyright, but for which the copyright ownership cannot be ascertained, perhaps because the work was published anonymously, or the author died without heir, or they simply cannot be found. Under copyright law, such works continue to be protected for a minimum of 50 years after the author's death (longer, in many countries), which means that there is no way in which they can be legally used. This locks away much historically significant newsreel footage, photographs, sound recordings and documents that could be of immense cultural and educational value.

Very often, orphan works become obscure no matter how valuable the material contained in them may be. No future creators are willing to use the orphan work for fear that they will have to pay a huge amount of money in damages if the owner emerges.

An understanding of the magnitude of the orphan works problem can by gained by reviewing the following studies and comments:

- a National Public Radio story on how music becomes inaccessible because companies will not reissue recordings,
- the Center for Public Domain at Duke Law School's study on orphan films,
- Library Copyright Alliance's comment in response to the Copyright Office's Notice of Inquiry on orphan works,
- College Arts Association's comment in response to that same Notice of Inquiry.

The solution to this problem is not straightforward, because one must balance the public value in the availability of these orphan works, against the fact that there

will inevitably be cases in which works are treated as orphaned, al (hough the copyright owner is still around and could have licensed the use of their work. The complexity of this issue has resulted in a plethora of different approaches to orphan works, ranging from simply treating them as if they were in the public domain (as in Brazil), to the establishment of a central registry from which those works can be licensed, and which disgorges the licence fees if the rights holder should later step forward (as in Canada).

Since 2005, efforts have been underway to solve the orphan works problem in the United States. Public Knowledge and many other organisations have proposed that the law should allow use of an orphan work if the user searched for the copyright owner in good faith and with reasonable diligence but failed to find the owner to ask permission. The copyright office recommends a similar solution, differing only in how the remedies would be limited. Groups of copyright holders, mainly photographers, illustrators, graphic artists, and textile designers, have opposed both specific aspects of these proposals and any attempts to permit use without consent. Legislation was introduced into the US Congress in 2008 that would have limited the remedies available to a copyright owner for copyright infringement where the defendant had undertaken a reasonable search but was nevertheless unable to locate the owner. This legislation lapsed and has not yet been re-introduced.

Meanwhile the Google Books settlement is, in a way, a privatised version of orphaned works legislation for the USA, in that it will allow out-of-print books (including, but not limited to, orphan works) to be redistributed by Google in electronic form, in exchange for licence fees to be administered by an independent Book Rights Registry.

Patent pools. Patent pools are useful in cases where there are so many patents covering a certain field of industry (a “patent thicket”) that the costs of innovating in that field becomes unaffordable. In such cases rights holders with patents covering a particular field can pool their patents together and agree on a single formula for licensing the use of those patents through a central intermediary.

Patent pools are receiving growing attention as possible tools for improving technology transfer to developing countries. They offer one big benefit: they can cut through patent thickets to provide access to critical technological innovations. But patent pools are also risky: the agreement to share technologies may run afoul of antitrust issues. And there are other pros and cons:

- patent pools allow for the transfer of intellectual property, not the transfer of technology. Know-how and trade secrets may also be required to use the intellectual property,
- patent pools have generally flourished when all companies in a sector are stymied by restrictions on access to intellectual property. This makes them willing to compromise. It is unclear whether or not pharmaceutical companies feel similar inclinations,
- patent pools have been most successful in the electronics industry, since they facilitate industry-wide standards that create larger markets. Again, this may not apply to drug companies,
- patent pools are also expensive to create and maintain.

Despite these reservations, the benefits of patent pools are strong. They create an efficient "one-stop shop" for intellectual property, eliminate stacking licenses, avert litigation, decrease research and administrative costs, and can greatly improve the speed and efficiency of technological development. Examples of successful patent pools (at least for industry) include those over the MPEG-2 and MPEG-4 video compression standards, the 3G telecommunications protocol, and the DVD medium. Examples of successful patent pools (at least for industry) include those over the MPEG-2 and MPEG-4 video compression standards, the 3G telecommunications protocol, and the DVD medium.

Most recently, civil society activists have been involved in the development of a medicines patent pool to be administered by UNITAID, which is hoped to improve access to newer anti-retroviral medicines for the developing world.[46] However, because participation in the patent pool would be voluntary there is doubt over whether pharmaceutical companies will contribute their most profitable patents to the pool.

Copyright collectives. Copyright collectives (or "collecting societies") work on a similar principle to patent pools, except that they typically allow for the licensing of an entire catalogue of copyright works for a fee that is either flat or based on a simple formula. Copyright collectives usually operate at a national level, but may have affiliates in other countries that also allow for overseas copyright works to be licensed. Copyright collectives may be privately established, or may be established by legislation. Each collective typically administers only a particular right or set of rights. For some works, this means that several collectives may be involved. For example, to licence musical works for public performance may require a user to obtain a licence from both the collective that administers the rights in the composition, and a separate collective that administers the rights in the recording.

Collective licensing of copyright can offer a middle ground in the difficult trade-off between providing incentives to authors and allowing widespread and unfettered access. Collective licensing of music, for example to radio stations and performance venues, has been commonplace in many countries for most of the 20th century. In some countries copyright in written works is also collectively administered: for example, to educational institutions in Australia, under a compulsory statutory licensing scheme.

Competition issues. Both patent pools and copyright collectives raise competition concerns, particularly if the pool or collecting society requires members to relinquish all their rights in their works for collective administration. Thus, critics such as Ariel Katz of the University of Toronto's Faculty of Law argue that "with rare exceptions, the various justifications for collective administration are too weak to justify departure from the competitive paradigm that underlies market economies." Katz suggests that "in most cases collusion and rent-seeking mainly drive the formation of copyright collectives". Katz suspects that "only rarely such rent-seeking may be justified as a matter of policy, either as a way to improve the incentives to create socially valuable works or on distributional grounds".

For A2K activists, it is a particular concern that collecting societies will typically prevent rights holders from releasing their works under a Creative

Commons licence, even if the terms of that licence preclude commercial use. However, progress is being made in this area. Agreements have been reached with collecting societies in countries such as Denmark and the Netherlands to permit members to release their works under Creative Commons licences whilst the society still collects royalties for commercial uses. This has also long been possible in the United States.

In 2010, the Australian Competition and Consumer Commission (ACCC) renewed the licence of one of the Australian copyright collectives, the Australasian Performing Right Association (APRA), on condition that it liberalise its conditions of membership to allow members to licence their works directly to the public. This opens up the opportunity for Australian performers to release their music under free licences if they so wish.

TRIPS allows countries to pass measures to prevent the abuse of intellectual property rights through competition law. For example, abuses of intellectual property rights have been litigated under articles 81 and 82 of the Treaty establishing the European Community. In one case, three British television networks, which produced a television guide containing the listings of their TV schedules, refused to allow the publisher of a competing TV guide to licence the use of those listings. This was held to be an abuse of their copyright in the listings, by reason that the aim and effect of the applicant's exclusive reproduction of its programme listings was to exclude any potential competition... in order to maintain the monopoly enjoyed... by the applicant on that market.

Factors affecting this decision were that the publication of a TV guide was only a secondary market for the television networks in question, and that there was no other source for the listings information than by licensing them from the networks. It should also be noted that in many other jurisdictions, television listings would not attract copyright protection at all.

Libraries. Libraries of all types are the starting point from which citizens can have access to information on an equal basis and in a trusted and neutral environment. Library and information services are the "people's universities". Through their vast collections, they enable access for all members of the community to global knowledge resources, ideas and opinions thus fostering a creative and innovative society. A strong library infrastructure is integral to a nation's development as evidenced by the countries which have ranked number one in the UN Human Development Index over the last ten years, ie Norway and Canada.

In developed countries, libraries accompany citizens through all stages of life, for example, "Bookstart for Babies" programmes in the local public library; "Help with Homework" clubs in the school library; as a student, logging into the university library from home for course-work material; as a professional, accessing the latest market research reports from the in-house company library on your desktop.

Libraries collect, organise and preserve our globed cultural and scientific heritage: the memory of humanity. The richness of the content is reflected in the diversity of the media: books, newspapers, journals, audiovisual material, maps, pictures, and music. The *raison d'etre* of libraries is to collect and preserve our knowledge for the purposes of making it available to current and future generations.

Bringing down the barriers in developing countries. Electronic Information for Libraries, known as eIFL.net, recognises the key role that libraries play in the exchange of ideas, knowledge and information and the development of open societies. The advent of digital technologies heralded a new era and new opportunities as traditional print journals became available electronically. Within a decade, the information landscape was transformed especially for academic and scholarly resources.

However, in poor countries or those which are undergoing the transition to a market economy, the barriers to access were formidable: litde money to pay for expensive electronic resources; poor technological infrastructure and lack of capacity; political and legal "firewalls"; few opportunities to join international experts where pertinent knowledge is shared and discussed.

eIFL.net saw an opportunity to assist libraries and their users in achieving affordable access to electronic scholarly resources. As access to Internet-based digital material can be expanded at marginal cost to the provider, the idea was to leverage the purchasing power of individually "poor" customers and to negotiate with information providers on a multi-country consortial basis with highly discounted prices and alternative business models. In this way, eIFL.net aims not only to lessen the digital divide between north and south, but also to ensure equitable access within individual countries to cover better-funded institutions, as well as smaller libraries lacking the funding for new acquisitions.

With eIFL.net library purchasing consortia now operating in 50 developing and transition countries serving thousands of libraries, access to global research and information has become a reality for millions of users. When first accessing e-resources provided through eIFL.net, Professor Hamlet Isaxanli, Rector of Khazar University in Azerbeijan exclaimed: "It's fantastic. Yesterday I had a dream, now it is a reality"[105].

eIFL.net members are saving millions of dollars each year using licences negotiated by eIFL.net. Cooperation and resource sharing between libraries is growing ensuring long-term sustainability and members are benefiting from expertise in cutting edge information and technology policies and practices.

Striking a balance. However, just as researchers and students in the elFL member countries are benefiting from access to these new resources, they have also become exposed to the international policy-making environment with regard to copyright and related trade issues. Especially over the last ten years, the global trend is towards more rights for right holders and stricter enforcement laws. Intellectual property now belongs to the global trading system. The public domain, the common cultural and intellectual heritage of humanity and a rich resource for further creativity, is being eroded.

Libraries support copyright because they recognise the need for creators to be rewarded for their work and for creative works to be protected from piracy and other

[105] Access to Knowledge: A Guide for Everyone, (2010), *Compiled and edited by* F. Noronha and J. Malcolm. Cover design by A. Carter. Production by J. Malcolm. First published 2010. Second edition 2010. 134 p.

unfair exploitation. But copyright is not just about protection for right holders. Copyright was from its early days meant to balance the need to protect creators with the user's right to access information for teaching, learning and further creative endeavours. The mechanism that makes copyright work is in fact the exceptions and limitations combined with adequate protection of copyright. So if there are no exceptions or only narrow exceptions, how can there be a balance? If there is no balance, then copyright works against libraries, learning and access to knowledge.

Users of copyright material find that they have less rights in the digital environment than in the traditional print world eg. exceptions and limitations granted to print material often do not apply to digital works; libraries are forced to sign away their rights in non-negotiable licences in order to gain access to essential resources; digital locks prevent libraries from making lawful use of a work.

Ibis places restrictions on the services provided by libraries and prevents innovative new services from being developed eg. distance education services to people living in rural or remote areas, ironically those standing to benefit most from the new technologies. The Millennium Development Goals are one of the great challenges facing the international community. On reaching these Goals, Kofi Annan says: We cannot win overnight... It takes time to train the teachers, nurses and engineers; to build the roads, schools and hospitals; to grow the small and large businesses able to create the jobs and income needed.

Student teachers, nurses and engineers in poor countries often rely entirely on the university library to provide learning and research material for their courses. Developing countries must ensure that learning content is made available to the widest possible base as part of their focus in achieving the Millennium Development Goals.

Public lending rights. Another issue of particular concern to libraries, but otherwise little- known even amongst copyright activists and practitioners, is that of public lending rights (PLR). These are a right of compensation granted to authors for the "potential" loss of sales from their works, which are available on loan in public libraries, the majority of which are fiction works. In other words, a PLR is a "subsidy" paid out of public funds to authors whose books are lent from public libraries.[55] Calculation of the PLR levy is either made on the basis of how often an author's works are lent out, or payment per copy of an author's work held in libraries, whether or not it is borrowed, ie. on library holdings.

About 41 developed countries to date have recognised a Public Lending Right in their legislation, either through their copyright legislation or through library-related legislation. The UK has a separate Public Lending Right Act.

The US does not have a lending right, which shows that it is not necessary for a thriving creative culture. Since public libraries are funded by the public through their taxes, they are mandated to provide access to their collections to the public and to provide loan facilities to facilitate access to knowledge.

As the I FLA Committee on Copyright and Other Legal Matters (CLM) states in its Background Paper on Public Lending Right, the oft held assumption that primary sales of authors' works maybe lost through library use is mistaken. There is no empirical evidence to show any link between the use of works in public library

collections and possible loss by authors.

Not only are libraries themselves major purchasers of authors' works, but library users often encounter an authors' works for the first time in a public library, which can lead to further primary sales, or referrals to others to purchase the works. In fact, libraries and authors enjoy a positive symbiotic relationship. Authors receive free marketing from libraries, particularly in developing countries, in a number of ways, eg. through new acquisition lists, new books stands, current awareness services, children's reading hours, adult book clubs, readings by authors or poets, book or author of the month promotions, exhibitions, selected reading lists, circulation of promotional pamphlets, etc. And, most importantly, the advertisement of authors' names and works in print and electronic library catalogues and national catalogues, eg. SABINET and Publishers' catalogues.

Libraries are also the main purchasers of important reference works in analogue and digital formats. These works are generally very expensive and their target market is libraries, not the public. Apart from basic dictionaries, maps and encyclopedia-type works, few, if any reference works would be purchased or even used, if it were not for them being housed in libraries. Authors are not likely to suffer loss of sales of these works from public lending. In fact, libraries provide a "captive audience" for these works, as they are generally only for "in-library use" and not for loan.

Open standards. An open standard is a standard that is publicly available and has various rights to use associated with it, and may also have various properties of how it was designed (eg. open process).

The terms "open" and "standard" have a wide range of meanings associated with their usage. The term "open" is usually restricted to royalty- free technologies while the term "standard" is sometimes restricted to technologies approved by formalised committees that are open to participation by all interested parties and operate on a consensus basis.

The definitions of the term "open standard" used by academics, the European Union and some of its member governments or parliaments such as Denmark, France, and Spain preclude open standards requiring fees for use, as do the New Zealand and the Venezuelan governments. On the standard organisation side, the W3C ensures that its specifications can be implemented on a Royalty-Free (RF) basis.

Many definitions of the term "standard" permit patent holders to impose "reasonable and non-discriminatory" (RAND) royalty fees and other licensing terms on implementers or users of the standard. The term "open standard" is sometimes coupled with "open source" with the idea that a standard is not truly open if it does not have a complete free/open source reference implementation available.

Open standards which specify formats are sometimes referred to as open formats. Many specifications that are sometimes referred to as standards are proprietary and only available under restrictive contract terms (if they can be obtained at all) from the organisation that owns the copyright on the specification. As such these specifications are not considered to be fully "open".

Open standards, particularly in relation to information and communication technologies (ICTs), also impact upon access to knowledge. This is because they

foster the development of a competitive, interoperable ICT ecosystem, that is inclusive of non-proprietary technologies such as the Worldwide Web and free and open source software.

In contrast, proprietary standards can result in "lock-in", whereby the customer of a certain ICT vendor invests so much in that implementing that vendor's solution, that the costs of later moving to a competitor or interoperating with a competitor's products become prohibitive.

The architecture of the Internet has been built around open standards. The IETF (Internet Engineering Task Force) is responsible for almost all Internet standards other than those for the Web, which it has delegated to the more specialised W3C (World Wide Web Consortium). The Internet Protocol used by all Internet-connected computers is an IETF open standard (RFC 791), as is the email protocol SMTP (RFC 821), and the HTTP protocol used for communication between Web browsers and Web servers (RFC 2616). HTML, the language of the Web, is a standard of the W3C.

One important battle ground in open standards has been that of video formats. The newest version of the HTML specification, HTML5, will require browsers to natively support Internet video. Because the W3C has a strict policy that its specifications must be free of patent claims, an opportunity arose for the open and patent-free video format, Ogg/Theora, to be incorporated into the HTML specification. However, this was blocked by proprietary software vendors such as Apple and Nokia, who instead have incorporated support for the patent-encumbered (but technically superior) standard H.264 in their browsers.

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Document freedom day. Document Freedom Day is an international day to raise awareness of open standards and free document formats. It was organised on March 31, 2010 (for the third year); the previous focus on the OpenDocument Format (ODF) is broadening to include other free formats such as Ogg Vorbis, and open standards in general. Document Freedom Day is inspiring lots of passion and creativity around the world. Volunteer groups from the Free Software scene are using this international day to draw their communities' attention to a topic that most people outside the technology world hardly ever think about, according to Karsten Gerloff, writing at Opensource.Com.

The campaign is coordinated by the Free Software Foundation Europe, but the passion and effort in cities around the world Eire IOCEQ. In Romania's capital, Bucharest, a group of activists visited a number of government buildings, each time telling the authorities that "I can't read your documents." In South Africa, the Department of Arts and Culture is holding a celebratory hour. In Buenos Aires,

Argentina, eight organisations are organising an evening of information and discussion about Open Standards. In many countries, as in Vietnam, local groups are setting up information campaigns in universities and elsewhere.

Over the past years, numerous countries have adopted policies on Open Standards. The Netherlands lead the way, by mandating that public bodies use free software and open standards from May 2008. Many others have followed, such as South Africa, Japan, Brazil and a number of European countries. Denmark is the latest nation to join the group, requiring its public bodies to start using ODF for its documents from April 2011. There are differences between all these policies, and they are being implemented with varying degrees of success. But the direction is clear: The public sector is moving to open standards. Not without a fight, though.

***Open data*.** The open data movement takes the same principle of openness to raw data, including scientific data, maps and statistical information. Examples of prominent data sets that have made freely available include the human genome as part of the human genome project, road maps through the Open StreetMap project, and various countries' census data. Science Commons is an organisation analogous to Creative Commons which advocates for open licensing of data. There is a tension in copyright law over the protection of data. The Berne Convention provides (in Article 2(8)) that facts are not subject to copyright, but this principle is gradually being eroded. For example, the TRIPS agreement expressly provides (in Article 10(2)) that copyright should be recognised in "compilations of data or other material, whether in machine readable or other form", depending on the intellectual effort that went into their selection and arrangement. There are also jurisdictions in which databases are protected by *sui generis* legislation (such as the EU databases directive 96/9/EC), and others in which copyright is stretched to cover databases through the application of a "sweat of the brow" doctrine. This doctrine has, however, been significantly limited by a 2010 Australian case which refused to recognise copyright in the data comprised in a telephone directory. A similar decision had earlier been reached in the United States.

The passage of a new treaty for the protection of databases was proposed at WIPO in 1996, but failed to gain acceptance, largely because such a right did not yet exist in some of the major WIPO member countries including the USA. Discussions at WIPO are ongoing, and a database treaty may yet emerge.

4.4. Promoting Human Rights in the Information Society

This chapter looks at the broader context of the A2K movement, beyond the intellectual property debate. Other issues that impact upon access to knowledge include communications rights (which is itself a hybrid term encompassing things like freedom of expression, censorship and privacy, which impact consumers' ability to send and receive information), access to telecommunications (including telephones, the Internet, community radio, and wireless spectrum) and telecommunications consumer protection. In this monjgraphy we will address the first two of these larger issues, before briefly looking at the higher level issue of

governance: what issues face the global consumer movement in participating in access to knowledge debates (Access to Knowledge: A Guide for Everyone, 2010)[106].

***Communications rights*.** The concept of the right to communicate began in 1969 with Jean D'Arcy and evolved in the Right to Communicate Group, the many nongovernmental and civil society organisations that made up the Platform for Cooperation on Communication and Democratisation, and the Communication Rights in the Information Society (CRIS) Campaign.

The first broad-based debate on media and communication globally, limited mainly to governments, ran for a decade from the mid-1970s. Governments of the South, by then a majority in the UN, began voicing demands in UNESCO concerning media concentration, the flow of news, and "cultural imperialism." The MacBride Report (1981) studied the problem, articulating a general "right to communicate." The debate was compromised, however, by Cold War rhetoric, and fell apart after the US and the UK pulled out of UNESCO, as described in more detail below.

The second phase of the communications rights movement took shape from the 1990s onwards, when NGOs and activists became increasingly active in a variety of communication issues, from community media, to language rights, to copyright, to Internet provision and free and open source software. These coalesced in a number of umbrella groups tackling inter-related issues horn which the pluralistic notion of communication rights began to take shape, this time from the ground up.

According to an assessment framework developed by the CRIS Campaign, the Four Pillars of Communication Rights are:

- communicating in the public sphere: the role of communication and media in exercising democratic political participation in society,
- communication knowledge: the terms and means by which knowledge generated by society is communicated, or blocked, for use by different groups,
- civil rights in communication: the exercise of civil rights relating to the processes of communication in society,
- cultural rights in communication: the communication of diverse cultures, cultural forms and identities at the individual and social levels.

A "right to communicate" and "communication rights" are closely related, but not identical, in their history and usage. The former is more associated with the intergovernmental debates that led to the MacBride report, and points to the need for a formal legal acknowledgement of such a right, as an overall framework for more effective implementation. It also makes intuitive sense as a basic human right. The latter emphasises the fact that an array of international rights underpinning communication already exists, but many are too often ignored and require active mobilisation and assertion.

The use of the term "communication rights", in the plural form, implicidy points towards existing human rights that relate to communication, and away from

[106] Access to Knowledge: A Guide for Everyone, (2010), *Compiled and edited by* F. Noronha and J. Malcolm. Cover design by A. Carter. Production by J. Malcolm. First published 2010. Second edition 2010. 134 p.

promoting a new formed right to communicate (in the singular) in international law. The emphasis subtly shifts towards realising existing communication rights on the ground. The balance of this section will examine some of the aspects of communications rights in this broadest sense.

Democratic public media. The communication rights debate has been shaped by different forces and thrusts at diverse points of time. As noted above, the MacBride Report to UNESCO articulated most comprehensively a right to communicate in 1981, but its calls for a "New World Information and Communication Order" (NWICO), involving democratisation of the media and more egalitarian access to information was condemned by countries such as the US and the UK as attempts to curb freedom of the press. In 1984, the United States withheld its contributions and withdrew from the organisation in protest, followed by the United Kingdom in 1985 and Singapore in 1986. Following a change of government in 1997, the UK rejoined. The United States rejoined in 2003, followed by Singapore on 8 October 2007.

Nonetheless, "Communication and information" is today one of five major UNESCO programmes, and its International Programme for the Development of Communication (IPDC) is an enduring outcome of the MacBride report.

A second UNESCO programme with relevance to the access to knowledge movement is its Information For Ail Project (IFAP), established in 2000, which aims to promote access to information through ICTs. The International Federation of Library Associations and Institutions (IFLA) and its member Electronic Information for Libraries (elFL) are other international institutions that promote this vision.

Privacy. Privacy (from Latin *privatus* "separated from the rest, deprived of something," and from *privo* "to deprive") is the ability of an individual or group to seclude themselves or information about themselves and thereby reveal themselves selectively. There are differences in the legal treatment of privacy in different jurisdictions, with the EU in particular having much stricter standards them the US. Likewise, there is a trade-off between privacy and security. In recent years, terrorism, piracy and child pornography have been increasingly used to justify privacy intrusions.

Online privacy as such is a much broader domain them can be adequately covered here, ranging from cloud computing, to childrens' online privacy, Facebook, the Google Books settlement, medical record privacy, national IDs, open government, search engine privacy, the smart grid, social network privacy and even whole body imaging. However, a few cases of particular relevance to the A2K debate will be discussed in turn (Access to Knowledge: A Guide for Everyone, 2010).

Online anonymity. For long, posting on the Internet could be done anonymously, or using pseudonyms that were not personally identifying. This offered users more freedom of expression, if less accountability. One example is of the collaboratively-crafted online Wikipedia encyclopedia, written mostly by authors with unidentifiable pseudonyms or IP addresses. In recent times, it has become increasingly difficult to maintain online anonymity. IP addresses can be tracked, making it possible to track from which computer or network a certain post was made - though not the actual user. Some countries have tightened their laws on Internet use,

aggravating the problem. For example, in July 2010 China revealed its plans to require Internet users to register their real names before posting online.

There are however some "anonymising services" like I2P and Tor which are designed to bypass IP tracking technologies. It is believed that their distributed technology approach might offer better security than centralised anonymising services, where a central point exists and could disclose one's identity.

Data retention. The retention of data relating to users' online activities is one area in which privacy principles collide on the one hand with the desires of law enforcement authorities, and on the other with the marketing plans of the private sector. As far as law enforcement is concerned, many countries have either legislated or introduced "voluntary" codes of practice to require ISPs to retain a variety of data recording their users' activities on the Internet. The EU data retention directive (2006/24/EC) applies to both voice and data communications. As far as Internet access is concerned, is requires ISP to retain the user ID of users, email addresses of senders and recipi ents, the date and time that users logged on and off from a service, and the IP address (whether dynamic or static) applied to their user ID.

This directive is implemented in the UK in the form of a Voluntary Code of Practice on Retention of Communications which took effect in 2009, and which requires logs of emails and Websites visited to be retained for between four days and six months. In February 2010, the FBI was reported to be seeking similar requirements of US ISPs. An equally stringent data retention regime is proposed for Australia.

Data retention is also practised by the private sector for their own purposes, which include online marketing. On this count, many of the large Internet businesses have had a poor record on privacy. For instance, Facebook raised concern by its repeated changes of its privacy policy. In March 2009 it was noted as having announced "another set of revisions" to this policy, which was seen as making it easier for Facebook to gather locational data on users and to disclose user data to third-party Websites. "It also appears that Facebook will make more use of data set to «Everyone», said the epic.org site.

Surveillance and IPR enforcement. One particularly worrying application of the practice of surveillance and data retention by ISPs is for the purpose of identifying users suspected of intellectual property infringement. It is quite simple for rights holders to obtain the IP address of those who participate in file sharing over the Internet. It is also relatively simple for the ISP who controls that IP address to provide the personal details of the customer who was using it at the time of an alleged infringement. Whilst almost all ISPs will require a subpoena or court order to release customer details, there are ways rights holders can get around this. In April 2010, the Irish High Court determined that a private "graduated response" regime that formed part of a settlement agreement between the Irish Recorded Music Association (IRMA) and its largest ISR Eircom, did not infringe its users' privacy, despite the fact that IRMA and Eircom would be dealing in users' IP addresses. The reason is that the personal details associated with a given IP address would not be disclosed to IRMA, and an IP address alone does not constitute "personal information". In the month following the judgment, Eircom commenced its policy of disconnecting users.

Another privacy concern for the A2K movement is deep packet inspection (DPI), a technology by which Internet traffic generated by a user is monitored for certain characteristics: for example, to detect whether the connection is being used for file sharing. Since November 2009, UK ISP Virgin Media has been using DPI to measure copyrighted material passing through its network, without informing its users. This led to a complaint from Privacy International to the European Commission, which remains pending.

Freedom of expression. Freedom of speech implies being able to speak without censorship or limitation. Freedom of expression goes beyond free speech and also involves the ability to seek, receive and impart information or ideas in any medium. Most countries impose certain limits upon the exercise of free expression – for instance curtailing hate-speech and the fomenting of inter-religious strife. Whilst privacy is more strongly protected in Europe than in the US, for freedom of expression the opposite is the case: the US constitutionally protects much speech that would be disallowed in parts of Europe, such as holocaust denial.

The United Nations High Commissioner for Human Rights (OHCHR) has addressed the issue of freedom of expression on the Internet by calling on all states to: refrain from imposing restrictions which are not consistent with the provisions of article 19, paragraph 3, of the International Covenant on Civil and Political Rights, including on: ... (c) Access to or use of modern telecommunications technologies, including radio, television and the Internet.

Cultural sensitivities aside, there is an obvious relationship between freedom of expression and access to knowledge. Freedom of expression protects the ability to communicate existing knowledge to new parties and enables collaboration for the development of new knowledge, fence, upholding freedom of expression is important in promoting access to knowledge. Policies that impede freedom of expression, such as censorship, arrests, book burning, or propaganda, are opposed by A2K activists as roadblocks to knowledge.

Lea Bishop Shaver argues that access to knowledge is "shaped by a variety of factors, including but not limited to: access to education, support for innovation, technological diffusion, freedom of expression, and intellectual property regulation." Shaver argues that "substantial political and scientific consensus exists" over respect for the freedom of expression and a balanced intellectual property regime.

The A2K@IGF Dynamic Coalition of the Internet Governance Forum has argued for the need of both A2K and freedom of expression in the realm of information and communication technologies. There is also a separate Dynamic Coalition on Internet Rights and Principles, formed from the merger of the former "Framework of Principles for the Internet" and "Internet Bill of Rights" dynamic coalitions. One of its current activities is to review the APC Internet Rights Charter that was last revised in 2006, which includes "Freedom of expression and association" and "Access to knowledge" respectively as its second and third main themes.

Another new institution in this arena, though less multi-stakeholder in composition given that it lacks governmental membership, is the Global Network Initiative (GNI). The GNI, which includes Microsoft, Google and Yahoo from the

private sector, alongside civil society groups such as the Electronic Frontiers Foundation (EFF) and Centre for Democracy and Technology (CDT), released a set of Principles on Freedom of Expression and Privacy in October 2008 that is intended to delineate the degree to which the private sector wiR cooperate with governments that seek its assistance in interfering with the freedom of expression or privacy of their customers (Access to Knowledge: A Guide for Everyone, 2010).

Freedom of Information. Freedom of information legislation guarantees access to data held by the state. It establishes a "right-to-know" legal process by which requests may be made for government-held information, to be received freely or at minimal cost, barring standard exceptions. Also variously referred to as open records or (especially in the United States) sunshine laws, governments are also typically bound by a duty to publish and promote openness. In many countries there are constitutional guarantees for the right of access to information, but usually these are unused if specific legislation to support them does not exist.

Over 85 countries around the world have implemented some form of such legislation. Sweden's Freedom of the Press Act of 1766 is the oldest. Other countries are working towards introducing such laws, and many regions of countries with national legislation have local laws. For example, all states of the United States have laws governing access to public documents of state and local taxing entities, in addition to that country's Freedom of Information Act which governs records management of documents in the possession of the federal government.

A related concept is open meetings legislation, which allows access to government meetings, not just to the records of them. In many countries, privacy or data protection laws may be part of the freedom of information legislation; the concepts are often closely tied together in political discourse. A basic principle behind most freedom of information legislation is that the burden of proof falls on the body asked for information, not the person asking for it. The requester does not usually have to give an explanation for their request, but if the information is not disclosed a valid reason has to be given.

One of the recommendations made at the WSIS summit in 2003 was that governments should "provide adequate access through various communication resources, notably the Internet, to public official information". The most important recent development in this area was the signature in lime 2009 of a Convention on Access to Official Documents by 12 of the 47 members of the Council of Europe, which for the first time laid down Em intergovernmentcil benchmEirk for access to official documents held by public authorities.

Civil society plays a strong role as watchdog in this area. Amongst the key organisations are the Sunlight Foundation, Transparency International (focussed on corruption), Reporters Sans Frontieres and Freedom House (focussed on freedom of the press).

In the developing world. As an example from the developing world, the Right to Information Act is a law enacted by the Parliament of India allowing citizens of India to access to records of the Central Government and State Governments. Under the provisions of the Act, a citizen may request information from a "public authority" (a body of Government or "instrumentality of State") which is required to reply

expeditiously or within 30 days. The Act also requires every public authority to computerise their records for wide dissemination and to proactively publish certain categories of information so that the citizens need minimum recourse to request for information formally.

This law was passed by Parliament on 15 June 2005 and came fully into force on 13 October 2005. Information disclosure in India was hitherto restricted by the Official Secrets Act 1923 and various other special laws, which the new RTI Act now relaxes. That law secured information related to security of the State, sovereignty of the country and friendly relations with foreign states, and contained provisions which prohibited disclosure of non-classified information.

There are however other countries throughout the developing world, such as Malaysia, that still lack a Right to Information Act and in which a colonial era Official Secrets Act remains in force.

Network neutrality. Network neutrality (also net neutrality, Internet neutrality) is a principle proposed for user access networks participating in the Internet that advocates no restrictions by Internet Service Providers or governments on content, sites, or platforms, on the kinds of equipment that may be attached, and on the modes of communication allowed.

The principle states that if a given user pays for a certain level of Internet access, and another user pays for the same level of access, that the two users should be able to connect to each other at the subscribed level of access. Though the term did not enter popular use until several years later, since the early 2000s advocates of net neutrality and associated rules have raised concerns about the ability of broadband providers to use their last mile infrastructure to block Internet applications and content (eg. websites, services, protocols), particularly those of competitors. In the US particularly, but elsewhere as well, the possibility of regulations designed to mandate the neutrality of the Internet has been subject to fierce debate. Neutrality proponents claim that telecom companies seek to impose a tiered service model in order to control the pipeline and thereby remove competition, create artificial scarcity, and oblige subscribers to buy their otherwise uncompetitive services. Many believe net neutrality to be primarily important as a preservation of current freedoms. Vinton Cerf, considered a "father of the Internet" and co-inventor of the Internet Protocol, Tim Berners-Lee, creator of the Web, and many others have spoken out in favour of network neutrality.

Opponents of net neutrality characterise its regulations as "a solution in search of a problem," arguing that broadband service providers have no plans to block content or degrade network performance. In spite of this claim, certain Internet service providers have intentionally slowed peer-to-peer (P2P) communications. Still other companies have acted in contrast to these assertions of hands-off behavior and have begun to use deep packet inspection to discriminate against P2P FTP and online games, instituting a cell-phone style billing system of overages, free-to-telecom "value added" services, and bundling.

Critics of net neutrality also argue that data discrimination of some kinds, particularly to guarantee quality of service, is not problematic, but is actually highly desirable. Bob Kahn has called the term net neutrality a "slogan" and states that he

opposes establishing it, however he admits that he is against the fragmentation of the net whenever this becomes excluding to other participants.

US FCC on "Open Internet". The Federal Communications Commission (FCC) has proposed stricter rules to, "ensure that Internet providers don't block or slow traffic over their networks." The FCC also launched a website it says is specifically designed to encourage thoughts and ideas on an open internet. OpenInternet.gov "will continue to adapt to best facilitate input and participation in the commission proceedings as this discussion evolves," says the site.

In 2007, the Associated Press reported that network provider Comcast was actively interfering with attempts by some of its high-speed Internet subscribers to share files online. "Comcast's interference affects all types of content, meaning that, for instance, an independent movie producer who wanted to distribute his work using BitTorrent and his Comcast connection could find that difficult or impossible." The AP found that Comcast's conduct had a "drastic effect... on one type of traffic - in some cases blocking it rather than slowing it down." Over twenty thousand Americans similarly complained of "Comcast's blatant and deceptive blocking of peer-to-peer communications" and requested the FCC to "take immediate action to put Em abrupt end to this harmful practice." The FCC investigated Eind ruled agciinst Comcast, asking it to disclose to subscribers in the future how it plans to manage traffic. Comcast had said that its measures to slow BitTorrent transfers, which it voluntarily ended in March, were necessary to prevent its network from being overrun (Access to Knowledge: A Guide for Everyone, 2010).

In an April 2010 order, the US Court of Appeals for the District of Columbia Circuit vacated the FCC's earlier ruling against Comcast, on the basis that the FCC lacked the authority to enforce net neutrality rules. The FCC has since sought the extension of its regulatory authority to enforce net neutrality principles against US ISPs.

Access to ICTs. Ideally, access to information and communication technologies allows users to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technologies. ICT tools can be used to find, explore, analyse, exchange and present information responsibly and without discrimination. ICTs can be employed to give users quick access to ideas and experiences from a wide range of people, communities and cultures.

In practice however, the digital divide makes this a dream for many. The term "digital divide'' refers to the gap between people with effective access to ICTs and those with very limited or no access at all. It includes the imbalances in physical access to technology as well as the imbalances in resources and skills needed to effectively participate as a digital citizen.

The term is closely related to the knowledge divide as the lack of technology causes lack of useful information and knowledge – hence the profound relevance of access to ICTs to the A2K movement. The term "global digital divide" refers to differences in technology access between countries or regions of the world.

The global digital divide between the developed and the developing world is an aspect of a much broader social problem of economic inequality. The United Nations'

Millennium Development Goals (MDG) are an umbrella programme for addressing such issues at the broadest level, including the need for investment in Internet infrastructure and services in regions suffering from the digital divide.

Access to the Internet. Access to ICT services including the Internet depends on a number of factors, including infrastructure, which are constrained in most developing countries. David Souter, a specialist in ICTs for development, notes that global institutions continue to focus on policy and regulatory change, rather than direct investment, in addressing communications infrastructure deficits. Private sector investment remains high and is expected to continue to grow, with mobile communications businesses seeming increasingly likely to lead the provision of broadband access in low income countries, as they previously led the provision of telephony.

The International Telecommunications Union maintains a regularly updated index of access to the Internet around the world. Its 2009 statistics show that over 90% of the population of the Scandanavian countries of Sweden, Norway and Iceland were Internet users, as against close to 0% in developing countries such as Bangladesh, Timor-Leste, Myanmar and Sierra Leone. For broadband Internet, the highest percentage of users was in Liechtenstein at 75%, with a great many more countries closer to 0%. Having said this, the statistics show that the gap in access between developed and developing countries is narrowing over time.

In Africa. Most educational institutions have little or no access to the Internet and networks, and bandwidth is limited. Expanding networking would encourage institutions and local journal publishers to build websites and provide content online, so helping users to access research materials – particularly if they were made available free of charge.

To this end, the arrival of fibre-optic cables in African countries is very timely. In July last year, the first of four undersea fibre-optic cables went live, connecting Africans along the east coast to high speed broadband Internet. The lines touch ground in Kenya, Tanzania, Mozambique and South Africa.

Developing strong ICT policies is not just about improving Internet coverage - it also includes supporting institutions to manage intranets, repositories and networking projects. For example, the Kenya Education Network Trust (KENET) promotes the use of ICT in teaching, learning and research in higher education institutions.

KENET aims to connect all of Kenya's universities, colleges and research institutions through a private network that also has high-speed Internet access. It enables electronic communication among students and faculty in member institutions and sharing of learning and teaching resources by collaborating on the development of educational content.

African researchers can also make use of external networks, particularly those of non-governmental organisations that are committed to disseminating information. The UN University, for example, offers free support, guidance and course materials to universities in the developing world that want to share courses and develop their own open access Websites.

Low cost computing. Since computers have become an increasingly

indispensable tool for accessing and spreading information, the cost of computing is a crucial issue which decides how effectively we can gain access to information and knowledge. As the cost of hardware declines, the type of software used - whether proprietary or free – is an important concern. ("Free" refers to "freedom" and not necessarily "zero-price", though "free" software can also be copied freely.) Says the Appropedia: "By using Linux, we encourage and tap into a community of users and open-source programmers who are likely to support our efforts. Windows also is more resource-hungry, less reliable and stable than Linux".

Attempts have been made to lower the price of hardware too. There are several projects to develop and sell a low cost computer for the developing world. Some have been more successful than others. Many have failed to live up to their promised potential.

Some such projects include the XO-1 (formerly known as the $100 Laptop or Children's Machine), and being developed by the One Laptop per Child (OLPC) association; the Simputer attempt from India (of sharable computing); Classmate PCWbeing developed by Intel; Eee PCW cheap Laptop being developed by ASUS; Jhai Foundation's work in Laos; the Nigerian project to build a very sturdy and dust-resistant though costly (US$1100) computer; the simplified Inveneo computer (a computer for rural areas) designed in San Francisco by Inveneo (costs from about US$300 to US$470, is small, runs from a 12VDC battery, and uses a fraction of the power of a regular computer); along with numerous projects not focused on the developing world, that could be easily ported.

Other attempts have been made by deploying second-hand computers, working on Computerbanks, and the like. For some years computers have been sufficiently powerful to be used by more than one user (even using a graphical interface). What is needed to tap this capability is to equip computers with one or more graphic cards supporting more than one monitor, and severed USB keyboards and mice.

Governance. The final class of issues to be briefly described under the heading of promoting human rights in the information society arc issues of governance. This is an overarching concern for the global consumer movement that relates to the ability of civil society to participate in the development of global public policy for the information society.

A number of governance institutions have opened up allow civil society participation in some form, but barriers of cost and capacity still impede consumer representatives from fully participating in these institutions. It is particularly difficult to ensure that the views of consumers in the global South are adequately represented in policy development processes at a global and regional level.

Participation. Amongst the global institutions whose decisions bear on access to knowledge are:

- specialised IP agencies such as WIPO and the TRIPS Council of the WTO,
- other UN agencies such as the United Nations Economic and Social Council (ECOSOC),
- narrower plurilateral treaty organisations such as the ACTA committee,
- regional groups such as the EU, the Organisation for Economic Cooperation and Development (OECD), Transadantic Economic Council,

Asia-Pacific Economic Cooperation (APEC), South Asian Association for Regional Cooperation (SAARC), Mercusor, and Association of South East Asian Nations (ASEAN),

- standards bodies such as the IETF, W3C, ITU and International Standards Organisation (ISO).
- bodies involved in critical Internet resource distribution such as the Internet Corporation for Assigned Names and Numbers (ICANN) and regional Internet registries,
- multi-stakeholder discussion fora such as the Internet Governance Forum.

The level of participation that civil society is afforded in such institutions varies widely, from none at all (as in negotiations over ACTA), to an active observer role (as in WIPO standing committees), to formal advisory groups (as in OECD advisory committees), to equality with governments (as at the Internet Governance Forum).

Obviously, civil society wishes to have the maximum possible level of input into decision making on A2K issues. But this is complicated by the lack of standards for civil society participation in international fora dealing with these issues. The closest that exists to such a standard comes from the World Summit on the Information Society, which acknowledged that "international management of the Internet should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society and international organisations".

Following from this, the Summit made two recommendations: firstly by calling for the establishment of "a process of enhanced cooperation" by which governments are to lead the development of globally applicable public policy principles for the Internet, and secondly (but as a part of that broader process) by establishing an Internet Governance Forum (IGF) as a new forum for multi-stakeholder policy dialogue in which governments can take an equal role and responsibility for Internet governance and policy making in consultation with all other stakeholders.

In this respect, the IGF marks a significant progression, in that it is open to all stakeholders, including (uniquely for a UN body) unaffiliated individuals, with the object of allowing civil society an equal opportunity to participate in policy discussion with all other groups in an unsegregated forum. To date however, this ethic of multi-stakeholderism has not permeated very well through to other institutions of global governance that deal with A2K issues.

Transparency. Transparency is a means of holding public officials accountable and fighting corruption. When government meetings are open to the press and the public, when budgets and financial statements may be reviewed by anyone, when laws, rules and decisions arc open to discussion, they arc seen as transparent and there is less opportunity for the authorities to abuse the system in their own interest. As in the case of opportunities for participation, the level of transparency that exists in A2K policy making varies widely between institutions. The lack of transparency in the ACTA negotiations has already been observed. In comparison, at WIPO, civil society organisations have relatively easy access to plenary negotiations (though not to private bloc negotiations), and negotiation texts are distributed and published on the Internet.

Some organisations and networks, for example, the GNU/Linux community and Indymedia, insist that not only the ordinary information of interest to the community is made freely available, but that all (or nearly all) meta-levels of organising and decision-making are themselves also published. This is known as radical transparency. Part of A2K activism involves advocating for greater transparency in policy processes, as necessary to maintain a public sphere in which civil society can have effective input and oversight of those processes. One of the tools that activists use in this endeavour is the mass media. When that fails, they often have recourse to peer-to-peer communications channels such as the "blogosphere," Twitter, and Web sites such as Wikileaks.

Policy laundering. An antithesis to transparency is the practice of policy laundering, commonly used as a tactic by IP maximalist lobbyists. The term policy laundering is used to describe means to disguise the origin of political decisions, laws or international treaties. The term is based on the similar money laundering. One common method for policy laundering is the use of international treaties which are formulated in secrecy. Afterwards it is not possible to find out who supported which part of the treaty. Each party can claim that it was not them who demanded a certain paragraph but that they had to agree to the overall "compromise". ACTA is the archetypal example of policy laundering in action.

A civil society coalition dedicated to exposing this tactic is the Policy Laundering Project, which focuses on issues such as communications surveillance; travel surveillance; identity documents; terrorist watch lists; migration and border controls; security cooperation and financial surveillance.

Chapter 5. Human Resources Management: Managing Knowledge People

5.1. Social Capital: The Driver for Corporate Success in the Knowledge Era

Social Capital as a concept has its roots in the field of sociology, being largely applied to describe organisational effects developed through socially derived connections in the broader communities, societies and cultures (Baker, 2001)[107]. Traditionally, the context of social capital for private sector firms is seen as their contributions (usually financial) to the communities within which they operate. While often seen as corporate philanthropy, claims have been made that such good corporate citizenship can contribute to improved business performance (Allee, 2000).

The traditional view of Social Capital, as described above, is "industrial era" thinking. Many commentators have argued that we are currently transitioning from the industrial era to a knowledge era (Drucker, 1993; Savage, 1996), where the traditional factors of production of land, labour and capital are being replaced by the creation of value through knowledge. In the knowledge era the boundaries between firms, governments and society at large will become increasingly blurred. In the knowledge era, firms will become embedded within a complex web of interconnections that span markets, governments and communities, rather than simply managing an interface between a private and public sector. In this world the concept of Social Capital can take on a whole new dimension for the "firm".

This monography explores the concepts of Social Capital, as it applies to the corporate sector. The notion of how world markets are migrating from being industrially based to knowledge based is discussed. A relationship is drawn between the concept of Social Capital and the concepts of "Intangibles" and their impact on company valuations. An argument is then put forward for the use of Social Capital as a unifying theme for developing a suite of management heuristics for intangibles. Finally some case study examples of how Social Capital could be measured at the individual, group and marketplace levels, are provided. These examples further illustrate how markets and firms are moving from an industrial modus operandi to a networked model, further supporting the argument for the use of Social Capital as a unifying concept for managing in the Knowledge Era.

What Is Social Capital. Definitions for Social Capital are many and varied as the concept broadens from its traditional sociological base to more fully embrace corporate sector activities. There are however a set of common themes that can be drawn from definitions offered by noted authors in the field (Baker, 2001; Putman, 1995; Cohen and Prusak, 2001; World Bank, 2003):

– strong levels of network/contacts,
– high levels of trust and shared understanding,
– high levels of co-operative action,
– operates at individual, group and marketplace level.

Continuing the theme of "corporatising" Social Capital one could look at the

[107] W. Baker, (2001), *Social Capital*. The AVENTIS Magazine, February 2001 (see www.corp.aventis.com/fiiture/futO 102/social_capital/printversion.htm).

traditional societal context for Social Capital through a Corporate lens. The following table provides a corporate interpretation of a traditional context provided by the Australian Bureau of Statistics[108].

Table 5.1.1. Traditional versus Corporate Context for Social Capital

№	Traditional Societal Context	Potential Corporate Context
1.	Social Networks and Support Structures	Communities of Practice, Industry bodies
2.	Empowerment and Community Participation	"Bottom up" initiatives; Industrial body initiatives.
3.	Civic and Political Involvement	Trust in Management. Trust in Community leadership
4.	Trust in People and Social Institutions	Cross functional teams, cross industry initiatives
5.	Tolerance of Diversity	Investment in local communities, environment etc.
6.	Altruism and Philanthropy	

Source: compiled by the author on the basis of materials (ABS, 2019) and (Baker, 2001).

One can see that a corporate context can be easily aligned with the tradition context for Social Capital. One could add that the corporate context for Social Capital when presented this way looks like a list of modem management "best practices", strengthening the argument for Social Capital as a leading focus for corporate success. The literature to date has been very much focussed on expanding the concept of intangibles into ever increasing sub-components. Very little research has addressed the need to now reduce this suite to the smaller set of heuristics that mangers will need, to manage intangibles on a day-to-day basis.

The following conceptual framework is offered to provide a basis for thinking about the impact of intangibles on market valuations.

Performance drivers can largely be divided into the traditional physical assets a firm has available to it and the intangible assets it can apply or leverage. Both asset forms contribute to the eventual financial performance of the firm. The historical financial performance of the firm will make a contribution to the firm's market valuation. The second input to a firm's market valuation is the market's perception of what might happen in the future i.e. the firm's potential performance. This perception is driven by intangibles, which have been variously described as Social Capital, Human Capital, Structural Capital, Innovation Capital etc. There is anecdotal evidence that intangibles are becoming the dominant factor in market valuations. Being able to clearly describe and articulate which intangible factors have most impact on market valuations is a key aspect of intangibles research to date.

In assisting managers to manage the non-fmancial aspects of their businesses, various intangible asset scorecards have been developed. Perhaps the best known are the Balanced Scorecard (Kaplan and Norton, 1996), and the Intangible Asset Monitor (Sveiby, 1997). Both scorecard methods attempt to decompose non-financial factors

108 ABS: Australian Bureau of Statistics, (2019), *Measuring Social Capital: Current Collections and Future Directions*', www.abs.gov.au

into component parts and then provide a suite of measures for on-going monitoring. For retrospective analysis of performance these tools provide a valuable analytical aid. However, to make the management of intangibles a pragmatic reality, a simpler conceptual theme, or set of heuristics is required to guide today's executives. In the financial world, heuristics like "cash is king", "sweating your (physical) assets", "look after your pennies and the pounds will look after themselves", need some equivalents in the intangible world. The following table provides a list of key intangible elements and the perceptions that they invoke.

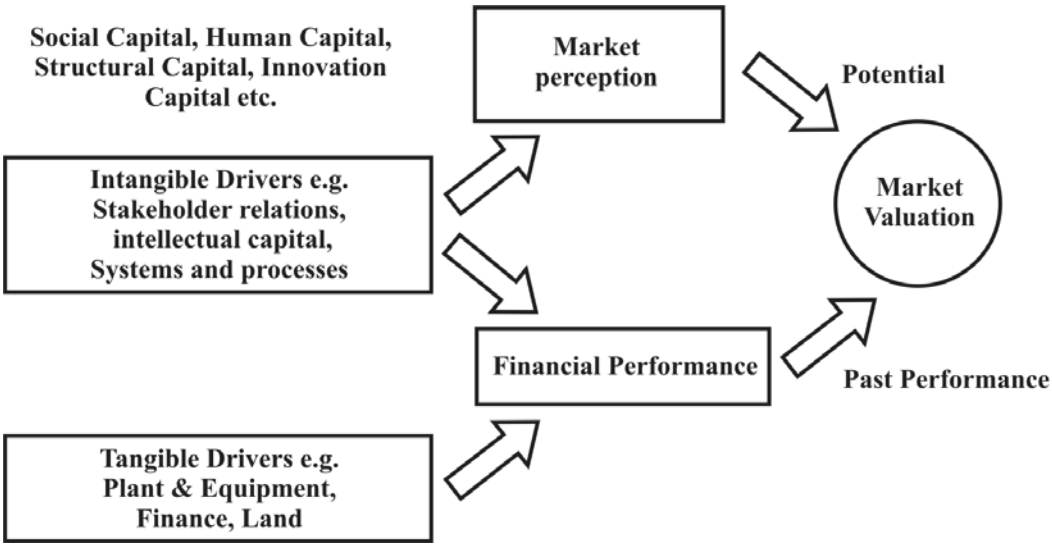

Fig. 5.1.1. Conceptual Framework

Source: compiled by the author on the basis of materials (ABS, 2019).

Table 5.1.2. Intangible Elements and the Perceptions They Invoke

№	Intangible Element	Perception
1.	Human Capital	Competency
2.	Intellectual Capital	Patents
3.	Internal Capital	Systems and Processes
4.	External Capital	Brand
5.	Social Capital	Trustful Relationships

Source: compiled by the author on the basis of materials (ABS, 2019).

Looking at each factor individually, an argument could be made to select any of them as the leading indicator for intangibles performance. For example, one could argue that if a firm has high human capital i.e. highly skilled and experienced staff, then they will build intellectual capital, design and operate great internal processes and work effectively with suppliers, partners and customers. A counter argument might be that just because you have highly skilled people, it doesn't necessarily follow that they are great collaborators or that they have the natural ability to put their knowledge to work to create new intellectual capital. Each factor will have its pros

and cons as a leading indicator. The argument for selecting Social Capital as the leading indicator is based on the author's perception that it has more pros and less cons than the other major themes. In supporting this argument one could argue that to be recognized as having excellent social capital one would need to:

- be successful in searching for competent people to co-operate with, both internally and externally (human capital),
- select collaborators on the basis of the intellectual capital that can be exchanged,
- have built a reputation for excellent internal processes (internal capital) and seek out those with similarly strong internal process to collaborate with,
- achieved a good brand and market reputation to attract the right sort of collaborations (external capital).

There are detracting views on promoting Social Capital as a leading theme. Typically these criticisms relate to highly cohesive groups becoming blind to diverse opinions, and therefore limiting the potential for new innovations i.e. innovation capital (Florida et al, 2002; Cohen and Prusak, 2001; Locke, 1999)[109]. These are fair comments when related to groups within firms or even communities in the general public. However, if we look back at the common definition for Social Capital it also defines that it must operate at the *individual and group levels*. One could argue that for innovation to succeed, the "innovators" would need excellent Social Capital skills at both the individual, then group levels to be able to shepherd a new invention through to a successful innovation. As such, a highly cohesive group that appears to be not open to engaging in diverse conversations and promoting innovation could be seen, by definition, as having a lower level of social capital. Of course the degree of cohesiveness of a particular network can be entirely contextual. A study of structural and relational embeddedness in the Steel and Semiconductor industries (Rowley, Behrens and Krackhardt, 2000)[110] illustrates that for highly dynamic industries, where continuous and radical innovations arc the norm, the structure of the networks will be more exploratory, reaching out to more diverse groups and having far less redundant links than say a Steel industry network. In the Steel industry the networks are more closed with many redundant links as companies concentrate on perfecting common practices i.e. exploiting rather than exploring innovations. The networks for the Semi-conductor and Steel industries will structurally be quite different, but one could argue that excellent companies in either industiy are exhibiting high levels of Social Capital.

An additional counter argument could be made relating to the observations that in today's market place, successful Firms need to be more collaborative than their industrially focused predecessors. It is rare that one would see a firm recognized for its innovation, not also recognized for its Social Capital in the market place e.g.

[109] R. Florida, R.Cushing and G.Gates, (2002), *When social capital stifles innovation*, Harvard Business Review, August.

[110] T. Rowley, D. Behrens and D.Krackhardt, (2000), *Redundant Governance Structures: An Analysis of Structural and Relational Embeddedness in the Steel and Semiconductor Industries*. Strategic Management Journal 21:369-386.

Xerox, HP, 3M, etc. While the above arguments could be seen as purely manipulating definitions, it is perhaps the trends to a more networked and collaborative market place and the fluidity of knowledge flows compared to physical flows which provide the strongest arguments for leading with Social Capital.

New Methods for Measuring Social Capital. While there has been many attempts at measuring Social Capital in a social science context, i.e. Social capital within communities, developing countries etc. (ABS, 2000; Spellerberg, 2001; World Bank, 2003), very few attempts have been related to the corporate world. One technique that has had its genesis in social science but is rapidly finding use in the corporate world is Social Network Analysis (SNA). Typically SNA involves surveying individuals on who they collaborate and share information and knowledge with. This data can then be used to generate a sociogram showing who is connected to whom. SNA statistical methods can be used to analyse the characteristics of the network, quickly identifying its weak and strong points. Several indices can then be developed to provide a proxy measure of the social capital that exists within the network[111].

One can see from the sociogram who is connected to whom. It also clearly shows those who play important brokering roles in the network. At the group level one can see for example how well networked the London office is with the Melbourne office. An individual's Social Capital could be measured by the number of nominations they receive (called input degrees). The Social Capital of the overall network could be measured by a network density measure like the ratio of nodes to links.

If we move up to the market place level, we can start to look at Social Capital from the perspective of alliance activities (Koka and Prescott, 2002). Laurent (Laurent, 2002) has developed a sociogram of the major computer services companies using data "mined" from company web sites and the Internet. IBM and HP, being the dominant suppliers of computer hardware and services, occupy a central position in the network. One can see how SNA measures could be used to identify key players in the market place. These techniques could provide an insight into the characteristics of a particular market place. If the network representation of a market place is seen to be highly connected, with many redundant links, one could assume that it might be difficult for a new player to break into the market. Conversely, if network representation of the marketplace appears more open and exploratory in nature, there will be opportunities for new entrants to become part of, and perhaps influence the network / market.

Electronic usage based proxy measures for Social Capital are now being developed to overcome the need to conduct time consuming and expensive SNA surveys. In many instances these proxies, like discussion group activity, on-line communities and even e-mail traffic are proving to be reasona bly good approximations to the true human networks (Lock Lee, 2003; Guimera et al, 2002; Boudourides, Mavrikakis and Vasileiadou, 2002). While these examples are

[111] World Intellectual Property Organization, (1997), *Introduction to Intellectual Property*: Theory and Practice. Kluwer Law International. p. 23.

preliminary in nature, it is clear that Social Capital metrics will start to emerge to support corporate executives in making decisions relating to intangibles and improving shareholder value[112].

This monograph has introduced the concept of Social Capital as it might apply to the corporate sector, in support of increasing shareholder value through the prudent management of intangibles. It has been argued that as world markets evolve from an industrial era into a knowledge era, the management of intangibles will become increasingly important in assuring market valuations, and hence maximizing shareholder value. The large and dynamic movement of share prices on world markets over the past 10 to 15 years is being attributed to a poor understanding of the effect of intangibles like human competence, intellectual capital, brands and Social Capital. While it is acknowledged that developments in balanced scorecards and intangible asset monitors will provide powerful analytical aides for reviewing non-financial performance, what is missing is the simple heuristics that managers rely on for day-to-day activities. These heuristics exist in financial management, they don't in intangible management.

To assist managers develop such heuristics, an argument has been made for the use of Social Capital as the basis for developing management heuristics. It is argued that a leading focus on developing trustworthy networks at the individual, group and market levels will create an assurance that other intangible factors such as human competence, internal processes, innovation and intellectual capital will also be well catered for. Finally some examples of emerging measurement techniques for Social Capital, based on SNA were provided. The examples illustrated how Social Capital might me measured at the individual, group and market levels.

5.2. Employee Self-Service HR Portal Case Study: Access, Content, & Application

A number of Australian companies have realized the relative quick gains with low associated risks that can be achieved through the business-to- employee (B2E) model. Employee Self Service (ESS) is a solution based on the B2E model and it enables employee access to the corporate human resource information system. This chapter looks at the development of a human resources (HR) ESS portal and presents the findings of a case study of three Australian organizations that have implemented an ESS portal. A model depicting portal maturity is presented and analysis shows that ESS portals can be categorized as first generation with an "Access Rich" focus, second generation with a "Collaboration Rich'' focus, or third generation with an «Application Rich» focus. The information and process focus of the ESS portal of three organizations will be presented and will be used to place the organization into the portal development model proposed by Brosche (2002)[113].

[112]L. Lee Lock, (2003), *Does your Community Leave a Digital Footprint?*, KM Challenge 2003, Melbourne, April 2003 (Proceedings published by Standards Australia).

[113]C. Brosche, (2002), *Designing the corporate portal.* Masters Thesis, Department of Computer Science, University of Gothenburg, Sweden.

Approximately 320 of Australia's top companies have implemented SAP's ERP system (SAPR/3), and of these approximately 150 have implemented the human resources (HR) module, with 3 3 implementing the ESS component. These companies include Toyota, Westpac, RMIT, National Australia Bank, Siemens, Telstra, and Linfox (Hawking & Stein, 2002). In recent times there has been a plethora of research associated with the impact and implications of e-commerce. Much of this research has focused on the various business models, such as business-to-business (B2B) and business-to-consumer (B2C), with the importance of developing customer and partner relationships being espoused. There has been little attention paid to the potential of B2E systems and the role that B2E systems can play in improving business-to-employee relationships. Many organizations have realized the relative quick gains with low associated risks that can be achieved through the B2E model.

The B2E human resources Employee Self Service (ESS) system is cl aimed to incorporate "best business practice" and therefore the significant growth in ESS systems (Webster Buchanan, 2002) is understandable when you consider the potential return on investment of ESS applications. Lehman (2000) saw ESS transforming labor-intensive, paper-based HR forms to digital-enabled forms, allowing a 50% reduction of transaction costs, 40% reduction in administrative staffing, 80% reduction in management HR duties, and a 10-fold speed-up of HR processes (Workforce, 2001)[114]. Many of Australia's larger companies and public sector organizations are implementing ESS functionality as an adjunct to their enterprise resource planning (ERP) human resources systems, and this chapter looks at case studies of three major Australian organizations, the preeminent Australian telecommunications company and two state government departments.

From Traditional HR to ESS Portals. The function of Human Resource Management has changed dramatically over time. It has evolved from an administrative function, primarily responsible for payroll, to a strategic role that can add value to an organization (Daszkiewicz M., 2015; Rogozińska-Mitrut J., 2019). Organizations have now realized the importance of this function and are investing resources into supporting Human Resource Management Information Systems (HRMIS). Hamerman (2002) describes a model of how Internet technology can be applied to HR functions. His Employee Relationship Management (ERM) landscape presents corporate, personal, and employee elements. Hamerman (2002) views ERM suites as being platforms for information delivery, process execution, and collaboration in the organization. He sees the ERM suite being focused on organization-wide issues including recruitment, development, retention, progression, and succession. Within the ERM suite sits ESS functionality. The ESS allows for greater operational efficiency and the elevation of the HR function from a reacting function to a more creative strategic function. The Human Capital Management (HCM) component signifies that the human resource is a very important resource for modem organizations. Hamerman proposes the advantages in empowering employees

[114] Workforce, (2001), *HR statistics*. Workforce, 79 (10), 54-61.

through an ERM suite include:

- multi pie value propositions,
- consistent portal GUIs,
- all employee 24x7,
- real-time dynamic information delivery, and
- a comprehensive collaborative work environment.

The evolution of traditional HR to ESS portals has been accelerated by the convergence of several organizational forces. The internal process of HR is changing its role from support to a more strategic focus in the organization. The role has developed from being primarily administrative, to support, then to the role of a business partner. At the same time HR is a stable, reliable business process; has high recognition within the organization; and touches every employee. This high recognition gives HR a rapid acceptance when being given the "e" treatment. Another force acting on HR is the "adding value" imperative.

Organizations are involved in a "war on talent" (Link, 2001), and organizations see e-HR as an important technological tool in winning the war. HR has seized this change in organizational focus and adopted the B2E model to further enhance the business partner role.

Internet technology continues to shape the way that HR information is being delivered to employees (Gildner, 2002)[115]. There are three main information delivery platforms – Customer Service Representative (CSR), Interactive Voice Response (IVR), and ESS Web applications. CSR and IVR systems are used in 20-30% of employee enquiries, with ESS Web applications used in another 50% of employee enquiries. The Customer Service Representative is still the dominant access method for complex transactions, with ESS access replacing IVR as the preferred self-service method in large organizations.

Many of the world's leading companies are using ERP systems to support their HR information needs. This is partly due to the realization of the integrative role HR has in numerous business processes such as work scheduling, travel management, production planning, and occupational health and safety (Curran & Kellar, 1998). TheB2EESS model involves the provision of databases, knowledge management tools, and employee-related processes online to enable greater accessibility for employees (Deimler & Hansen, 2001)[116].

B2E Employee Self Service (ESS) is an Internet-based solution that provides employees with a browser interface to relevant HR data and transactions. This enables employees' real-time access to their data without leaving their desktop. They can update their personal details, apply for leave, view their pay details and associated benefits, view internal job vacancies, and book training and travel. The benefits of this type of technology have been well documented (Alexander, 2002;

[115] A. Gildner, (2002), *Trends in HR service delivery*. White paper for Gildner Human Resources Outsourcing Forum. Retrieved March 2003 from www.gildner.net/White%20Paper%20-%20HR%20Service%20 *Delivery %2 0 Trends.pdf*

[116] M. Deimler, , & M. Hansen, (2001), *The online employee*. Boston Consulting Group. Retrieved March 2002 fromwww.bcg.com publications files Online Employee Aug 01 _perpsective.pdf

McKenna, 2002; Webster Buchanan, 2002; Wiscombe, 2001. They include reduced administrative overheads and the freeing of HR staff formore strategic activities, improved data integrity, and empowerment of employees. One report identified a major benefit as the provision of HR services to employees in a geographically decentralized company (Net Key, 2002).

Tangible measures include reductions in administrative staff by 40%, a reduction in transaction costs of 50% (Wiscombe, 2001), and the reduction of processes from two to three days to a few hours (Net Key, 2002). A recent study of the UK's top 500 firms revealed that the majority ofB2EESS solutions were still at a basic level, and have focussed on improved efficiency and electronic document delivery (Dunford, 2002). Ordonez (2002) maintains the theme of information delivery in presenting ESS as allowing employees access to the right information at the right time to carry out and process transactions, and further, ESS allows the ability to create, view, and maintain data through multiple access technologies. Companies such as Toyota Australia are now extending this functionality beyond the desktop by providing access to electronic HR kiosks in common meeting areas.

ESS: State of Play. The Cedar Group (2002, 2001, 2000, 1999) carries out an annual survey of major global organizations in regard to their B2E intentions. The survey covers many facets of ESS including technology, vendors, drivers, costs, and benefits. The average expenditure in 2001 on an ES S implementation was US$1,505 million. This cost is broken down:

- software - 22%,
- hardware - 18%,
- internal implementation costs - 18%,
- external implementation costs -17%,
- marketing - 10%,
- application service providers - 17%.

Looking at this cost from an employee perspective, we see the average cost of an ESS implementation ranging from US$32/employee for a large organization (>60,000 employees) to US$ 155/employee for a medium-size organization (7,500 employees). The funding for the EIRESS comes from the HR function in North American and Australian organizations, whereas the head office funds the solution in European organizations. The study found that the main drivers for ESS are improved service (98%), better information access (90%), reduced costs (85%), streamlined processes (70%), and strategic HR (80%). Employees can utilize a variety of applications in the ESS, and the main ones identified in the Cedar survey are: employee communications (95%), pension services (72%), training (40%), leave requests (25%), and many others.

Manager Self-Service (MSS) is used differently in the three regions of the survey. North American managers use MSS to process travel and expenses (42%), European managers to process purchase orders (48%), and Australian managers to process leave requests (45%). Employee services can be delivered by a variety of methods, and the Web-based self-service (B2E) is undergoing substantial planned growth from 42% in 2001 to 80% planned in 2004.

The trend is for implementing HRMIS applications from major ERP vendors like SAP or PeopleSoft. ESS implementations show overwhelming success measures, with 53% indicating their implementation was successful and 43% some what successful. The value proposition for ES S includes:

- average cost of transaction (down 60%),
- inquiries (down 10%),
- cycle time (reduced 60%),
- headcount (70% reduction),
- return on investment (100% in 22 months),
- employee satisfaction (increased 50%).

The culmination of the Cedar Group reports lists the barriers to benefit attainment and critical success factors in ESS applications. North America and Australian organizations both list cost of ownership/lack of budget as the main barriers, while European organizations perceive lack of privacy and security as the main barriers. Other barriers include lack of technical skills, inability to state business case, low HR priority, and HRMS not in place. As with other complex IT application projects, executive commitment, internal collaboration, and availability of technical skills to implement the application are all considered important success factors.

Web Portals. The term "portal" has been an Internet buzzword that has promised great benefits to organizations. Dias (2001) predicted that the corporate portal would become the most important information delivery project of the next decade. The term portal takes a different meaning depending on the viewpoint of the participant in the portal. To the business user, the portal is all about information access and navigation; to the organization, the portal is all about adding value; to the marketplace, the portal is all about new business models; and to the technologist, a portal is all about integration.

The portal was developed to address problems with the large-scale development of corporate intranets. Corporate intranets promised much but had to address multiple problems in the organization (Collins as reported in Brosche, 2002, p. 14). On the user side, employees must make informed and consistent decisions, and are being implored to access multiple information sources on the Web. On the technology side, intranet sites in organizations have proliferated, resulting in an increase in search complexity for corporate users. Early versions of portals were merely Web pages with extensive document linkages, a gateway to the Web. These early versions have been replaced by several generations of portals.

Eckerson (1998) proposed four generations of portals (Table 5.2.1) and that portals can be analyzed by the information content, information flow, and the technology focus that make up the portal. Just as the intranet proliferated within organizations, portals are now starting to multiply. The portal management system or the mega portal is being developed to take control of portal proliferation with the aim to enhance business process convergence and integration. Shilakes and Tylman (1998) coined the term "Enterprise Information Portal" (EIP), and this definition encompassed information access, application nature, and Internet gateway that are

apparent in the second and third generations of organizational portals[117].

Table 5.2.1. Portal generations

№	Generation	Descriptor	Features
1.	First	Referential	Generic focus Hierarchical catalog of pages Pull flow Decision support
2.	Second	Personalized	Personalized focus Push and pull flow Customized distribution
3.	Third	Interactive	Application focused Collaborative flow
4.	Fourth	Specialized	Role focused Corporate applications Integrated workflow

Source: compiled by the author on the basis of materials of Eckerson (1998).

One area that is being developed via portal technology is employee relationships. We have already looked at ESS as an example of a B2E system; some additional employee applications are M2E (Manager to Employee), E2E (Employee to Employee) and X2E (external to Employee). Taken together, all these relationships are considered part of the ERM strategy (Doerzaph & Udolph, 2002). An ERM strategy is made up of the following components:

- self-service technology,
- collaboration tools,
- communication tools,
- knowledge management techniques,
- personalization focus, and lastly,
- access technology.

The access technology can encompass employee interaction centers like hotlines, Helpdesks or enterprise portals. General Motors is one of the leading HR portals in the world and they have proposed three generations of HR portal (Dessert & Colby, 2002). The three phases are presented in Table 5.2.2 and are presented in five organizational dimensions. A conceptual model of portal architecture is proposed by Brosche (2002, p. 19) and depicts a portal having core, key elements and specialization components. The components proposed by Brosche (2002) can be further categorized as having an information focus, technology focus, or a process focus. We can further combine Eckerson generations with the Brosche portal model and analyze an organization's portal by its information focus, process focus, and technology focus, and categorize it as being first, second, or third generation.

Access rich refers to a portal that is a static information dissemination tool where the information is "pushed" to the user. This could be a portal where minutes, memos, and notices are posted and "pushed" to the user. The content rich portal has information that is posted by users in a two-way flow. In this portal information is "pulled" from the portal by the user and the real issues are all concerned with content

[117] W. Eckerson, (1998), *PIumtree blossoms*: New version fulfi1s enterprise portal requirements. Patricia Seybold report. Retrieved March 2003 from w'H'H'. e-global, es/017/017eckerson plumtree.pdf

management. The application-rich portal elevated the portal to be more than an information tool; it becomes a fundamental process tool where business is conducted. Using this proposed categorization of portals, we will analyze ESS portals of three major Australian organizations by analyzing their information and process focus of their portal. This analysis will then allow us to substantiate the applicability of Broche's categories of portal development.

Table 5.2.2. Generations of HR portals (Dessert & Colby, 2002)

№	Dimensions	1st Generation	2nd Generation	3rd Generation
1.	User Stickiness	Static Web High Usage Search	Dynamic Personalized Robust Search	Anywhere Access Analytics Dashboard
2.	Communi-cations & Collaboration	News Chat Jobs	Unified Messaging Targeted Push vs. Pull Role Based	E-Learning E-Culture Broadcast Media
3.	Information Access	Online Publications Links Launching Pad	Dynamic Publishing Native Web Apps Content Integration b/w Functions	Online Publishing Int Content
4.	Services	Travel Expenses Payroll E-Procurement	Life/Work Events Communities E-Health	Role Based Online Consulting
5.	Technology	Web/App Servers Unsecured Basic Login	Content Management LDAP Int E-Mail, Chat, IM	Federated Services Wireless Multi-Media Broadband

Source: compiled by the author on the basis of materials (Dessert & Colby, 2002).

Research Methodology. The move toB2E ESS portals is detailed through the use of a case study. Case study research methodology was used, as the chapter presents an exploratory look at implications of ESS implementations. Yin (1994, p. 35) emphasizes the importance of asking "what" when analyzing information systems. Yin goes further and emphasizes the need to study contemporary phenomena within real- life contexts. The ethic or outsider approach was used in this case study. This approach emphasizes an analysis based upon an outsider's categorization of the meanings and reading of the reality inside the firm. The analysis is based upon objective methods such as document analysis, surveys, and interviews. Assumptions that were gleaned in the analysis of maturity of portal development were queried and clarified by interview. Walsham (2000, p. 204) supports case study methodology and sees the need for a move away from traditional information systems research methods such as surveys toward more interpretative case studies, ethnographies, and action research projects. Several works have used case studies (Chan & Roseman, 2001; Lee, 1989) in presenting information systems research. Cavaye (1995) used case study research to analyze inter-organizational systems and

the complexity of information systems[118].

A multiple company case study was chosen in an attempt to identify the impact of an ESS implementation and the associated development across both the private and public sector. The case study companies were chosen because they are leading Australian organizations with a long, mature SAP history and had implemented SAPESS module. Initially information was collected as a result of the company's presentation at the ESS forum in June 2002. Interviews were conducted firstly by e-mail with managers from the organizations. These predetermined questions were then analyzed and enhanced, and formed the basis of the interviews supported by observations through access to the ESS system. Project documentation and policy documents were also supplied. The name of one of the case study organizations has been withheld due to conditions set in the case study interview. The analysis will look at the information, process, and technology aspects as derived from the Broche model and will also look at implementation issues in developing the HRESS portal.

Private Sector Organization (Auscom). Auscom is one of Australia's leading companies. Auscom's vision is to be a world-class, full-service organization by delivering company-wide process improvement, productivity gains, and cost efficiency (Auscom Vision, 2002). It was privatized in 1997 and currently has 40,000 full-time employees, 20,000 contractors, 2,000 information systems, and 50,000 desktops (Greenblat, 2002). In the year ending June 2002, it had AUD$20 billion of sales and a profit of AUD$3 billion. The company operations are divided into several business units: retail, wholesale, infrastructure, and corporate center. This last unit is responsible for the HR processes within the company and had full responsibility for the IT strategy underpinning the ESS implementation initiatives, as well as the end-to-end project management of the implementations. One of the areas that Auscom had analyzed and felt was able to better deliver their vision was HR. The existing HR system was cost bloated, process fragmented, and had poor data access. Auscom wanted to explore the strategic aspects of HR, especially the concept of "employer of choice," and instigated "People Online" in May 2001. Initially the project was to be developed in three phases:

- phase 1 introduced ESS to provide simple HR employee-based transactions and information search facilities. Phase 1 had two components, My Details, the simple employee HRESS, and People Search, the information search component,
- phase 2 would introduce workflow for both HR and non-HR processes,
- phase 3 would provide access to corporate-wide applications.
- Phase 1 was rolled out in May 2002 and Phase 2 was scheduled to be rolled out in November 2002 with Deloitte Consulting the implementation partner.

Details of the benefit metrics were not available due to commercial in confidence. The business case for Phase 1 identified four groups of benefits:

[118] L. Lee Lock, (2003), *Does your Community Leave a Digital Footprint?*, KM Challenge 2003, Melbourne, April 2003 (Proceedings published by Standards Australia).

- quantifiable cost savings,
- increased data integrity,
- enabling process re-engineering,
- e-enabling the workforce.

Four months after the implementation, an external organization carried out a review and analyzed the business requirements, performance, implementation, and project management of People Online.

The NRE was formed from six state government organizations and employs approximately 5,000 staff at more than 200 diverse locations across Victoria. The NRE is responsible for preserving and managing Victoria's vast wealth of natural resources, including major oil and natural gas fields, substantial mining and agricultural resources, as well as one of the world's (On Sun, 2000) largest deposits of brown coal. The NRE must balance the need for development and wealth generation with the obligation to protect the land and its resources for sustainability and long-term benefits. On discussing the importance of IT in the strategic plan, Secretary Michael J. Taylor of the department commented:

"The information revolution is inescapable. Managing IT strategically in NRE is the department's response to that revolution" (NRE, 2003).

NRE first implemented SAP R/3 in 1999 to support its HR function (Shone, 2002). Prior to this, NRE was using another HR system with a customized ESS. One of the major benefits the department noticed with the implementation of SAP' s ESS was the reduction in pay roll processing, which was partly achieved through the introduction of online pay slips. There was improved data integrity, not just with the use of ES S but due also to the integrative nature of the ERP system. Data only needed to be entered once and employees could then ensure the accuracy of their own data. Staff were also able to apply for leave and overtime electronically, and apply and receive approval for training courses.

Government Organization 2. NSW Department of Housing (DoH). The Department of Housingin New South Wales aims to assist people into lower cost housing when their needs cannot be met by private sector housing. The mission statement of the department reflects this focus:

"The purpose of the New South Wales Department of Housing is to work in partnership with the community to supply and sustain safe, decent, and affordable housing for people on low incomes, and to enable people in need to create environments where they live with dignity, find support, and make sustainable futures" (DoH, 2002, 2003).

It has approximately 130,000 properties across NSW and employs about 2,300 people. The information technology drivers for the DoH ESS portal include (King, 2003):

- replace technology of unsupported legacy systems,
- enable best-practice HR processes,
- deliver information to support modern people management,
- empower employees through the provision of ESS, MSS, and work flow process systems.

It is important to consider that the terms *information*, *processes*, and *technology* are paramount in the statement of DoH's main technology drivers. The ESS project was developed in two phases, with the first phase being rolled out in April 2003 after a project length of 11 months.

Information Focus. Information focus or stickiness refers to the ability of the ESS portal to draw and retain the user. In Auscom the Mydetai1s application did provide enhanced stickiness, but People Search did not. The review team found that the needs of super/power users in switchboard/reception who use People Search extensively had not been analyzed enough in the initial business requirements analysis. There was also a problem when cost considerations created a scope and software change, and project requirements of the special power users were not re-visited after this change. There was also an operational problem where service level agreements did not have adequate time/penalty clauses and/or metrics built in, thereby causing performance problems to be neglected. The implementation of the Phase 2 ESS portal led to the reduction from 40 to 16 HR systems and the savings of AUD$5 million per year (Fleming, 2003)[119].

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In DoH, Phase 1 looked to extend information access and dissemination across the enterprise to allow employees to process payroll information, personnel details, and financial posting and reporting (King, 2003). Both employees and managers were able to access information from the portal, but the information flow was mainly directed to the employee.

Process Focus. This dimension looks at the extent that the portal reaches out to other areas of the organization, and the extent that the portal enables collaboration and cross integration business process operations, like e-procurement, travel expenses authorization, payroll, time, and HR data management. In Auscom the services provided by the Phase 1 project were limited to HR type data including payroll. The extension into other areas of the organization and across business units was achieved in Phase 2. The People seach component enhanced communications by providing a one-stop search facility in the whole organization. It was important that this communication tool should have been aligned to the corporate intranet look and feel.

[119] F. Fleming, (2003), *My SAP from a customer perspective: Auscom Ltd.* Presentation at Saphire 2003, Sydney, Australia, May.

The process focus of the NRE portal emphasized traditional HR business processes and activities (Shone, 2002). The more strategic HR processes of recruitment and training were present, but there was no employee scheduling. Cross-functional processes were not accommodated greatly except for the ability to enter the SAP R/3 system to do maintenance tasks. Staff were also able to apply for leave and overtime electronically, and apply and receive approval for training courses. The DoH was again focused on the traditional HR processes, with the only cross- functional process being financial posting and reporting (King, 2003). This entailed some degree of collaboration into other functional areas of the organization with resultant problems of lack of integrative business processes.

In analyzing the portals for their information content, all three ESS portals did enhance information stickiness as they provided the ful1 range of typical "pul1" ESS features: personal details, pay, leave, bank, and benefit packages. They also provided a range of personalized "push" features. This type of ESS site is somewhere between a first-generation "*access-rich*" site with predominately "pull" features (static Web, high usage) and a second-generation "*content-rich*" site.

In analyzing the portals for their process focus, the information provided to the user was limited to HR-or employee-based information. There was no across-function process information, business transaction information, or product information provided. The process focus of the portal would indicate that the portal was immature and still first generation. All portals demonstrated moderate communications but limited collaboration features, again an example of a first-generation "*access-rich*'' HR portal. The DoH portal was some what more advanced with the ability to access financial reports, demonstrating cross process collaboration. As organizations move to more advanced portals like Auscom Phase 3 and DoH Phase 2, it is expected that more collaboration will be used. The Auscom representative touched upon this collaboration focus when he commented on the difficulty of developing the interface between the corporate and the HR portal. It is almost a necessity to have a line of delineation between the functional areas.

Compared to other e-business solutions, B2E portals have a relatively low impact on the organization, employees, and processes. The risks of a B2E portal are minimal, as it provides a Web interface to an existing system and improves data integrity, as employees are responsible for much of their own data. ESS portals do promise to provide extended functionality in to and across the organization. We can analyze the relative positions of Auscom, NRE, and DoH portal maturity by referring to Table 5.2.3.

Auscom developed its first-generation portal to be primarily an information pull application, with the main focus on traditional HR forms. Little collaboration or communication applications were developed in the first release. The next version of the portal looked at the online routing of standard HR transactions, online recruitment, talent management, and an enhanced emphasis on training. This development would move the Auscom portal into the *"content-rich"* and partially into the "*application-rich*" phases. Auscom seems to be moving in the right direction. There seems no doubt that the technology exists to move an organization like Auscom from first-generation "*access-rich*" to second-generation "*content-rich*" and

onto third-generation "*application-rich*" portal s. The DoH portal seems to be located in Broches "cowte «t-r/c/?" phase, ready for the implementation of additional applications. The NRE portal still is placed in the *"access-rich"* phase, but is developing the collaboration focus of a Phase 2 portal.

Table 5.2.3. Portal generations by Brosche categories

Portal Generations	First	Second	Third
Portal Categories	Access Rich	Content Rich	Application Rich
Information Focus	Static Aggregated	Dynamic Personalized Auscom NRE DoH	Integrated Analytics
Process Focus	Single HR Forms *Auscom NRE*	Multi HR Publication *DoH*	All HR Application

Source: compiled by the author on the basis of materials (Fleming, F., 2003).

While the technology exists, organizations seem to be slow in moving to the more developed cross-process, integrated functional portal. It is possible that the business processes that would be utilized in an "application-rich" portal do not exist in the organizations. Portal development must follow the business, not lead the business. What is not vague is the understanding that ES S portals are information delivery platforms that have much potential to deliver not only cost-focused savings, but the more important strategic HR benefits being sought by modern organizations. The recent Cedar Report (2002) commented on the importance of high performance workforces and the need for enterprise to employee solutions. Major Australian organizations are exploring the use of ESS portals, and these modern e-enabled applications set the stage for other Australian organizations to be aggressive followers. We will watch with great interest the march to ESS and then the advancement to HR/corporate/enterprise portals.

5.3. Managing and Practicing OD in an IT Environment: A Structured Approach to Developing IT Project Teams

This chapter introduces a framework for improving success in information technology (IT) projects by leveraging the organization development (OD) practitioner's expertise in fostering cooperation and learning in teams. It argues that IT project failure can be addressed and prevented by building teams that anticipate and recover from issues of communication, goal clarity, and internal support. The author intends this framework to provide a foundation for OD practitioners and IT project teams to engage the domain knowledge of each in order to successfully execute projects that are cooperative, focused on improvement through learning, and ultimately dedicated to more productive outcomes for the organizations they serve

Failure was not an option for the eRecords project. The health, safety, and lives of its constituents were at stake. The initiative sought to create a client-server application and database to replace the hundreds of thousands of paper files a government agency used to track those in its care. These files contained the most sensitive bits of information on each benefit recipient, and the decisions made from these files were literally a matter of life and death. The government had allocated millions of dollars in funding to eRecords (a pseudonym), and the project was publicly supported and promoted at the highest levels of government. Multiple agencies contributed financial and human resources. The best-known, most expensive contractors formed an integrated team to develop and implement the new system. The project personnel were virtually an all-star team of the best and brightest in their field. Every possible resource was devoted to the initiative's success, and the lives and careers of thousands were riding on it. And yet, eRecords failed.

Infact, it didn't just fail – it failed spectacularly. eRecords failed in the most public possible ways, leading to internal investigations, government audits, and an ongoing presence on the front page of the newspaper. Its staff fled for safer positions, its management scrambled to shift blame, and its sponsors were publicly humiliated and demoted. The project exceeded its schedule more than threefold, consumed many times its projected budget, and delivered fewer than half of its promised benefits. The application continues in use to this day, and every day it is used it exacts an escalating cost in lost time, unnecessary work duplication, and user frustration. Far from being an isolated example of IT project failure, it illustrates the norm. Kurt Lewin on the last day of his life told Ronald Lippitt, "Interdependence i s the greatest challenge" (Weisbord, 1987, p. 104)[120]. He was remarking on the hazards individualism presents to groups working together toward common goals, and, 60 years after his death, the father of organization development (OD) could just as easily have been addressing a group of information technology (IT) project managers. Despite linking people around the world with new and innovative uses of technology, IT project teams continue to contribute tremendous waste and dysfunction to their organization s and clients through their failure to work together effectively.

IT professionals, the premiere knowledge workers, are among the most individually gifted professionals in the world. They are able to interpret the processes of the physical world to a digital form, enabling quantum leaps in productivity and creating new opportunities in industry, government, and service organizations. Their work contributed US$255 billion in IT project spending in the United States in 2002 (The Standish Group [Standish], 2003), and over US$1 trillion globally (Microsoft Corporation [Microsoft], 2002). Yet, project waste reached $55 billion in the U.S. that year, over 20% of total IT project spending (Standish, 2003). Assuming a proportional global success rate, IT project waste could easily top a quarter of a trillion U.S. dollars each year.

If global IT project waste is over a quarter of a trillion U. S. dollars each year, is it the case that modern technology is too complex to be developed and deployed

[120] M. Weisbord, (1987), *Productive workplaces*: Organizing and managing for dignity, meaning and community. San Francisco: Jossey-Bass.

predictably? No. Graduates of elite project management programs like the one at Boston University – many of whom manage knowledge work in large IT projects – consistently cite the foil owing reasons for the failure of IT projects:

- poor communication,
- unclear goals,
- lack of senior management support.

Ten years of research into project success and failure by the Standish Group supports these findings (Standish, 2003). In other words, these hundreds of billions of dollars in waste are attributable not to failures in the technology itself, but rather to the human systems that create the technology. OD is a field devoted to improving organizational effectiveness. The recurrent issues in IT projects – communication, clarity about objectives, and leadership alignment and support – are precisely the opportunities OD addresses. While the OD practitioner has not traditionally been a key member of IT project teams, the persistent issues these teams face indicate a strong need, integral role, and clear challenge for teachers, managers, and practitioners of OD.

Perspectives on QD and IT. Failure in IT projects can be defined as exceeding a projected budget, taking longer than the estimated schedule, failing to meet agreed-upon quality requirements, or (most common) some combination of the three. Some of the more common types of IT projects include:

- software application development (creating new software packages),
- hardware and software implementation (implementing new computers or software),
- database management and revision (ensuring proper data storage and access),
- hardware and software upgrades (replacing or enhancing existing assets),
- network infrastructure improvements (continuing to involve the paths data travel).

While there are differences among these and other types of IT projects, one commonality is that most IT projects take longer, cost more, or contribute less than originally planned. OD practitioners specialize in addressing the issues of organizational learning and alignment that plague IT projects, and yet OD practitioners are usually absent or marginal in such projects. IT professionals instead use project management techniques to exert greater control over uncertainty in projects, but IT projects continue to experience cost and schedule overruns, as well as unmet requirements. These gaps indicate a need for complementary roles between IT project managers and OD practitioners. IT offers a substantial market for increasingly underused OD practitioners, and OD offers relief for the cycle of dysfunction that drains IT budgets. The key to realizing these benefits is to eliminate the traditional barriers between these fields and frame a new working relationship. IT and OD suffer from stereotypes that create barriers between them. IT professionals are often cast as aloof, antisocial, arrogant, analytical geeks. OD is usually dismissed as being too "touchy-feely" and largely useless for producing real results. These stereotypes mask the potential for each field to Failure in IT projects can be defined as exceeding a

projected budget, taking longer than the estimated schedule, failing to meet agreed-upon quality requirements, or (most common) some combination of the three. Some of the more common types of IT projects include:

- software application development (creating new software packages),
- hardware and software implementation (implementing new computers or software),
- database management and revision (ensuring proper data storage and access),
- hardware and software upgrades (replacing or enhancing existing assets),
- network infrastructure improvements (continuing to involve the paths data travel).

While there are differences among these and other types of IT projects, one commonality is that most IT projects take longer, cost more, or contribute less than originally planned.

OD practitioners specialize in addressing the issues of organizational learning and alignment that plague IT projects, and yet OD practitioners are usually absent or marginal in such projects. IT professionals instead use project management techniques to exert greater control over uncertainty in projects, but IT projects continue to experience cost and schedule overruns, as well as unmet requirements. These gaps indicate a need for complementary roles between IT project managers and OD practitioners. IT offers a substantial market for increasingly underused OD practitioners, and OD offers relief for the cycle of dysfunction that drains IT budgets. The key to realizing these benefits is to eliminate the traditional barriers between these fields and frame a new working relationship.

IT and OD suffer from stereotypes that create barriers between them. IT professionals are often cast as aloof, antisocial, arrogant, analytical geeks. OD is usually dismissed as being too "touchy-feely" and largely useless for producing real results. These stereotypes mask the potential for each field to complement and extend the other. Working together, these two fields are far more effective than either is alone. To be accepted in IT projects, OD practitioners must respect the purpose and pace of IT, working with accountability toward its success. In return, IT professionals must be receptive to the presence and outcome-oriented approaches of the OD practitioner. The short term result will be immediate savings in technology budgets. Long-term benefits include more strategic use of technology, more and better jobs for both IT professionals and OD consultants, and the promotion of innovation and growth.

Note that the lack of OD practitioners is not the source of project failure. The source of project failure is an inability or unwillingness to work cooperatively (as evidenced by the previously cited issues of poor communication, lack of clarity about objectives, and absence of leadership support) and to collectively learn from self-reflection (as evidenced by problem repetition within and across IT projects). Nor are OD practitioners the only way to address such issues; in fact, an OD practitioner without a framework for engaging the IT project team can hasten its demise. Success in IT projects can be improved when IT project teams work cooperatively and learn

from experience, two behaviors that qualified OD practitioners understand and cultivate. The key to unlocking that success is to build a framework for enabling the IT project team's cooperation and learning.

When discussing two fields as disparate as OD and IT, it is essential to clarify the terminology of each at the outset. In the case of these particular fields, where a word such as "system" or "process" may have different meanings in each, such definition is absolutely necessary. IT and OD are fundamentally distanced from each other by their terminology, and each views its work through its own metaphors. Agreement on terms or at least the differences between similar terms i s a logical first step toward bridging that di stance. Defining term s i s al so a good investment of time in the early stages of IT-specific OD efforts, minimizing misunderstanding slater in the project. The following terms are key to this discussion.

Organization development: Though there are nearly as many definitions as people purporting to practice it, organization development in the context of this discussion can be defined as "a process that applies behavioral science knowledge and practices to help organizations achieve greater effectiveness, including increased financial performance and improved quality of worklife" (Cummings & Worley, 1997, p. 1). Marvin Weisbord (1987) notes that high-quality work requires a creative interaction of the three perspectives of people, economics, and technology. This definition of OD accommodates that essential interaction, and the pace and investment in IT projects demand the successful management of that interaction.

Information technology: Information technology also has a variety of definitions, most of which are largely derived from the perspective of the person doing the defining (Szymański A.I., 2012)[121]. John Thorp defines information technology as "a general term used to refer to all aspects of computing and communications technology, including hardware and software (both system and application software) that encompasses the creation, storage, processing, distribution, and display of information for a variety of uses, including business, educational, artistic, scientific, recreational, or personal" (Thorp, 1998, p. 257)[122]. For the purpose of succinctness, let's consider IT to be software systems that process information and the technologies supporting these systems. This definition accommodates office applications, communications systems such as e-mail and groupware, specialized systems such as accounting packages, and Internet and World Wide Web sites and applications. While the field of IT is as broad and diverse as the organizations and individuals that use it, this discussion will place IT in a much more focused context.

Projects and project management: IT is executed in discrete efforts called "projects." The Project Management Body of Knowledge (PMBOK) defines a project as "a temporary endeavor undertaken to create a unique product, service, or result" (Project Management Institute [PMI], 2000, p. 204). Projects may be as short as a few weeks or as 1ong as a few years, but they are distinct from an ongoing business concern in that they have a planned beginning and end. The field of project manage-

[121] A. Szymański, (2012), *Wpływ innowacji na rozwój przedsiębiorstwa*. Seria wydawnicza: Encyklopedia zarządzania, Kraków.

[122] J. Thorp, (1998), *The information paradox:* Realizing the business benefits of information technology. Toronto: McGraw-Hill Ryerson Limited.

ment, defined as "the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements," is the *lingua franca* of IT projects, and the PMBOK is its bible (PMI, 2000, p. 205).

While it is not necessary for the OD practitioner to be certified as a project manager in order to understand these terms of art, it is useful to have a copy of the PMBOK as a reference.

Systems, processes, and process consultation: As mentioned earlier, IT and OD have different meanings for the same terms, and being clear on these dual meanings will help in establishing rapport. It will also save time and confusion during the more critical points in the project. A "system" in IT terms usually refers to some combination of software, hardware, or both that work together to perform a specific function or set of functions. The OD practitioner is likely more familiar with human "systems" such as organizations or groups. Similarly, IT professionals understand "process" as an activity that receives inputs and acts upon them to produce outputs. For example, a personal finance software system might take one's bank balances as an input and act upon them to produce a pie chart, comparing these balances as an output. OD practitioners compare "process" with "task," where the "task" is what is to be done and the "process" is how (Weisbord, 1987, p.221). Weisbord (1987) notes that process reflects perceptions, attitudes, feelings, and reasoning, a definition that will likely sound quite foreign to those accustomed to mapping processes in flowcharts[123].

Edgar Schein defines "process consultation" as "a set of activities on the part of the consultant that help the client to perceive, understand, and act upon the process events that occur in the client's environment in order to improve the situation *as defined by the client*" [italics added] (Schein, 1988, p. 11). This definition comes closest to the OD practitioner's role described here, and the emphasis on the customer's definition helps to frame that role. However, in this discussion the OD practitioner will be presented with a model that specifies inputs, outputs, and quality in relation to the activities of process consultation, in essence merging the OD definition of process with the technical one. The technical definition of process considers an input to be any product, service, or piece of information that comes into a process from a supplier (Pande, Neuman, & Cavanagh, 2000, p. 397). In this model, inputs will be information about the functioning of the IT project team, and the suppliers will be the team, its members, and its customers. Similarly, an output is any product, service, or piece of information coming out of, or resulting from, the activities in a process[124]. The outputs from this model are new information about the IT project team's functioning and new behaviors that improve that functioning.

Customers, requirements, and quality: Three important and related terms in this discussion are "quality," "requirements," and "customer." "Quality" is defined as "measurable standards of comparison so that applications can be consistently directed toward business goals" (Pande et al., 2000, p. 401). Note that "business goals" in this

[123] M. Weisbord, (1987), *Productive workplace*s: Organizing and managing for dignity, meaning and community. San Francisco: Jossey-Bass.

[124] P. Pande, R. Neuman, & R. Cavanagh, (2000), *The six sigma way*: How GE, Motorola, and other top companies are honing their performance. New York: McGraw-Hill.

sense refers to the business of the organization, whether that business is making cars or abating global warming. “Requirements” are specific statements of those measurable standards of comparison for a given process. A “customer” is any person or organization who receives the output of a process (Pande et al., 2000, p. 395). In this context, quality is the degree to which a process acts upon inputs to produce outputs that meet the (process) customer’s requirements. These terms are important in this model because the IT project team (the customer) has very specific requirements (including schedule and cost), and the OD practitioner will select the inputs into and seek outputs from the OD process that meet these requirements (quality). The OD practitioner in the IT project is using Schein’s process consultation, with the more technical definition of “process” framing the data going into and the outcomes resulting from the process consultation. In essence, this is one type of process embedded within the other.

Teambuilding: One final term needs to be defined for this discussion : “team bui1ding. ”Wi11iam Dyer 1ists four criteria for success in team bui1ding: Dyer goes on to satisfy the last item by defining teambuilding as an activity whose purpose is “to help those who must work together to accomplish results, to identify any condition that impedes effective collaboration, and engage in actions that improve the quality of teamwork” (Dyer, 1995, p. 15). In contrast to the common perception of teambuilding as an activity that helps people feel good about working with each other but drains time and money from the organization, this definition emphasizes results, effective collaboration, and quality. These are the priorities of the IT project team, and they are what the OD practitioner will help to achieve as a part of that team.

The terminology used by IT and OD in their respective domains may seem obscure and contradictory, but in working together, simplicity and directness are key. The better the two fields are able to understand each other, the more effectively they can work together to produce the results they jointly seek.

IT and OD remain distanced by differences in priorities, undefined relationships, and incomplete approaches. Each pursues different – and often conflicting – goals and values. Similarly, the relationship between IT and OD – and the benefits of creating such a relationship – has not been defined and does not have many models to emulate. Perhaps most important, IT and OD continue to employ incomplete, insular approaches when more robust, complementary, and collaborative approaches are required.

In order to stop the cycle of IT project failure and waste, IT project teams must learn to learn, correcting recurrent behaviors that impede their success. OD efforts to facilitate these improvements must respect the boundaries of the project, delivering results whi1e working within the schedule and budget of the IT project. Time and cost are at a premium in the IT project; this is perhaps the strongest element of the IT culture. The OD practitioner interested in working with IT project teams must understand that their work will be evaluated in these terms. The OD practitioner can contribute to the success of the IT project by using a model for integrating IT and OD, adapting the model to each IT project with a customized project charter, and employing a structured team-building approach that focuses the model on the process level. Once the proper context has been established, teambuilding is a logical first

approach to addressing the most cumbersome problems of IT. While there are many interventions that can produce positive results in the IT project, the structured team-building approach is the one that most directly addresses the most troublesome issues in IT projects. The goal in this approach i s to promote a structured, results-driven methodology for engaging and promoting productive learning in these projects. W or king with the IT project manager – the formal leader of the IT project – the OD practitioner builds the team's capacity to plan and manage its own work within the parameters of the project's scope, purpose, and organizational goal.

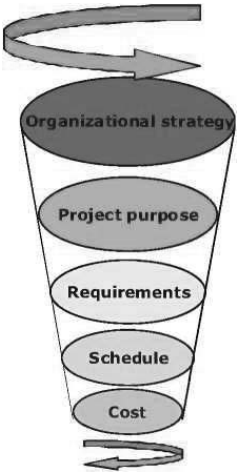

Fig. 5.3.1. IT Project Success Funnel
(The elements of IT project success are considered
by working downward through the levels of the funnel.)
Source: compiled by the author on the basis of materials (Pande, P., Neuman, R., & Cavanagh, R., 2000).

A Model for Integrating IT and OD. Differences in priorities, undefined relationships, and incomplete approaches have impeded IT-OD collaboration. A model for integrating and defining shared priorities, relationships, and approaches creates a way to overcome these barriers and begin the work of developing the IT project team. The IT Project Success Funnel is that model.

The IT Project Success Funnel brings together the priorities of the OD practitioner and the IT project manager in one unified, consistent approach to the work of the project. The model takes the primary concerns of the OD practitioner – organizational strategy and project purpose – and merges them with the on-the-ground imperatives of the IT project manager: project requirements, schedule, and cost. The combination dictates the alignment essential to creating and demonstrating value through IT projects. This alignment creates the foundation for consistent communication, cl arity about project objectives, and support throughout the organization.

Organizational strategy. At the top of the funnel is organizational strategy. Organizational strategy is the broadest context within which an IT project is conducted. Every IT project should be able to be directly traced to the organizational

strategy. If not, the project is likely not something on which the organization should be spending time and energy. While this may seem a somewhat extreme view, IT investment is too large a p art of organizational investment to be anything other than perfectly clear about how the IT project supports organizational strategy. When the project's benefit is unclear, so is its entitlement to be a part of the organization.

Project purpose: Under organizational strategy is project purpose. Project purpose is the specific objective or objectives met by the IT project, and these are where the most direct links to organizational strategy are emphasized. The project purpose is the means by which the IT project supports the organizational strategy. The project purpose is ideally a very brief (one- to two-sentence) statement of how the project supports an organizational strategic objective.

Requirements: The next level is requirements, which refer to the specific things the product or service of the IT project must do. These are the means for achieving the ends of the project purpose. The requirements specify what the IT project's end product or service is supposed to *do.* While IT project teams sometimes confuse requirements with features (such as "Oracle database" or "Microsoft Word-like spell check feature"), IT project requirements specify the outcomes of the project that make the project purpose a reality.

Schedule: Next is the project schedule; this element in the funnel defines the time by which the requirements of the project can be delivered upon. The project schedule plays an important role in supporting the requirements, purpose, and strategy in that the IT project's role is often time sensitive. IT projects' ability to deliver value upward into the organizational strategy usually depends on being able to deliver that value within a particular window of time, especially when that strategy focuses on competitive advantage. Lapses in the project schedule can push an IT project's outcomes from indispensable to irrelevant.

Cost. At the bottom of the funnel is cost. Cost is the smallest part of the funnel but is the part (along with schedule) most likely to receive attention throughout the project, especially from the IT project team and manager. Cost and schedule are the most clear indicators in any IT project, though meeting these requirements says nothing about the value delivered by the IT project. Cost is at the bottom of the funnel for the purposes of OD intervention because problems throughout the funnel's levels always trickle down to cost, whether through serving the wrong goals and purposes, unmetor unnecessary requirements, or most commonly – lapses in schedule. All these issues exact costs, and these costs can ultimately stop an IT project cold.

The IT Project Success Funnel very clearly defines the boundaries of the IT project in such a way that the OD practitioner can begin addressing issues of alignment and leadership support while planning an approach to the IT project team's process needs.

Using the Project Charter. The model is a useful theory for thinking about the parameters of an IT project, but the OD practitioner has to bridge the gap between theory and practice to create real results in the IT project. One of the most useful tools for an OD practitioner in contracting and working with an IT project manager is a project charter specifying the IT project's organizational strategy linkage and the

purpose of the project, and laying out the highest level of requirements, schedule, and cost. These should ideally be laid out at a level appropriate for an executive, omitting unnecessary detail s in order to present a high-level view of the IT project's intent and the scope of the OD practitioner's efforts. The charter is not a binding contract, but rather a tool for confirming shared understanding at the outset of the partners' work together. The project charter announces that a new project has begun, and it demonstrates management support for the project and the project manager (Verzuh, 1999, p. 53). Ideally the OD practitioner would be present at the inception of the IT project, and thus would recommend the use of a project charter at the outset, but the OD practitioner may also arrive after a project is already underway. In this case, the OD practitioner may encourage the IT project manager to collaborate in creating a charter that describes the high-level specifics of the project. If the IT project manager already has a working charter – and many will – the OD practitioner should obtain it, verify that all necessary information is included, and negotiate a relationship with the IT project manager and team based on the existing charter and the team's development opportunities. The IT Project Charter captures the common understanding of the elements of the project funnel at a level that is specific enough to guide the project, but general enough to be shared among all members of the IT project team and its customers. The charter establishes the definition of quality for all involved, and thus should be validated and shared across the IT project team. The IT project manager may al so wish to use the charter as a tool for framing interactions with the project sponsor and stakeholders.

The IT Project Charter is usually created by the IT project manager and OD practitioner together at the outset of the project, or when the OD practitioner joins the team. The charter should include:

- the name of the IT project,
- the name of the IT project's sponsor,
- the unit of the organization that is requesting and/or sponsoring the project,
- the beginning and ending dates of the project,
- the name of the OD practitioner (or manager): the person responsible for increasing communication, clarity, and alignment in the project,
- the date the OD practitioner (or team) joined the project,
- a high-level project schedule with major milestone dates and deliverables: the key dates in the project,
- the purpose of the project (phrased to indicate how the strategic objective is supported): what the project will be doing to directly support that objective,
- the organizational strategic objective the project supports: the specific element of the organization's strategy that is directly served by this project,
- a list of three to five high-level requirements for the project, and a reference to where the complete requirements are recorded: the main activities performed by the product of this project,
- a high-level statement of the project's budget and funding source: the broad financial parameters that form part of the definition of project success.

A Teambuilding Approach to IT Project Success. Once the elements of the IT

Project Success funnel are established and agreed upon, the OD practitioner must design ways to use the model as a lever for positive change with the IT project team. The IT project team is able to improve performance and minimize the historic issues of poor communication, lack of leadership support, and unclear objectives through focused teambuilding, organizational alignment, and organizational learning.

Warner Burke notes that when a workgroup has at least one goal common to all members and when accomplishment of that goal requires cooperative, interdependent behaviors on the part of all group members – as for the IT project team – teambuilding may be an appropriate intervention (Burke, 1982). Teambuilding i s an especially effective intervention for addressing the common issues in IT projects because its structure provides a framework for addressing organizational alignment and organizational learning. An IT executive in the U. S. government once remarked that creating organizational change while continuing to deliver mission-critical services is like attempting to paint a Boeing 747 in full flight. The structured framework of teambuilding, organizational alignment, and organizational learning attempts to do a better job of painting the airplane while keeping the flight on schedule.

Burke, citing Beckhard, notes that there are four purposes of teambuilding:

- to set goals or priorities,
- to analyze or allocate the way work is performed according to team members' roles and responsibilities,
- to examine the way the team is working (its processes such as norms, decision making, communications, etc.),
- to examine relationships among the team members (Burke, 1982)[125].

Burke elaborates on Beckhard's purposes by emphasizing that while all these purposes are operating in a teambuilding effort, one purpose should be defined as the primary purpose in order to avoid conflicting notions among team members of the purpose of the effort. In the IT project, the primary purpose of teambuilding is to address the processes of the team, especially those specific to the team's communication behaviors. The reason for this emphasis is that poor communication among team members is by far the most commonly cited issue in IT projects, and that better communication may provide clarity about objectives and leadership support needs. Burke also notes that Beckhard's purposes are most effectively used in the order listed (Burke, 1982). The reason for working from the top of Beckhard's model downward i s that each level sets context for the levels beneath it. Burke notes that it may be a misuse of energy to begin work at the interpersonal relationship 1evel because these issues may re suit from misunderstanding in the other domains. This approach is particularly useful for the IT project team and its typical issues because it addresses objectives and roles (leadership and otherwise), two of the most common issues in IT projects, in the process of working toward the process level, where communication issues can be identified and resolved.

[125] W. Burke, (1982), Teambuilding. In W. Reddy &K. Jamison (Eds). *Team building: Blueprints for productivity and satisfaction*. Alexandria, V.A.: NTL Insti tute for Applied Behavioral Science.

The work of the IT-focused OD practitioner begins with the first level of Beckhard's model, goals and priorities, and continues through roles and responsibilities toward the focus of the OD effort, the processes of the team itself, and the interpersonal concerns in its work.

Goals of the IT-focused OD practitioner. The mission of the OD practitioner in an IT project – and that of the IT project team – is to increase the IT project s contribution to the organization's strategy. The OD practitioner's goal as a part of the IT project team is to increase the likelihood of project success by facilitating better communication, clearer objectives, and support for the project throughout the organization. To achieve these ends, the OD practitioner in an IT project takes into account alignment of the organization's strategy, the purpose of the IT project, and the requirements, schedule, and cost of the project. This orientation aligns the organizational concerns of the OD practitioner with the project-specific concerns of the IT professional to define the value boundaries of work within the project.

The process of completing and validating the project charter is the most meaningful approach to satisfying the goals and priori ties level of the IT project. With shared understanding of the IT project's organizational alignment and project boundaries, the IT project team comes to a clear, common vision of their work together.

A common issue found at the goals and priorities level is a misalignment through the project funnel, such as contradictions between project purpose and organizational strategy, requirements and project purpose, or any combination of requirements, schedule, and cost. These issues should become fairly obvious during the OD practitioner's contracting phase with the IT project manager, and they should be noted and addressed or flagged as likely trouble spots.

Since the focus of the teambuilding effort is at the process level, the goals and priorities level defines the context and objectives for the project team s processes. The goals and priori ties level, through the model of the project funnel, also establishes the boundaries for the inputs to both the IT project team and the OD practitioner's processes. If the data the OD practitioner obtains from the organizational or project system (the inputs to the process level) do not fall within or demonstrably affect the boundaries of the IT project funnel, they are irrelevant. In short, the OD practitioner must deliver value in the eyes of her customer, the IT project team.

Roles and responsibilities of the IT-focused OD practitioner. Because of the prominence of the project management approach as a means to deliver value and increase the probability of success in IT projects, roles and responsibi1ities in IT projects tend to be exceptionally well defined. Project managers usually employ a Responsibility Assignment Matrix (RAM) such as the sample in Table 5.3.1 (PMI, 2000), and OD scholars have advocated similar approaches in teambuilding and organizational structure interventions (Dyer, 1995; Weisbord, 1987; Burke, 1982).

A key concern of the IT-focused OD practitioner is the specific outcomes to be delivered as a result of having worked with the IT project team. Specifying desired outcomes and behaviors establishes the parameters of that relationship. The OD practitioner has a responsibility to select inputs, interventions, and outputs that fall

within the funnel, and thus serve the goals of the project and the strategy of the organization. This responsibility is demonstrated at the process level in Burke's model.

Table 5.3.1. Responsibility Assignment Matrix (Adapted from Guide to the Project Management Body of Knowledge, 2000 Edition)

Phase	Person A	Person B	Person C	Person D	Person E	Person F
Requirements	s	R	A	p	p	
Functional	s		A	p		
Design	s		R	A	i	p
Development		R	S	A		p
Testing			S	P	i	p

P =Participant; A=Accountable; R=Review Required; I=Input Required; S=Sign-of jRequired
Source: compiled by the author on the basis of materials (Pande, P., Neuman, R., & Cavanagh, R., 2000) and (Dyer, 1995; Weisbord, 1987; Burke, 1982).

The process of OD in the IT environment. The process level of Beckhard (Burke's) model is the focus of the teambuilding approach, and it is where the most critical work with an IT project team is performed. The most common issue contributing to IT project failure–poor communication–is a result of dysfunction in the IT project team's processes. With the foundation of clear goals and priorities and mutually understood roles and responsibilities, the OD practitioner can employ the action research process to diagnose and positively intervene in the IT project team's processes, especially those that produce the symptoms of poor communication.

It is helpful to think of the action research process in the same way an IT professional thinks of technical processes: a set of steps that receives inputs and acts upon them to produce outputs. In the case of the IT-focused OD effort, the inputs to the process are selected from within the IT Project Success Funnel, and the quality of the outputs to be produced are defined within the parameters of this same funnel (Figure 5.3.2).

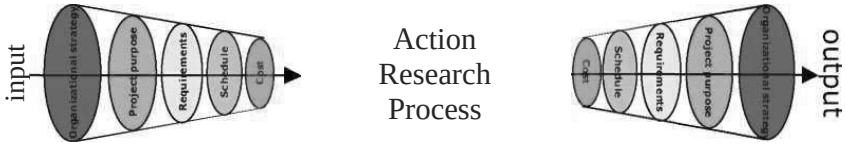

Fig. 5.3.2. Combining the IT Project Success Funnel with the Action Research Process to define input and output quality
Source: compiled by the author on the basis of materials (Pande, P., Neuman, R., & Cavanagh, R., 2000) and and (Dyer, 1995; Weisbord, 1987; Burke, 1982).

The funnel serves as an orienting device used to narrow the range of possible inputs and focus the desired results of the OD practitioner's work. In practice, this model provides a foundation for each step of the action research process. In entry and contracting, the OD practitioner and IT project manager already have a mutual understanding of the environment in which the IT project operates, and of its goals

and staff responsibilities. The OD practitioner collects data that fall within the boundaries of the IT Project Success Funnel and provides group feedback within these same parameters. The IT project team and OD practitioner can jointly decide how to proceed with the validated data, and the action plan and goals they create can be compared against the funnel to ensure that the OD-related effort is compatible with the imperatives of the IT project. Subsequent evaluation and contracting can be conducted, with the funnel continuing to set context.

The action research process works in this context as a process within a process; Burke's team building process serves as a preparatory, orienting process to the action research process, focus in gittoward the level and IT project team processes offering the most opportunity for improvement and innovation. This combination of approaches involves the IT project team, not just in getting to the issue or opportunity, but also in agreeing about the environment in which the issue or opportunity exists.

Once the OD practitioner and IT project team have reached the process level and begun mutually deciding what to work on and how to do it, the IT Project Success Funnel and Burke's team building model continue to provide the background and much of the OD practitioner's data (which tends to abbreviate the time-consuming data collection part of the action research process). Together the OD practitioner and the IT project team can apply the action research process to improve the effectiveness of meetings, resolve tensions between different but interrelated functions, guide planning efforts for the project' s completion and implementation, identify developmental needs, and any number of other interventions the team finds appropriate and useful. So long as participation, leadership, and a shared understanding of the IT project boundaries are present, the opportunities presented by this structured OD approach are limitless, as are their results.

In actually implementing changes proposed by the team, it is a good idea to break large change into smaller, more manageable phases separated by time for reflection and team discussion (Freedman, 1997; Schaffer, 1997; Lippitt & Lippitt, 1986)[126]. In any OD intervention, and especially to one in the high-stakes environment of the IT project, the Hippocratic Oath applies: First, do no harm. OD is a difficult enough sell with a driven IT team; any approach that disrupts the requirements, schedule, or cost of the project will create animosity toward the OD practitioner. Conversely, smaller phases with time for evaluation and reflection give the team the opportunity to create change, 1 earn from the change, and apply the lessons of the change to the next phase. Smaller phases al so divide the risks of change, moving them from the all-or-nothing realm of whole sale transformation to the manageable parameters of incremental implementation and evaluation.

The human element. The element of Burke's model most associated with the OD field and least associated with IT project teams is its fourth level, interpersonal relationships. Weisbord (1987, p. 258) lists three powerful levers in every workplace for turning anxiety into energy: purposes, structure, and relationships. The IT Project

[126] R. Freedman, (2000), *The IT consultant*: A commonsense framework for managing the client relationship. SanFrancisco: Jossey-Bass/Pfeiffer. Full text of the Trademark Law Treaty.

Success Funnel and the process-focused action research process offer powerful tools for leveraging purpose and structure to focus the IT project team's energy. This alignment and shared momentum create a fertile environment for building positive interpersonal relationships. Weisbord (1987) advocates guided team development, and his recommendation depends on developing awareness, skills, and cooperation within a natural workgroup against a social and business backdrop. Using as a guide the context and progress created by the work at the process level, and encouraging the democratic behaviors fundamental to that work, IT project team members can among themselves (or with the help of the OD practitioner as a coach) begin to identify and develop the healthiest, most harmonious behaviors and norms for the IT project team.

*Putting Theory into Action***.** The teambuilding approach, when practiced within the framing and formalization of the model and charter, provides a structured approach to diagnosing and improving the cooperative, interdependent process behaviors required to deliver the IT project on time, within budget, and according to requirements. It would be a mistake to assert that this approach is a panacea for the universe of pitfalls that can happen in an IT project. IT projects concentrate complexity into narrowly defined windows of time, tasks, and funding, bringing together di verse people and disciplines to achieve a common goal without the luxury of extended reflection and experimentation. IT projects move quickly, and they create complex dynamics within a temporary organization. The approach and models presented here are not a universal cure, but rather one specific way to define and engage in the work of developing the IT team without impeding its work. In practice this approach is best used as a guide and a framework within which to apply the specific OD and project management knowledge most appropriate to a given situation and team. Rick Freedman (2000) warns about the double-edged sword of methodologies and best practices: While having a defined process for performing a complex task is clearly an advantage, that process should not be so rigid as to stifle innovation and impose uniformity on the creative process of developing the IT project team's effectiveness.

IT projects will continue to consume organizational energy, time, and money. Yet, the approach to managing and learning in IT projects can, with incremental adaptations, result in far greater effectiveness and organizational impact in IT projects. With hundreds of billions of dollars in waste being chalked up each year, IT projects are going to face increasing scrutiny before they are started and throughout their life cycles. With some incremental change, IT can continue its growth with 1ess of the burden of failure it bears today.

The model and approach presented here provides a framework for planning, implementing, and evaluating OD efforts in an IT environment, allowing organizations to envision success and make course corrections as necessary. As this model becomes more common, it will be useful and informative to perform benchmarking within and among organizations in order to assess effectiveness and illustrate the possibilities presented by this approach. It will also be useful to track organizations using this approach over a period of years, and to compare their performance to those with different approaches. Organizations might also consider

augmenting this approach with a system for capturing and reinvesting IT project savings in a measurable way[127].

IT and the projects that create it are going to be an increasingly integral part of modern life in the years to come. Most organizations already depend upon a robust IT infrastructure. The challenge in the coming years will be to integrate rather than compartmentalize, building the capacity of human systems and technological systems in tandem to produce the most effective collaboration between people and technology. The IT environment of the future must embrace the concept of the learning organization, "where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (Senge, 1990, p. 3; Chimiak G., Kościński A., 2014).

OD is afield uniquely qualified to collaborate with IT to address these issues. This chapter has presented a model for managing and practicing OD in an IT environment. Using this model, the OD practitioner or team can establish a collaborative, mutually beneficial relationship with the IT project manager. The outcomes of this partnership will be more effective teams, better organizational alignment both within the team and with the organization it serves, and the promotion of results-oriented organizational learning.

This is one of the first efforts to address the persistent problem of waste in the IT environment by codifying the relationship between OD practitioner and IT project team, and it is only the beginning.

What this chapter has established is a general context for and overview of work for OD professionals in an IT environment. While establishing the technical context of the IT project is an important step in enabling team development, Lewin's core principle for OD ultimately still applies: *We are likely to modify our own behavior when we participate in problem analysis and solution and likely to carry out decisions we have helped make* (Weisbord, 1987, p. 89). Yet, participation alone will not solve the issues of IT project waste. Participation requires go a/*focus* and *active leadership* (Weisbord, 1987, p. 85). The two are brought together through a structured collaboration between the IT project manager and the OD practitioner. The opportunities for each are bound only by their mutual will and discipline in creating IT project success.

5.4. The Impact of Information Technologies on Communication Effectiveness

In this chapter, we consider the relationships between effective communication, social identity, and e-democracy in organizations that exist in the constantly changing global business and technological environment (Якимчук А.Ю., 2017). We also consider the inevitability of organizational e-democracy in organizations undertaking information technology (IT) changes, the technology at the

[127] Strategia Rozwoju Kraju, 2020, (2012), *Aktywne społeczeństwo, konkurencyjna gospodarka, sprawne państwo*. Załącznik nr l, Warszawa.

base of e-democracy (Chimiak G., Kościński A., 2014)[128]. Through an examination of employees* experiences of change, we investigate their perceptions of changes in effective communication during major organizational change implementation in a hospital context. While the changes were far reaching, we mainly focus on the introduction of information and communication technology (ICT).

We define e-democracy as the technological advances in communication media that provide employees with more information and more direct access to other employees (supervisory and subordinate levels) than previously existed. These changes to communication channels provide organizational connections and lead to e-democracy practices that seek to improve the autonomy of organizational members. Thus there is a freeing of information to help erase or ease organizational boundaries, which changes the relationship between executive and middle management parties.

The chapter uses an empirical examination of an Australian public hospital's IT change experience as the backdrop to assess the accuracy of the statement that there is an improvement in the autonomy within organizations as a result of IT changes. We assert that while hospitals are a very specific type of organization, they represent a typical hierarchical organization that uses the same human resource (HR) practices and principles that underlie all successful ICT implementations. We adopt the theoretical framework of *social identity theory* (SIT) (Tajfel, 1978) to understand how communication effectiveness and e-democracy evolve during IT change. SIT proposes that individuals understand their self-concept through their identification with salient social groups (1978, p. 63). Such groups include gender, profession, nationality, and religion – to name just a few. Individuals derive their sense of self-worth and positive selfesteem by viewing their group memberships (in-groups) as better than other groups to which they do notbelong (out-groups). Employees will often tend to make favorable in-group comparisons to ensure that their workgroup is perceived as more successful and prestigious than comparable out-groups. Such comparisons lead to positive evaluations of one's own self-worth. This theory, which is discussed in more detail below, has important implicati ons for the ways in which individuals will react to and manage ICT change.

ICT often changes the environment in which individuals work. As the work environment changes, so to do work-related tasks androles. Changes to role and work functions alter the composition of workgroups and so impact on an employee's identification with his or her workgroup and intergroup relations between groups. From an SIT perspective, we view organizations as cultures. Thus the hospital environment has its own culture; within this, subcultures or groups (e.g., work units, departments) co-exist. We argue that SIT is a theoretical framework that provides insights into how employees absorb and manage ICT-enabled changes.

The chapter highlights two i mportant issues within the area of organizational change and new technology introduction:

[128] G. Chimiak, A. Kościński, (2014), *Innowacyjność a samoorganizacja społeczna*. Wyd. Uniwersytet Wrocławski, Warszawa.

- the changes in employees' perceptions of their rol e and the groups within the organization that they identify with that are brought about by Id-enabled change,
- the implications of these changes for HR practitioners.

Focusing on the ways that i ndi vi dual s in traditionally hi erarchi cal organizations understand and adapt to the changes in their work, we exami ne the process of change from the viewpoint of both the implementers of change and the employees who must adapt to change. In so doing, we investigate how communication processes and their level of effectiveness change with IT implementation. Our intention is to provide e-human resources management with key recommendations that need to be in place to successfully i mplement an organization's planned ICT change.

This research is framed by the arrival of the knowledge economy that allows e-democracy practices to exist. As the knowledge economy has evolved, as part of more widespread changes to organizations including ICT, some researchers have examined how employees' identification with organizations explains change outcomes (Terry, 2001).

We recognize that there is agap in ourunderstandingbetween the emergence of organizational e-democracy and the potential changes to the organizational structure and communi cati on that can result from ICT i mplementations. We bridge this gap by highlighting the fact that, because individuals identify with their workgroups, when the current status or existence of these groups is threatened, resistance to the change may result. HR practitioners need to understand the composition and function of employee workgroups – both formal and informal. They will then develop an understanding of how and why members of these groups resi st the changes within the organization and can seekto remedy the issues.

Organizations that typify theknowledge economy are viewed as dynamic and organic (Alvesson, 2000). As a consequence, the nature of organizational change in such organizations can be unpredictable. Understanding that change will bring about unexpected alterations to the way that employees respond to change is, therefore, key tobeing able tomanage these people. In line with this view, Carlopio (1998) notes that the implementation stage of organizational change, while crucial to successful change, has been wrongly consi dered to be a rational and linear process.

In the subsequent pages we discuss the implementation of ICT change to stimulate discussion on the nature and place of organizational e-democracy. We seek to promote debate on the ways that social identification adapts and modifies itself within an organization undergoing ICT change. We focus on the implications for HR practice as we examine the uptake of ICT changes, the emergence of e-democracy, issues of identification, and the role of effective communication.

In this chapter, we first briefly describe the theoretical background to our research, focusing on the overlap between organizational democracy, change, and social identity. Using the experiences of a large public hospital undergoing change, we then provide evidence to demonstrate the value of connecting ICT innovation with social identity processes and e-democracy outcomes. We discuss the role that social identification with an organization or workgroup plays in an organization

during ICT change. Finally, we examine the outcomes of such change as it affects the core business of an organization and make recommendations for HR practitioners.

These recommendations will equip HR practitioners with a more appropriate and relevant knowledge base from which to plan and operationalize technology change.

The Paradox of Democracy in Organizational Research. Over 100 years after de Tocqueville's (1835) discussion on the triumphs, hazards, and powers of democracy, Slater and Bennis (1964) argued that "democracy is inevitable." They offered democracy as the most efficient and practical form of social organization, mimicking Weber's (1924/1968) philosophy on bureaucracy. Atthe time oftheir argument, the Cold War was the center of world attention, making the issue of democracy both topical and compelling. In the context of the global and technological changes occurring overthe past five years, our research borrows from Slater and Bennis' thesis, but considers the same issue from an organizational perspective.

Today we live in a knowledge economy whose core assets are the intelligence, understanding, skills, and experience of employees, notthe machinery, buildings, or real estate ofyesteryear (Drucker, 2001; Manville & Ober, 2002). This environment has focused attention on the role of ICTs and their ability to di sseminate information. The emergence of a knowledge economy, where effective information transfer and the decentralization of organizational power structures i s paramount, however, rai ses questions about the nature of organizational democracy.

Despite its prominence in change research (e.g., Beer & Nohria, 2000), organizational democracy within the knowledge economy is confusing. In the contemporary workplace, knowledge is regularly portrayed as the primary resource for individuals (Drucker, 1992). The simultaneous sharing of information through sophisticated technology is viewed as a primary tool of organization (Orlikowski & Iacono, 2001). This process assumes thatthe militari sti c conditions of the industrial organization are antiquated and perhaps even unnecessary. Consequently, changes to traditional bases of power and influence are believed to occur through decentralization and information access (e.g., Applegate, 1994; Halal, 1996; Chimiak G., Kościński A., 2014; Pieńkowska M., 2010). Change initiated in the knowledge economy i s regularly presented as a constant feature of the modern organization, despite the di ssati sfaction that exists with the nature of change research (see Tsoukas & Chia, 2002). This perspective that change is constant in the knowledge economy adds a paradoxical tangent to organizational e-democracy[129].

These changes do not necessarily foster democracy (Mantovani, 1994), even though there are implied benefits ofthe evolving, boundary-less, and pluralistic nature of organizations inthe current global economy. Many organizations are still organized autocratically (Kraemer & Dedrick, 1997; Schwarz, 2002). Corporate ownership structures, governance systems, and incentive programs are still firmly entrenched in the industrial age. Organizations are still primarily organized through small

[129] G. Chimiak, A. Kościński, (2014), *Innowacyjność a samoorganizacja społeczna*. Wyd. Uniwersytet Wrocławski, Warszawa.

management groups typical of hierarchies (Markus, 1983; Robey & Boudreau, 1999). Any features of employee empowerment are limited.

It would, of course, be negl i gent not to recognize the advances made in the use of more democratic governance methods, such as participatory management practices (e.g., Drehmer, Belohlav, & Coye, 2000), organizational citizenship (e.g., Lambert, 2000), and communities of practice (e.g., Wenger, 1999). Nonetheless, change research is often too concerned with two aspects of change. First, the research concerns itself with re-evaluating the authority, power, and control features that normally exist in institutions (Scott, 2001). Second, it concerns itself with the promotion of alternative organizational designs and practices.

Organizational change in aknowledge economy contextis regularly hypothesized tobringaboutamore democratic organizational shape than previously existed. For example, we expect more information connectivity and freer communication than before. We expect more autonomy, butless centralization and less hierarchy than before. Yet there is enough research, and a growing line of argument, to undermine thi s assumption. Is organizational democracy in the knowledge economy (i.e., e-democracy) inevitable? If organizations change, then logically, so too must employee perceptions of their role in the organization. In a consideration of the objectives of this chapter, we therefore invoke social identity theory (SIT) as aguiding framework that may help understand the outcomes from change and whether or not e-democracy emerges as a result of ICTs.

Social Identity Theory and its Organizational Context. The central tenet of this approach is that belonging to a group is largely a psychological state. This grouping confers social i dentity, or a shared representation of who one is and how one should behave (Hogg & Abrams, 1988). In this way, group belongingness reduces our uncertainty about where we fit in society (Hogg & Mullin, 1999). More recently, SIT has been applied to the organizational context. Implicitin this understanding of organizational identity function is the recognition that organizations are composed of the people in that organization. In essence then, "Organizations are internally structured groups, which are located in complex networks of intergroup relations that are characterized by power, status, and prestige differentials" (Hogg & Terry, 2001, p.l). As a result, organizations are implicitly dynamic, continually changing entities. Changes that affect the organization can therefore have serious effects on employees in terms of their identification with workgroups and the relationships between workgroups.

While there has been a longstanding research tradition examining organi zati onal identification, more recently SIT researchers have viewed organizations as being composed of individuals possessing multiple group identities. These identities range from the employees[1] overall identification as members of an organization, to their identification with specific workunits and professi ons. At any one time different group membership may be salient for an employee. Accordingly, when a manager interacts with a subordinate, he or she is 1ikely to identify with their respective roles of manager and subordi nate as most sal i ent in the work situation (Gardner & Jones, 1999). Yet in another context the person's professional identity may be most salient. SIT has been used by organizational scholars to better understand how the individual

relates to these collectives, and the intergroup relations that accompany the process of identificati on (Pratt, 2001, for a comprehensive review of this trend). Such a perspective does not deny the importance of an i ndi vi dual's personal identification, but sees i t as often less relevant than group identification in the workplace.

Social identity theory proposes that individuals will tend to make favorable evaluations about their in-group ('us'), but make unfavorable evaluations concerning the out-group ('them'). If we identify at the organizational level, we perceive all employees of our organization as in-group members and employees of competing organizations as members of an out-group. More often though, it is at the sub-organizational level that we make the most relevant comparisons. The result is that employees will then tend to favor their workgroup or department and evaluate it more positively than other workgroups or departments. Organizational change, including the development of the knowledge economy, may not only 1 ead to the formation of new identities, but may challenge/threaten exi sting i dentiti es and intergroup relati ons. Thus mergers, acquisitions, and downsizing have increasingly become the subject of research examining organizational change and SIT (Terry, 2001).

Such research has been crucial in understanding change from an SIT perspective, but as Hogg and Terry (2000) note, they do not address important developments of SIT in the last decade that are particularly relevant as to whether e-democracy may emerge in response to ICTs Recent developments include research on identification problems dealing with (1) loyalty, and (2) nested and cross-cutting identities. Looking first at the issue of loyalty, as information intensity becomes more relevant to organizational functioning, many of the traditional roles of identity are undercut. Group identification is aprocess whereby individualsbecome connected with others and wherejoint interests may overtake those ofthe individual. Whenthereare changes in perceived membership or competing identities emerge which make the lines of group belongingness unci ear, questions concerning group loyalty may arise. Specifically, employees ask whether their loyalty should be conferred to the group, the organization,theprofessional association, the occupation, or to workmates?

Thus, before individuals can act in a given organizational context, they need to situate themselves, allowing certain identitiestobenested or embedded within others (Ashforth & Johnson, 2001). Nested identities exi st at the higher order level, such as an employee's identification with his or her division, which is nested under the organizational identification. Lower order identities are those of identification with an individual's job. Job identification would benested under an individual's workgroup. Conversely, cross-cutting identities refer to an employee's committee or task force identification that runs across the hierarchical structure. Cross-cutting identities and lower order level nested identities are more likely, more salient, and more proximal than are higher order level identities[130]. Internal conflicts may arise when an individual perceives competing demands across two of his or her work identities. The cognitions and identity changes that occur during change therefore need to be

[130] B. Ashforth, & S. Johnson, (2001), *Which hat to wear?* The relative salience of multiple identities in organizational contexts. InM.

thoroughly investi gated in order to better understand the change outcomes.

The longitudinal study that we present in this chapter acknowledges these aforementioned complexities and seeks to raise awareness levels of HR managers to these issues. Specifically, we contend that an examination of any change implementation without due consideration to the psychological processes thatunderl ie an employee's perception of the change will not provi de an accurate picture of the evoluti on process during change. Nor will such an exam i nati on provi de an understandi ng of the potential subsequent changes i n e- democracy. The empirical reviewthat follows describes how employee workgroup identification interacts with technology change and communication effectiveness, and the outcomes in terms of e-democracy. Employee responses include perceptions about changes to their levels ofjob satisfaction and commitment, as well as changes to the status and prestige of their workgroup and other groups within the organization. For HR practitioners, these are important considerations that, ifmanaged well, allowfor smooth transitions during change. Researchers have typically neglected the intergroup nature of change, despite the fact that corporate change involves maj or reallocations of status, power, and resources across divisions of an organization (Gardner, Paulsen, Gallois, Callan, & Monaghan, 2000).

We present change as a process that impacts on an organizati on i n at least two ways. First, thereistheindividualimpactupon employ eesintermsoftheirlevels ofj ob sati sfaction and organizational commitment. Second, researchers – and by impli cation, HR practitioners – need to consider the significant impacts upon employees' levels of identification with their workgroups orthe social categories with which they identify. This second impact is demonstrated by employees' perceptions of changes in the groups they identify with, perceived status, and the levels of in-and out-group bias.

Our approach adds to previous research by considering whether e-democracy is an inevitable consequence of ICT changes, and how a social identity perspective helps us understand the effects of ICT changes. We argue that soci al i denti ty theory provides an alternative (socially) evaluative insight into the nature of change and the process of how organizations evolve and adapttothe knowledge environment economy. In this chapter, we concentrate on how group membershi ps wi thin organizations are influenced by change. Our approach differs from other researchers who have applied democracy at the organizational level in debating whatthe organization and organizational change will look like (e.g., Lammers & Szell, 1989).

Social identity argues that organizations are internally structured groups that are located in complex networks of intergroup relations characterized by power and status (Hogg & Terry, 2000). In referring to the processes that underlie the development and maintenance of individual and group identities, social identity allows us to better deconstruct the process of organizational democracy using this prestige differential.

Information and communication technologies are regularly promoted as drivers that take costs out of the supply chain, improve the management of customers, and enhance the capability of the organization to quickly respond to a changing marketplace (Glover, Prawitt, & Romney, 1999). ICT developments are perceived as

key organizational tools that can alter reporting structures, cultures, j ob roles, and the identities of employees and their groups. These technologies have been an excellent means of expanding access to information across an organization, empowering employees through added flexibility and enhanced functional integration. These new capabilities have occurred despite the increasing recognition that in reality many very expensive IT systems are abandoned or never realize theirfull potential (Fahy, 2001). To date, we know that while organizations often have high expectations for change when new systems are commissioned, technology implementations regularly result in the reduced or failed adoption of complex, integrated technology architectures (Koch & Buhl, 2001).

Nonetheless, as with most industries, ICTs are an increasingly essential part of contemporary healthcare. The healthcare industry has recently experienced sub stantive changes brought about by this new technology, with consequences for health providers, professionals, and patients. These include changes to the way healthcare is delivered through the emergence of new medical professions (e.g., genetic specialists), thedevolution of minor medical treatments as nursing staff become more highly trained innew technol ogy, and less invasive treatments. Future medical ICT-related developments i nclude the use of rob oti cs and telemedicine, enhanced drug design through the use of computerization, and the trend towards electronic services (e.g., e-procurement) as away to deliver healthcare services. Ongoing developments related to ICTs that will change the nature of healthcare in the next 20 years include emerging medi cal communication technologies and increasing application of evidence-based healthcare globalization. It i s within a hospital context that we sought to examine examples of such industry changes.

As previously noted, we focus on change in a large Australian metropolitan public hospital that was undergoing significant organizational re-engineering change b oth in its infrastructure as well as in the introducti on of new technology. We used a sample from a series of 85 in-depth, unstructured interviews with a cross-section of healthcare employees. We examine howthese employees described and identified with the change process. This change included staff restructuring; the introducti on of innovative wards to trial changes that were planned to occur in the new hospital building; the devolution of finance from management to department level, with the introduction of new financial technologies (i.e., enterprise resource planning system: ERP); and the phasing in of newmedical technologies (e g., the picture archive communication system: PACS). These changes had implications for increasing the knowledge and authority levels of staff. Management of department finances by charge nurses rather than by higher management level s meant that senior nurses were now responsible for the budget of specific wards and units. Thus they would have access to information databases that were previously not avai lable. In theory such changes should empower these nurses. Similarly, the PACS would provide easy access to patient x-rays across the hospital, and lead to more efficient and effective communication between hospital departments. In fact i mproved and more fluid commun i cati on was a vi si on for the new hospital with more communication between units and wards than had previously existed. The participants in our study represented a cross-section of different levels and roles in the hospital, including

executi ves (often with medi cal backgrounds), doctors, nurses, and allied health professionals (e.g., physiotherapists, psychologists).

In our interviews, we were particularly interested in the ways in which employees' workunits or professional identities influenced theirunderstanding of the changes being implemented. To this end we focused on the health professional employ eeswithinthe hospital as identified above. We investigated the relationship between changed organizational structure and employee perceptions abouttheirroleand identification inthe organization. In particular, we examined the ways that new IT implementation altered the dynamics of the organization interms of lines of communication (including communication effectiveness) and democratic structure.

Our research for this chapter was conducted at two stages between 1998 and 2000. At Time 1 (1998), we conducted 67 in-depth, unstructured interviews. From this data collection period, we selected 19 interviews for in-depth analysi s. The sample included five executives, four doctors, six nurses, and four allied health professionals. During this time period, the hospital was at the beginningofundertakingmany changes (e.g., downsizing and changes to work practices – including ICT implementations such asERP and PACS). For Time 2 (2000), we conducted 28 in-depth unstructured interviews from which we have drawn a sample of 18 interviewees. During this time period, the implementation of changes initiated at Time 1 were quite advanced (e.g., hospital rebuilding, changes to work practices, and the lCT changes).

In this monograph, we analyzed the interviews of nine executives, one doctor, five nurses, and three allied health professionals. It is unfortunate that at Time 2 we were only able to interview one doctor. For each period of data collection, interview transcripts were analyzed with the use of the QSR qualitative software package called NVIVO. Trained coders identified common themes throughout the data. The interviews conducted at Times 1 and 2 were open and unstructured. The aim at Time 1 was for the interviewees to describe what they felt was good and bad about the changes that were to occur. At Time 2, the interviewees again described what they felt was good and bad about the changes that were occurring. They also described their perceptions concerning the implementation process.

Specific Findings. Social identity theory posits that when change occurs, some employees will react with perceptions of threat to their in-groups. As a consequence, they will act to protect their social group status. Thus in-group bias may increase, but the group may also seek to create anew group identity. If the group does strive to create a new group identity, then social i dentity theory would predi ct a new energized in-group identity, as was seen in the creation of the "black is beautiful" new identity in the 1960s for black Americans. When doctors and allied health professional s spoke about the technology change, they identified with two in-groups, the hospital (distal in-group) and their professi on (proximal in-group). When discussing the change implementation i n more general terms (e.g., patient care), however, both their proximal in-group and out-group salience were more evident, that is, they spoke more about work units and professional identity. Interestingly, nurses did not make their professional identity salient when talking aboutICT changes –

rather they identified with the more distal in-group of hospital. The reasons underlying this finding are unclear. In contrast, when nurses talked about other general change issues, their i dentity as a nurse and i n particul ar their unit was salient.

Effective Communication. Health professionals expressed concern about the effects of new technology on communication. F or example, an allied health professional was of the opinion that the new PACS technology led to reduced communication between health professionals, leadingto aloss of relationship with other clinicians and trainee staff. She commented that the medical staff [people] would losethe network connections that currently existed.

A member of the executive level focused on this reduced level of communication at Time 2. However, she looked to the level of efficiency that would be achieved. The sentiments regarding the P ACS technology expressed by the allied health professional at Time 1 demonstrated the view of non-executive health professionals that communication still needed to take place atthephysical ratherthan the electronic level. Face-to-face communication was viewed as an important feature of the intra-hospital networking system. A perceived lack of such communication brought aboutby the ICT change was therefore viewed as a threatto communication efficiencies. For example, PACS technology meant thatx-ray requests could now be requested electronically. The old system had meant that forms were filled out and taken down to the x-ray division. As a result of the archaic manual system, however, interns got a better understanding of x-ray procedures and could ask for advice from the radiographers and radiologistsbecause they interacted with them. As exemplified by the allied health professional quote at Time 1, ICT change thereby paradoxi cally allowed b oth a reduction in informati on connectivity al ongside an i ncrease in autonomy. But rather than enable the ease of information sharing, as e-democracy practices forecast, our results revealed an atrophying of inter-disciplinary contact and subsequently lower effective communication than previously existed.

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In presenting much the samebeliefin the need for face-to-face communication,

doctors suggested that PACS changes did not allow important information relayed by people to be received effectively. This doctor implied that owing to the culture of medical staff (i.e., his in-group), important information was continuously lost, ignored, or overlooked as the systems changes started to take effect. At Time 2 a nurse commented that the structure of the hospital would improve the communi cati on. His comments supported the notion that health professionals recognize the need to communicate on a face-to-face basis. Interestingly, he also addressed the issue of work identities. While this comment does not directly address ICT, it high lighted the face-to-face culture that exists in the hospital context.

Workgroup identity and communication work against each other or together to influence both intergroup and individual adjustmentto change. In the hospital setting described in this chapter, the outcomes were such that the hospital remained a highly stratified institution. Both executive and non-executive groupings were able to develop justifications and explanations for the lack of participatory change and for existent structural arrangements. Specifically, although some executives expressed concern for lower level staff as they were experiencing ahigh workload and stress associated with the changes, they were simultaneously convinced that there were more positive issues brought about by the change than there were negative. The system and the processes it set in place did not bring about an amalgamation of different groups, nor did it equalize the way authority was transferred.

Such a reaction to changes suggested a difficulty in adapting to some kinds of changes. The view held by this doctor was that medical practitioners shouldnot have to b e involved in technology uniess they wish it. This reaction also reflected a belief that a lot of time wasbeing spent on change-related activities, without adequate compensation or proper attention being paid to those being forced to use the new sy stem. In particular, doctors beli eved that executives were making decisions based on budgetary constraints rather than patient care. This opinion clearly emphasized the different group i dentity outlook (i. e., health care professionals versus healthcare managers). Doctors were resistant to technological changes, and perceived that their job was to treat patients and everything else was secondary. Nurses presented a resistance with ICT-enabled changes, based on similar reasoning, and focused on role changes and possible staff reduction.

The difference in individual and therefore intergroup adjustment was further typified by the executive group’s perception of how adjustment to change should be managed. A senior executive commenting on the voluntary retrenchment of 40 workers as their jobs became obsolete observed that working with the staff who would be laid off made for a smooth transition.

The i nference made by this very senior executive who was b rought in to manage the change was that adaptation to changes is easily made if the correct internal procedures are followed. In his mind, this procedure included talking to staff at the shop floor level and discussing the need for redundancies for the hospital’s own good. This reaction emphasized the view that the hospital’s cumulative needs over-rode those ofthe group. For this executive, in his mind, he was reaffirming that communication about change is effective if it is well managed through staff involvement. There was, of course, some level of involvement atthe non-executive

level, with some employees happy to be part of an internal arrangement rather than take industrial action, generally. Nonetheless, the individual risk associated with ICT change overwhelmed the change rationalization offered by executives. In particular, as the change implementation progressed, nursesbecame increasingly agitated by thepoten- tial j ob losses expected to occur. This concern was linked to frustration about the level of care that would occur as an outcom e of the resultant devolution of responsibility. Other nurse concerns related to training and patient care outcomes as a result of role changes.

This observation reflected a common perception that while new technology resources were welcome, they were introduced for spurious budgetary reasons, rather than to improve patient care. Consequently, they initiated a series of probl em s at the ward 1 evel. A b eli ef among som e nurse s was that the h o spital was not prepared for ICT change outcomes. In short, they argued that the hospital's infrastructure was not equipped for the planned IT changes. These comment s highlighted the inference that pati ent safety was not improving with the innovations because the hospital is first and foremost interested in institutional outcomes. Thus, whiletechnology advancescan aidthe patient, they were perceived to also put the patient at risk if the new technology is not supported at all levels of the hospital. Hospital executives may have cultivated a belief that some technology was installed for the sake of the hospital being seen as a state-of-the-art organization, without prioritizing the needs of the patients. Clearly patient outcomes in this context were not as focal as they might be. In this context, ICT change implied pati ent risk when executives imposed changes on the roles of health professional roles. Health professionals may resist the changes and so resist the ICT.

Using a social identity framework, we reiterate that organizations suffer from problems of intergroup relations. Unlike other research and commentary, however, we assert that group identity and status differences simultaneously impede and enable e-democracy. For instance, whereas Semler (1989) suggests that the participatory features of organizational e-democracy are "just hot air" (1989, p. 3) that needs to be minimized, our results reveal that the features of democracy are embedded in the organization under review, but may not be able to penetrate traditional bases of power and influence. In other words, the organization chooses to appropriate parts of the democracy features of a new technology that seem to best fit its preexi sting structure or institutional arrangement. IT-enabled changes therefore paradoxi cally reinforce normative institutional practi ces (after Scott, 2001). In response to our focal research question that examines the inevitability of e-democracy, Slater and Bennis (1964) were correct in asserting the place of and importance of democracy. Our results suggest, however, that while aspects of e-democracy are inevitable (i.e., symbolically more information is available to staff), social i dentity provides a barrier that reduces the extent to which e-democracy will occur.

Our findings have important implications for FIR practitioners. Ourresults show that ICT brings changes to the ways inwhich employees focus on their roles and identities. In particular, we argue that group identification is a key part of the successful adoption of e-democracy change. At the two phases of changes described here, when ICT changes were highlighted, findings suggest that compared to doctors

and allied health professionals, higher order identities (e.g., hospital) are more salient for nurses. This result may reflect that fact that the nurses were less involved with the technology changes than the doctors and allied professionals at these two phases of change. For example, PACS was highly relevant for some allied health professionals and doctors. Thus, groups who find themselves immersed in the new system, and affected by it, do present their proximal roles as salient. By contrast, when change implementation and patient care was the focal topic, all health professionals identified with their professional in-group.

Individual empowerment through PACS was nottranslated upward into group changes inthe organizational hierarchy. As noted above, our findings focus on ahealthcare industry, but their relevance to other organizations with hierarchi cal structures is self-evident. This finding, concerning employee identities, also raises a second implication that HR practitioners need to bear in mind during ICT change. That is, they need to be aware of the salient identities within organizations and not simply focus on the formal roles and functions that are outlined in the organizational charter. Ourfmdings reveal that, atleastfor some groups, higher order identities during IT implementation seem to be more salient. We would have predicted that lower order level identities would be more salient in the ICT context, butthi s i s not so. Thus the management of ICT changes is a complex phenomenon that may differ from the implementati on of other types of changes. Specifically, rhetoric of empowerment and authority voiced by senior management do not equate to high levels of e-democracy with staff who historically didnothave such responsibilities – noris it sought by these staff. This observation highlights that, at least in our context, the overall good of the organization (the hospital) and professional roles are paramount. Thi s finding goes some way to explaining why role rel ati ons remain intact during ICT implementation, regardless of the collaborative practices organizations adopt during new informati on technology impl ementati ons.

A third implication that HR practitioners need to focus on is that employee identity can act as abarrierto the uptake of change. Resistanceto changeis not a new phenomenon, but in this chapter we have begun unpicking the elements of that resistance. If ICTbrings with it significant changes to a professional's job description and duties, HRmust acknowledge this change and address the changes di rectly with the professi onal s involved. Thi s last point relates closely to the following two HR implications that ari se from our findings.

HR practitioners mustrecognize the importanceofensuringtheparticipati on of key groups inthe planning and implementation of changes. They mustalso recognize the importance of effective and relevant training procedures inthe newly acquired technology. Theformerimplication suggests thatHR practitioners should put in place an appropriate program of focus groups and workshops for employees which will serve to encourage key personnel to engage in and champion the changes. From such programs, these employees will gain an in-depth understanding of the rationale for each aspect of ICT change. With their increased knowledge and understanding of the change, they will then be able to impart their knowledge to other employees affected by the change. Specifically, the rationalethatunderlieseach ICT introduction needs to be openly explained to the staff. In turn, staff shouldbe allowed to provide input as to

their perceptions of the value of the impl ementati on. HRpractitioners need to be aware of the critical importance of this level of dialogue throughout all phases ofchange.

The latter implication, regardi ng trai ni ng, relates to our results that reveal that despite the potential sophistication of the new systems, such technology requires effective training procedures to be put i n place. Staff training programs need to timed so that they integrate smoothly with the introduction of new technology. Training must be viewed by the change agents as another important aspect of the change and implemented at the appropriate time in the change program, with back-up and training assistance available as needed. Clearly then, HR managers need to address resource and training issues and, in the case of some professions, create an environment where the professional will wantto engage in thetechnology. While there are some professionals who will seekto resist new technology, it is important that education and training be aligned with technology preparation and a clear outline of the benefits to the organization. Again, active dialogue at all stages of change is critical.

A final implicati on for HR is the need to recognize the communication culture of the organization. If the organizati on is one that relies on face-to-face and one-on-one communication, HR practiti oners must not only address the impact of the new technol ogy, but must monitor how employ ees m anage the change in their traditional channels of communication. Notto recognize the huge culture change that new communication media bring to traditional organizati ons i s to j eopardize the efficient functioning of the organization and risk increases in mi scommunicati on and di sh armony.

We have highlighted the uni ntended consequences of newtechnology i mplementation. By illustrating the problems with assuming the inevitability of e-democracy, we indicate that integrating HR practices with the task of designing information systemsismuchmorethan simply specifyingparticular equipment parameters. Rather the process is about designing, inscribing, and configuring the system both formers and recipients alike – in this case, health professional s and their patients. This process needs to include ongoing negotiation as the system evolves. We would suggestthat patients or other clients may not benefit from new ICTs, at least in the short term and in the current climate of HR- managed change. This disadvantage topatients/clients needs to be addressed by HR practitioners through the suggestions above. Our SIT framework highlights the need for attend on on human resource issues during the implementation of new information technology. The impact of information technology improvements on the workforce needs careful evaluation beyond a simple assessment of technology outcomes or organizational benefits.

We emphasize how an organization’s communication processes and its levels of effectiveness may change with ICT implementation. Our findings suggestthatIT implementations are sometimes installed at the expense of other systems, which may be more directly beneficial to the patient. To generalize to other organizations, we ask: Are organizations installing IT for IT’s sake without due consideration of the needs? Paradoxically this approach to IT and, in particular, ICT change may

disadvantage the original aims of the organization. ICT changes do not necessarily equate to improved communication between employees orworkgroups. Our findings highlightthat as new ICT systems are putin place, communication channels and dynamics alter. This alteration may not align with staff empowerment or increased communication effectiveness. HR practitioners need to examine current communication procedures and involve employees inthe potential changes to communication that thenew ICT brings. With the introduction of new technology, communication networks within organizations such as hospitals are often likely to break down. If the organizational culture has a tradition of face-to-face communication (as do hospitals), HR practitioners need to be aware that ICT implementation will have a huge impact on practice and on culture. Open di scussion of disadvantages in anew system can only be acknowledged and constructively dealt with if there is genuine staff input and dialogue. Our findings suggest that HR managers need to be cognizant of the fact that effecti ve communi cati on may be compromi sed. Further they need to ensure that the change program i s communicated and managed effectively. In this way, further miscommuni cation issues may be reduced or even avoided. Our current findings suggest that e-democracy is not enhanced through IT change. Rather, we have found that the contrary i s true. HR must respond to the frustrati on expressed by professi onal s concerning the actual changes and the implementati on process. To address these concerns effectively, HR must understand both the formal and informal organizational charter. Without due consideration to the opinions of professionals throughout the change process, our findings suggest resistance.

Conclusions

The resulting valuation of a business' existing or prospective intellectual property may be the determining factor in whether an acquisition goes forward or a potential research and development project continues to receive funding. Moreover, as certain businesses experience intellectual property gaining a greater proportion of their value, the quality and precision of valuations will be of increasing importance to shareholders and business owners. This monograph should be useful to a variety of constituencies who are interested in the interrelationships between human resources management and IT, including managers who treat their personnel as a key factor for organizational success, leaders wishing to develop the human side of their organizations, IT experts, human resources managers, researchers, consultants, and practitioners. Each audience may have different levels of interest in the theoretical concepts, practical experiences, and empirical data presented in this monograph.

Access to Knowledge (A2K) is the umbrella term for a movement that aims to create more equitable public Access to Knowledge (A2K) is the umbrella term for a movement that aims to create more equitable public access to the products of human culture and learning. The ultimate objective of the movement is to create a world in which educational and cultural works are accessible to all, and in which consumers and creators alike participate in a vibrant ecosystem of innovation and creativity.

These goals are of interest to a broad coalition of consumer groups, NGOs, activists, Internet users and others. However for many of them, coming to grips with the issues involved in the A2K movement can be daunting. These issues, including copyright and patent law reform, open content licensing, and communications rights, often involve legal and technological concepts that even specialists find difficult. The purpose of this monograph is to provide an accessible introduction to the A2K movement and the institutions, concepts and issues involved in it, for those who would like to become involved but don't know where to start.

The author of the monograph on the results of the study has formed the following conclusions and proposed the following recommendations for the development of the system of intangible assets of the enterprise and the state as a whole:

1. After summarizing the results of the research of contemporary domestic authors and implementing the experience of foreign specialists in relation to the content of the definitions of "intellectualization", one can cite the author's interpretation of the concept of "intellectualization of world economic development" as a subject of research. Thus, the author concludes that ensuring the balanced development of the modern world economy depends directly on the formation of a global institute of intellectualization of world economic development. In our opinion, the intellectualization of world economic development should be understood as the process of materialization of new ideas, knowledge, skills and abilities of humanity expressed in the creation and effective management of intellectual property in order to ensure global economic equilibrium in the global economy.

2. The Sensemaking Theory of Knowledge, outlined briefly in this monograph, identifies and describes different types of knowledge in organizations – individual,

collective, organizational, and cultural – that are in permanent flux, influencing and re-constituting each other. The Sensemaking Theory of Knowledge is consistent with and contributes to the view of the firm as a *distributed* knowledge system "which is not, and cannot be, known in its totality by a single mind". This theory describes several ways and levels of knowledge distribution in an organization: from individual knowledge of organizational members, to collective knowledge of groups, to organizational knowledge and knowledge embedded in culture. Through the emergence within and dynamic interchange between these types of knowledge, knowledge in an organization is continually transformed and re-constituted. By drawing from the three field studies of knowledge management, the paper illustrates the applicability and usefulness of the Sensemaking Theory of Knowledge in investigating these simultaneous knowledge creation processes and the dynamics of knowledge transformation in practice. The outline of the Sensemaking Theory of Knowledge and illustrations of its application, while brief and cursory at times, indicate that there is a wealth of knowledge and theoretical concepts created in disciplines such as psychology, social psychology, sociology, organization theory, economics, and communication, to mention just a few, that pertain to knowledge in organizations and could be useful for understanding specific aspects of its creation, transformation and use. While the reasons are various, it can be argued that among the key obstacles is the complexity of these concepts and theories that makes their interpretation and application in knowledge management practices quite difficult. Due to their complexity, concepts and theories from different disciplines are typically not quite understood (discussed, applied, criticized) outside limited professional circles. To understand them and interpret them in the specific context of knowledge management is not straightforward and often requires considerable background disciplinary knowledge.

When some of these theories, though, do cross over disciplinary boundaries, such as, for instance, concepts of 'tacit' and 'explicit knowledge or theories of group behavior (brought from social psychology), they run the risk of being over simplified and applied as easy-to-do recipes. Taken as unambiguous and clear-cut concepts, tacit and explicit knowledge form the basis for their model of knowledge transformation, that became hugely popular in knowledge management literature and practice. A contrary example is the notion of collective mind that draws from several complex theories and is itself a complex concept, which has not made it into the knowledge management literature, despite its demonstrated explanatory power and high potential value in understanding knowledge sharing and conditions for coordinated action. One is tempted to conclude that the wealth of knowledge and theories from other disciplines have been imported and applied to knowledge management problems only when heavily simplified and presented in an easy digestible form. It is arguable, however, that this should not necessarily be so.

3.Furthermore, when dealing with any specific issue – be it the nature of personal versus the collective knowing and acting, or the problems of knowledge sharing and transfer within or between organizations – we need to investigate what has been done in relevant disciplines so far, and whether and how an existing body of knowledge can be applied to our specific problems. Such investigations would

require collaboration with researchers and professionals from relevant disciplines (eg. psychologists, anthropologists, sociologists) to ensure 'proper' interpretation and mindful appropriation of concepts and theories from these disciplines for specific purposes of knowledge management. Proper interpretation here means deep understanding and critical assessment of various concepts and theoretical foundations and their specific meaning within the context of knowledge creation, transformation and use in organizations. Mindful appropriation means the adoption of concepts and theories that takes into account background knowledge from originating discipline(s) and preserves their authentic meaning and richness while being re-interpreted and re-defined for knowledge management. Finally and more broadly, the reluctance of knowledge management professionals to embrace the new worldviews, new paradigms, and new dimensions of problems at hand may be seen as another obstacle to fruitful adoption of concepts and theories from other disciplines and their integration into knowledge management field. The Workshop like this one, that brings together both practitioners and researchers with different backgrounds and professional affiliations, is an excellent example how this obstacle can be overcome. As we have experienced in this monograph, opening up to the new worldviews, new paradigms, and new dimensions of problems is not really threatening or arduous but can indeed be challenging and hugely exciting.

4. The author has showed that present day company management is based on a model of the company, which might be insufficient and thus constrain the development of efficient and effective management methods and tools. In monograph has been presented an alternative company model based on knowledge that might have the potential to open up the way towards a new and better understanding of the company and could lead to a new and better operative and strategic management. The result is that knowledge management is no longer an additional task for the company - but the core of the company management itself. The most challenging task was establishment of culture that supports innovation and knowledge generation. The key elements of this support system are the culture supportive of innovation and the culture of taking up challenges. This needed dismantling of all organizational and other barriers. Such a strong cultural base enabled ideas generation, facilities creation, technologies development and establishment and relevant systems to achieve the mission of developing the LCA.

Development of Indian Light Combat Aircraft, the largest R&D Program undertaken in the country so far, is an extraordinary experience for the development team. It achieved a considerable degree of cultural and system changes. It enabled creation of a valuable knowledge base at the various work centers. This knowledge base is expected to have many spin-off benefits not only in the aviation but also in the non-aviation sector.

5. Many countries protect unregistered well-known marks in accordance with their international obligations under the Paris Convention for the Protection of Industrial Property and the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement). Consequently, not only big companies but also SMEs may have a good chance of establishing enough goodwill with customers so that their marks may be recognized as well-known marks and acquire protection

without registration. It is, nevertheless, advisable to seek registration, taking into account that many countries provide for an extended protection of registered well-known marks against dilution, the reputation of the mark being weakened by the unauthorized use of that mark by others. A number of trademark laws merely implement obligations under Article 16.3 of the TRIPS Agreement and protect well-known registered trademarks only under the following conditions: 1 – that the goods and services for which the other mark is used or is seeking protection are not identical with or similar to the goods for which the well-known mark acquired its reputation 2 – that the use of the other mark would indicate a connection between these goods and the owner of the well-known mark, and 3 – that their interests are likely to be damaged by such use.

6. Well-designed framework policies can raise incentives to invest in KBC. Regulatory policies in product, labour and capital markets have a pervasive impact on KBC given their potential to affect each stage of the innovation process. Furthermore, reforms to these policies are an attractive way to enhance KBC-driven growth from a public finance perspective since they do not imply a direct cost to public budgets. Indeed, well-functioning product, labour and (early stage) venture capital markets and bankruptcy laws that do not overly penalise failure are associated with greater investment in KBC – a link that is corroborated by more detailed empirical analysis. These benefits are partly realised through stronger competitive pressures and more efficient reallocation, which make it easier for successful firms to implement and commercialise new ideas and, by lowering the costs of failure, encourage firms to experiment with uncertain growth opportunities.

Reforms to anti-competitive product market regulations – such as the removal of administrative burdens on start-up firms as well as broader barriers to competition - can increase investment in KBC via:

- more entry of entrepreneurial start-ups, which in turn increases pressure on incumbent firms to invest in R&D and incorporate foreign technologies,
- improved management performance as a result of greater market discipline, which enhances the ability of firms to implement new technologies and sustain the innovation process,
- easier and cheaper access to labour and capital inputs, which – because of easier reallocation – raises the returns to investing in KBC. For example, a policy reform that would alleviate regulatory barriers in business services from the OECD average (i.e. France) to the low level in Sweden is associated with a 30% increase in investment in innovative firms,
- lower barriers to international trade and investment, which increase access to international technological transfer and raise the returns to innovation by expanding potential market size and facilitating the growth of the most productive firms.

The sensitivity of firm capital to changes in the patent stock varies according to the policy environment. All policy terms are statistically significant at at least the 10% level. For example, the sensitivity of firm capital to patenting is about three times larger when EPL is at the sample minimum *(i.e.* the US), compared with when EPL is at the sample maximum *(i.e*, Portugal).

7. Yet a few Congressional leaders realized these policies were failing and concluded that restoring the incentives of the patent system, coupled with the decentralized management of technology away from Washington, was the better path. They passed Bayh-Dole, which President Reagan immediately embraced. Combined with renewed support for the patent system, the U.S. enjoyed an economic renaissance, again dominating every field of technology. The old arguments that patents inhibit innovation, and non-exclusivity with compulsory licensing leads to a brave new world are now in vogue. We've stood at this fork in the road before. It requires courage to reject the easy path downward and restore the system which created our prosperity. If we lack the will, we have no one else to blame as we plunge deeper into the mire. That's the last place anyone wanting to drain the swamp while growing the economy should go.

8. Countries ranked from highest to lowest R&D tax incentives/GDP. R&D tax incentives do not cover sub-national incentives. Direct government funding includes grants and public procurement of R&D and excludes repayable loans. Figures are not shown for Greece, Israel, Italy, the Slovak Republic, China and the Russian Federation, which provide R&D tax incentives, but cost estimates are not available. For the United States, direct government funding of R&D includes defence spending on R&D by the government in the form of procurement contracts or the subcontracting by government agencies of non-classified projects to private firms. That is, it includes only R&D spending not directly performed by national or publicly funded institutions (e.g. military laboratories etc). If a project is conducted by the private firm in direct collaboration with the government, publicly funded institutions or universities, only the part that is done by the private firm and paid to her would be included.

9. Finally, it is clear the contribution of even highly skilled and motivated employees will be limited if jobs are programmed or structured in such a way that employees do not get the opportunity to use their skills and abilities to improve their performance. Consequently, HRM practices can also create competitive advantage through provision of organizational structures, leadership and work conditions that encourage initiative and creativity among employees and allow them to find ways to improve how their jobs are performed. Delegation, cross-functional teamwork and participative management are examples of such conditions. With the increasing demands of today's business environment, company executives are placing more pressure on the human resource function to perform better, smarter, faster, and cheaper, while providing more value added services. Now, in addition to supporting workforce requirements and general business initiatives, the activities of HR are increasingly focused on managing the broader human capital capabilities required to achieve and sustain a competitive advantage (e.g., succession planning, leadership development, performance management, cultural transformation).In order to accommodate this shift in focus, HR needs to rapidly align their priorities and resources to provide the wider range of expertise necessary.

10. In the world of intellectual economy, the key role in creating a new value is occupied by intangible assets and the multiplier effect of their application. Moreover, this effect increases in geometric progression. This confidence is based on the fact

that today the world begins to live in intangible economics – an economy based on knowledge. In the intellectual economy, what yesterday did not have any value can be valued, and vice versa, what yesterday was valuable, today or tomorrow, this value can completely lose. The nature of the competitive advantage has shifted from the sphere of material to the sphere of immaterial, from the visible to the invisible. The paradigm of the very nature of creating value changes. The driving force behind the development of the current economy is something that is hard to see. Intangible becomes a "new force" of economic development. Intellectual Property Association, the United States found that the "creative" sectors of the economy: communication, information, research, organizational, management, consulting is already estimated at 360 billion dollars. per year, which exceeds the cost of road, aircraft, space industry or agriculture. According to L. Edwinson, "intangible, intellectual capital becomes a new wealth of nations".

11. So, the intellectual capital of the country is formed from the intellectual capital of business entities legally registered and operating in the country. The intellectual potential of society is reflected through the ability of the society to realize the factors of the internal and external environment, accumulation, use and transfer of knowledge, as well as the ability to form a high-quality workforce capable of creating, evaluating, protecting, commercializing and managing intellectual resources. The author’s definition of the term "intellectualization of world economic development" is the process of materializing new ideas, knowledge, skills and abilities of humanity expressed in the creation and effective management of intellectual property objects in order to ensure global economic equilibrium in the global economy. Studies have shown that already developed countries have concentrated most of the intellectual potential of humanity. This can lead to the fact that the advanced countries of the world will begin to take on their own interests to define the policy of the global institute of intellectualization of world economic development, and also to have a significant influence on the priorities of the rest of the world. In the conditions of global intellectualization, there was a new tendency to increase the differences not only between centers and the backward part of the periphery of the world economy, but also within the leading countries according to the level of development of new sectors of the economy. Thus, there is the danger of the monopolization by individual countries of the world market of intellectual resources and the transformation of the rest of the countries not only in the technologically backward states, but also in intellectually peripheral.

12. Technological resources are systems and tools required to effectively produce or create a product or service. These include energy, information, people, tools, machines, capital and time. Technological resources aid production processes and service delivery in companies and organizations. The most important resource of technology is people. Without them, no product would be formed, and no service would be delivered. People develop tools and machines, which are used in production such as software and hardware. Their innovative tools increase the end user’s convenience and drive development, construction, delivery and purpose. Energy is another one of the most important technological resources. Most forms of technology rely on energy for power. Machines driven by energy are an invaluable resource in

industries that rely on continuous and mass production. Moreover, energy is used in households and businesses to power various necessities and conveniences. Information is also an important technological resource. Introduction of highly efficient technological devices has resulted in increased information sharing across the globe. Many people can access updated and accurate information using various devices such as cellphones and computers. As such, people have greater access to more information. Furthermore, computers provide a safe and economical storage of information for companies, organizations and individuals.

13. There are seven main categories of substantive issues – Copyright, Patents, IP enforcement, IP alternatives, Access to government information, Internet regulation, Media diversity. The term “intellectual property rights” is being used as shorthand for two particular legal rights over information: copyright and patent rights. However, the limitations of this term are acknowledged, since copyright and patent rights vary markedly both from each other, and from rights to other forms of property, particularly in that their use is CPTech (the Consumer Project on Technology, now Knowledge Ecology International). Knowledge is essential for so many human activities and values, including freedom, the exercise of political power, and economic, social and personal development. The A2K (Access to Knowledge) movement takes concerns with copyright law and other regulations that affect knowledge and places them within an understandable social need and policy platform: access to knowledge goods.

14. The ratcheting up of IP protection adversely impacts almost all the rights of consumers. The right to basic goods and services, especially access to education, healthcare and food are reduced by IP protection. The right to choose is reduced when IP laws create monopolies; permit market segmentation, and differential pricing. The consumer rights to access information and education are severely reduced when information and knowledge are made into private property that provides its owners the right to seek rent. The right to a healthy environment is compromised when there is a loss of biodiversity and crop varieties because corporations that find it more profitable to move away from the rich variety of agricultural species to a limited range control the food chain. This chapter begins by providing an outline of copyright and patent law, and describing some of the ways in which these laws and the ways in which they are enforced can impeded access to knowledge. Although not under direct pressure from a Free Trade Agreement, Malaysia has introduced amendments to its copyright law in 2010 that would introduce a number of new offences. These include provisions to criminalise the simple possession of a single copyright-infringing item, as well as the operation of a camcorder in a movie theatre, and would even impose liablity for the landlords of premises in which infringing items are sold.

15. The A2K movement combines a reactive or responsive agenda, and also a proactive or positive agenda. Until now, most has been written about the responsive agenda, which includes adding new exceptions to copyright law that allow for more “fair uses”, opposing enforcement practices such as cutting accused users off from the Internet, and fighting the extension of content owner’s rights through using technology like DRM. In this monograph we will turn to the positive agenda that

involves the promotion of alternatives to market-based models of copyright or patent-protection, such as the open source movement, open access publishing, and Creative Commons, as well as collective licensing schemes and libraries. The passage of a new treaty for the protection of databases was proposed at WIPO in 1996, but failed to gain acceptance, largely because such a right did not yet exist in some of the major WIPO member countries including the USA. Fowever, discussions at WIPO are ongoing, and a database treaty may yet emerge.

16. Social Capital as a concept has its roots in the field of sociology, being largely applied to describe organisational effects developed through socially derived connections in the broader communities, societies and cultures. Traditionally, the context of social capital for private sector firms is seen as their contributions (usually financial) to the communities within which they operate. While often seen as corporate philanthropy, claims have been made that such good corporate citizenship can contribute to improved business performance. The traditional view of Social Capital, as described above, is "industrial era" thinking. Many commentators have argued that we are currently transitioning from the industrial era to a knowledge era, where the traditional factors of production of land, labour and capital are being replaced by the creation of value through knowledge. In the knowledge era the boundaries between firms, governments and society at large will become increasingly blurred. In the knowledge era, firms will become embedded within a complex web of interconnections that span markets, governments and communities, rather than simply managing an interface between a private and public sector. In this world the concept of Social Capital can take on a whole new dimension for the "firm". This monography explores the concepts of Social Capital, as it applies to the corporate sector. The notion of how world markets are migrating from being industrially based to knowledge based is discussed. A relationship is drawn between the concept of Social Capital and the concepts of "Intangibles" and their impact on company valuations. An argument is then put forward for the use of Social Capital as a unifying theme for developing a suite of management heuristics for intangibles. Finally some case study examples of how Social Capital could be measured at the individual, group and marketplace levels, are provided. These examples further illustrate how markets and firms are moving from an industrial modus operandi to a networked model, further supporting the argument for the use of Social Capital as a unifying concept for managing in the Knowledge Era. This monograph has introduced the concept of Social Capital as it might apply to the corporate sector, in support of increasing shareholder value through the prudent management of intangibles. It has been argued that as world markets evolve from an industrial era into a knowledge era, the management of intangibles will become increasingly important in assuring market valuations, and hence maximizing shareholder value. The large and dynamic movement of share prices on world markets over the past 10 to 15 years is being attributed to a poor understanding of the effect of intangibles like human competence, intellectual capital, brands and Social Capital. While it is acknowledged that developments in balanced scorecards and intangible asset monitors will provide powerful analytical aides for reviewing non-financial performance, what is missing is the simple heuristics that managers rely on for day-

to-day activities. These heuristics exist in financial management, they don't in intangible management. To assist managers develop such heuristics, an argument has been made for the use of Social Capital as the basis for developing management heuristics. It is argued that a leading focus on developing trustworthy networks at the individual, group and market levels will create an assurance that other intangible factors such as human competence, internal processes, innovation and intellectual capital will also be well catered for. Finally some examples of emerging measurement techniques for Social Capital, based on SNA were provided. The examples illustrated how Social Capital might me measured at the individual, group and market levels.

17. While the technology exists, organizations seem to be slow in moving to the more developed cross-process, integrated functional portal. It is possible that the business processes that would be utilized in an "application-rich" portal do not exist in the organizations. Portal development must follow the business, not lead the business. What is not vague is the understanding that ESS portals are information delivery platforms that have much potential to deliver not only cost-focused savings, but the more important strategic HR benefits being sought by modern organizations. The recent Cedar Report (2002) commented on the importance of high performance workforces and the need for enterprise to employee solutions. Major Australian organizations are exploring the use of ESS portals, and these modern e-enabled applications set the stage for other Australian organizations to be aggressive followers. We will watch with great interest the march to ESS and then the advancement to HR/corporate/enterprise portals.

18. OD is afield uniquely qualified to collaborate with IT to address these issues. In this monograph nas been presented a model for managing and practicing OD in an IT environment. Using this model, the OD practitioner or team can establish a collaborative, mutually beneficial relationship with the IT project manager. The outcomes of this partnership will be more effective teams, better organizational alignment both within the team and with the organization it serves, and the promotion of results-oriented organizational learning. This is one of the first efforts to address the persistent problem of waste in the IT environment by codifying the relationship between OD practitioner and IT project team, and it is only the beginning. While establishing the technical context of the IT project is an important step in enabling team development, Lewin's core principle for OD ultimately still applies: we are likely to modify our own behavior when we participate in problem analysis and solution and likely to carry out decisions we have helped make. Yet, participation alone will not solve the issues of IT project waste. Participation requires go a *focus* and *active leadership*. The two are brought together through a structured collaboration between the IT project manager and the OD practitioner. The opportunities for each are bound only by their mutual will and discipline in creating IT project success.

19. In this monograph, we consider the relationships between effective communication, social identity, and e-democracy in organizations that exist in the constantly changing global business and technological environment. We also consider the inevitability of organizational e-democracy in organizations undertaking

information technology (IT) changes, the technology at the base of e-democracy. Through an examination of employees* experiences of change, we investigate their perceptions of changes in effective communication during major organizational change implementation in a hospital context. While the changes were far reaching, we mainly focus on the introduction of information and communication technology (ICT). We define e-democracy as the technological advances in communication media that provide employees with more information and more direct access to other employees (supervisory and subordinate levels) than previously existed. These changes to communication channels provide organizational connections and lead to e-democracy practices that seek to improve the autonomy of organizational members. Thus there is a freeing of information to help erase or ease organizational boundaries, which changes the relationship between executive and middle management parties. We emphasize how an organization's communication processes and its levels of effectiveness may change with ICT implementation. Our findings suggest that IT implementations are sometimes installed at the expense of other systems, which may be more directly beneficial to the patient. Paradoxically this approach to IT and, in particular, ICT change may disadvantage the original aims of the organization. ICT changes do not necessarily equate to improved communication between employees orworkgroups. Our findings highlightthat as new ICT systems are putin place, communication channels and dynamics alter. This alteration may not align with staff empowerment or increased communication effectiveness. HR practitioners need to examine current communication procedures and involve employees inthe potential changes to communication that thenew ICT brings. With the introduction of new technology, communication networks within organizations such as hospitals are often likely to break down. If the organizational culture has a tradition of face-to-face communication, HR practitioners need to be aware that ICT implementation will have a huge impact on practice and on culture. Open discussion of disadvantages in anew system can only be acknowledged and constructively dealt with if there is genuine staff input and dialogue. Our findings suggest that HR managers need to be cognizant of the fact that effective communication may be compromised. Further they need to ensure that the change program is communicated and managed effectively. In this way, further miscommuni cation issues may be reduced or even avoided. Our current findings suggest that e-democracy is not enhanced through IT change. Rather, we have found that the contrary is true. HR must respond to the frustration expressed by professionals concerning the actual changes and the implementati on process. To address these concerns effectively, HR must understand both the formal and informal organizational charter. Without due consideration to the opinions of professionals throughout the change process, our findings suggest resistance.

The introduction of a set of measures designed to stimulate the effective use of intangible assets of enterprises operating within the legal framework of the European Union, which have been developed in this scientific monograph, will significantly improve the state of affairs in the field of copyright protection, informatization of the society, information updating and will provide a new level of their development.

Literature

Access to Knowledge: A Guide for Everyone, (2010), *Compiled and edited by* F. Noronha and J. Malcolm. Cover design by A. Carter. Production by J. Malcolm. First published 2010. Second edition 2010.

A trade mark is a sign which can distinguish your goods and services from those of your competitors (you may refer to your trade mark as your "brand")". Retrieved 2012-12-22.

A trademark is a word, phrase, symbol, and/or design that identifies and distinguishes the source of the goods of one party from those of others". Retrieved 2011-12-13.

ABS: Australian Bureau of Statistics (2019), '*Measuring Social Capital: Current Collections and Future Directions*', www.abs.gov.au.

Advanced Economies: *Measurement Methods and Comparative Results*", INTAN-Invest Mimeo.

Ahonen G. (1998). *Henkilöstötilinpäätös: Yrityksen ikkuna menestykselliseen tulevaisuuteen.* Yrityksen Tietokirjat.

Alavi M. and D.E. Leidner (2001), "*Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues*". MISQ, 25, 1, 107-136.

Alexander S. (2002). HRe-power to the people. Retrieved August 2002 from archive, infoworld. com/articles/ca/xml/01/02/12/010212cahr.xml.

Allee, V. (2000), '*Return on Knowledge'*, Executive Excellence, Vol.17, Issue 9, Pg 8.

Al-Musali M.A.K., & Ismail K.N.I.K. (2014). *Intellectual capital and its effect on financial performance of banks*: Evidence from Saudi Arabia. Procedia – Social and Behavioral Sciences, 164, 201-207. https://doi.org/10.1016/j.sbspro.2014.11.068.

Alvesson M. (2000). *Social identity and the problem of loyalty in knowledge-intensive companies*. Journal of Management Studies, 37,1101-1123.

Andrews D. and C. Criscuolo (2013). "*Knowledge Based Capital, Innovation and Resource Allocation*".

Andrews D. and F. Cingano (2012). "*Public Policy and Resource Allocation: Evidence from Firms in OECD countries*", OECD Economics Department Working Papers, No.996, OECD, Paris.

Andriessen D. (2004). *IC valuation and measurement*: classifying the state of the art. Journal of intellectual capital, 5(2), 230-242. https://doi.org/10.1108/14691930410533669.

Andriessen D., & Tissen R. (2000). *Weightless Wealth: Finding your real value in a future of intangible assets*. New York: Pearson Education.

Applegate L.M. (1994). Managing in an information age: *Transforming the organization for the 1990s.* InR. Archived copy. Archived from the original on 23 October 2011. Retrieved 2012-12-27.

Approach Shoes Market Insights 2019, *Global and Chinese Analysis and Forecast to 2024* // https://www.bigmarketresearch.com/approach-shoes-market-insights-2019-global-and-chinese-analysis-and-forecast-to-2024-market.

Arthur M.B. (1994). Theboundaryless career: A new perspective of organizational inquiry. Journal ofOrganizational Behavior, 15.

Arthur M.B., & Rousseau D. (1996). *A new career lexicon for the 21st century*. Academy of Management Executive, 10(4).

Ashforth B E., & Mael F. (1989). *Social identity theory and the organization*.

Ashforth B.E., & Johnson S.A. (2001). *Which hat to wear?* The relative salience of multiple identities in organizational contexts. InM.

Atkinson H. and Brander Brown J. (2001). "*Rethinking performance measures: assessingprogress in UK hotels*", International Journal of Contemporary Hospitality Management, Vol. 13 No. 3, pp. 128-35.

Auscom vision. (2002). *Auscom's vision and direction*. Retrieved October 2002 from www.Auscom.com.au/investor/vision.himl.

Baer M., & Frese M. (2003). *Innovation is not enough: climates for initiative and*

psychological safety, process innovations, and firm performance. Journal of Organizational Behavior, 24, 45−68.

Baker W. (2001). '*Social Capital*', The AVENTIS Magazine, February 2001 (see www.corp.aventis.com/fiiture/futO 102/social_capital/ printversion.htm).

Banegil Palacios, T.M. and Sanguino Galvan, R. (2007), "*Intangible measurement guidelines: a comparative study in Europe*", Journal of Intellectual Capital, Vol. 8 No. 2, pp. 192-204.

Banker R., Potter G. and Srinivasan D. (2005). "*Association of nonfinancial performancemeasures with the financial performance of a lodging chain*", Cornell Hotel and Restaurant Administration Quarterly, Vol. 46 No. 4, pp. 394-412.

Baskerville S. Smithson O. Ngwenyama & J.I. DeGross (Eds.), *Transforming organizations with information technology* (pp. 15-94). Amsterdam: North-Holiend.

Becker B., Huselid M., & Ulrich, D. (2001). *The HR scorecard: Linking people, strategy and performance*. Boston: Harvard Business School Press.

Becker G.S. (2011). *The Oxford handbook of human capital*. Oxford: Oxford University Press.

Beckhard R., & Harris R. (1987). *Organizational transitions:* Managing complex change (2nd ed.). Reading, MA: Addi son Wesley.

Beer M.,& Nohria N. (2000). *Resolving the tension between theories E and O of change*. In M. Beer & N. Nohria (Eds.), Breaking the code of change (pp. 1-34). Boston: Harvard Business School Press.

Bently Lionel, "*The Making of Modern Trade Marks Law*: The Construction of the Legal Concept of Trade Mark (1860-80)" in Lionel Bently, Jane C. Ginsburg & Jennifer Davis (eds), Trade Marks and Brands: An Interdisciplinary Critique (Cambridge University Press, 2008).

Biesner J. and Briiggen G., (2005). *The Significance of Knowledge Management for a Large Company*. Knowledge Management and Technological Dimensions. Physica-Verlag Heidelberg, New York, 2005. P. 159-168.

Bloom N. and J. Van Reenen (2010). "*Why Do Management Practices Differ across Firms and Countries?*", Journal of Economic Perspectives 24 (1), pp. 203-224.

Blumer H. (1969). *Symbolic Interactionizm*: Perspectives and Method. Englewood Cliffs, NJ: Prentice Hall.

Boisot M. (1998). Knowledge assets. Securing Competitive Advantage in the Information Economy. Oxford: Oxford University Press.

Bontis N., (2001). *Assessing knowledge assets: a review of the models used to measure intellectual capital* // International Journal of Management Reviews. – 2001; 3(1). – p. 41-60.

Bontis N. (1999). *Managing organisational knowledge by diagnosing intellectual capital:* Framing and advancing the state of the field. International Journal of Technology Management, 18(5-8), 433-462. https://doi.org/10.1504/IJTM.1999.002780.

Bontis N. (2001). *Assessing knowledge assets: A review of the models used to measure intellectual capital*. International journal of management reviews, 3 (1), 41-60. https://doi.org/10.1111/1468-2370.00053.

Bontis N., Dragonetti N.C., Jacobsen K. and Roos G. (1999). "*The knowledge toolbox: a reviewof the tools available to measure and manage intangible resources*", European Management Journal, Vol. 17 No. 4, pp. 391-402.

Boudourides M., Mavrikakis M. and Vasileiadou E. (2002). '*E-Mail Threads, Genres & Networks in a Project Mailing List*', Proceeding of Internet Researchers International Conference, Maastricht, the Neterlands, Octobver 13-16.

Boudreau J.W. (1998). *Strategic human resource management measures*: Key linkages and the peoplevantage model. Journal of Human Resource Costing & Accounting, 3(2), 21-40. https://doi.org/10.1108/eb029046.

Bourdieau P. (1990). *The Logic of Practice*. Cambridge, UK: Polity Press.

Bridal Eva's Ltd. v. Halanick Enterprises, Inc. 639 F.3d 788 (7th Cir. 2011).

Brooking A. (1998). *Corporate Memory*: Strategies for Knowledge Management. International Thomson Business. – 1998. – p. 231-264.

Brooking, A. (1996). *Intellectual Capital*: Core Asset for the New Millenium Enterprise. London: International Thomson Business Press.

Brooking E. (2001). *Intellectual capital: the key to success in the new millennium*. - SPb .: Peter, 2001. - 288 p.

Bromberg T.V., Khin V.Yu., Lynnik N.V. *Recommendations for determining the value of industrial property objects*. - M .: NPO Poisk, 1993. - 128 p.

Brosche C. (2002). *Designing the corporate portal*. Masters Thesis, Department of Computer Science, University of Gothenburg, Sweden.

Burke W. (1982). *Teambuilding*. In W. Reddy &K. Jamison (Eds), Team building: Blueprints for productivity and satisfaction. Alexandria, VA: NTL Insti tute for Applied Behavioral Science.

Caddy I. (2000). *Intellectual capital*: Recognizing both assets and liabilities. Journal of Intellectual Capital, 1(2), 129-146. https://doi.org/10.1108/14691930010377469.

Cañibano L., Covarsí M.G.A., & Sánchez M.P. (1999). *The value relevance and managerial implications of intangibles*: A literature review. In Measuring and reporting intellectual capital: Experiences, issues and prospects. Amsterdam: Organisation for Economic Co-operation and Development.

Carlopio J. (1998). *Implementation*: Making workplace innovation and technical change happen. Roseville, NSW: McGraw-Hill.

Cascio W.F. (1996). *The role of utility analysis in the strategic management of organizations*. Journal of Human Resource Costing & Accounting, 1(2), 85-95. https://doi.org/10.1108/eb029032.

Cavaye A. (1996). *Case study research*: A multi-faceted approach for IS. Information Systems Journal, 63, 227-242.

Cecez-Kecmanovic D. and C. Jerram (2001), "*Understanding Crisis from a Sense-Making Perspective*: An IS Operation Change". In Proceedings of The Twelfth Australasian Conference on Information Systems ACIS 2001, Coffs Harbour, NSW, Australia, 103-112

Cecez-Kecmanovic D. and C. Jerram (2002), "*A Sensemaking Model of Knowledge Management in Organizations*". In Proceedings of the European Conference on Information Systems ECIS 2002, Gdansk, Poland, 894-904.

Cedar Group. (1999). *Cedar 1999 human resources self service*. Baltimore, MD: Cedar Group.

Cedar Group. (2000). *Cedar 2000 human resources selfservice*. Baltimore, MD: Cedar Group.

Cedar Group. (2001). Cedar 2001 human resources self service/portal survey. Baltimore, MD: Cedar Group.

Cedar Group. (2002). *Cedar 2002 Human resources self service*/portal survey. Baltimore, MD: Cedar Group.

Chan R., & Roseman M. (2001). *Integrating knowledge into process models - a case study*. Proceedings of the Twelfth Australasian Conference on Information Systems, Southern Cross University, Australia.

Chasser Anne H. (January–February 2003). *"A Historical Perspective: The International Trademark Association and the United States Patent and Trademark Office*" (PDF). The Trademark Reporter. 93 (1): 31, 34. Retrieved June 11, 2013.

Children's Cancer Institute Australia for Medical Research, 2003. Submission P13, 30 September 2003.

Chimiak G., Kościński A. (2014). *Innowacyjność a samoorganizacja społeczna*. Wyd. Uniwersytet Wrocławski, Warszawa.

Choong K.K. (2008). *Intellectual capital: definitions, categorization and reporting models*. Journal of Intellectual Capital, 9(4), 609-638. https://doi.org/10.1108 14691930810913186.

Cohen D. and Prusak L. (2001). *In Good Company*: How Social Capital Makes Organizations Work, Boston: Harvard Business School Press.

Comparative Advertising: Mac vs. PC - "*In the United States where we hold the First Amendment above reproach by any laws*, there are many legitimate and legal uses of a trademark, and the right to engage in comparative advertising is among one of those legitimate uses.

Convention Establishing the World Intellectual Property Organization (*Signed at Stockholm on July 14, 1967* and as amended on September 28, 1979). sphvalue.com/news-resources/articles-publications/intellectual-property-intangible-assets (15.03.2019).

Córcoles, Y.R. (2010). *Towards the convergence of accounting treatment for intangible assets*. Intangible Capital, 6 (2), 185-201.

Corrado C. C. Hulten and D. Sichel (2005). "*Measuring Capital and Technology*: An Expanded Framework", in Measuring Capital in the New Economy, C. Corrado, J. Haltiwanger, and D. Sichel, eds., Studies in Income and Wealth, Vol. 65, Chicago: The University of Chicago Press.

Corrado C., J. Haskel. C. Jona-Lasinio and M. Iommi (2012), "*Intangible Capital and Growth in Advanced Economies*: Measurement Methods and Comparative Results", INTAN-Invest Mimeo.

Cummings T., & Worley C. (1997). *Organization development and change* (6th ed.), St. Paul, MN: West Publishing Co.

Curran T., & Kellar G. (1998). *SAP R/3 business blueprint*. Englewood Cliffs, NJ: Prentice-Hall.

Damodaran A. (2008). *Damodaran on valuation*. Hoboken: John Wiley & Sons.

Daszkiewicz M. (2015). Innowacje społeczne w kreowaniu atrakcyjności miast, Logistyka 2/2015.

Davenport, T.H., & Prusak, L. (1998). *Working knowledge*: How organizations manage what they know. Boston: Harvard Business Press.

Davis J., Subrahmanian E. (2005). *Art Westerberg (Editors) Knowledge Management and Technological Dimensions*. Physica-Verlag Heidelberg, New York 2005. 204 p.

Dawson R. (2003). Living Networks, Prentice-Hall, New Jersey de Geus, Arie, '*The Living Company*', Harvard Business Review, March-April 1997, p. 51-59. Academy of Management Review, 14, 20-39.

Deimler M., & Hansen M. (2001). *The online employee*. Boston Consulting Group. Retrieved March 2002 fromwww.bcg.com publications files Online Employee Aug 01 _perpsective.pdf.

Department of Human Services Victoria, 2004. Submission P111, 30 April 2004. See also Commonwealth Department of Health and Ageing, Submission P79, 16 April 2004.

Dessert M., & Colby E. (2002). *General Motor's employee portal - lift-off plus 1 year*: The sky's the limit. Proceedings of the IHRIM2002 Conference, Boston, USA.

Dias C. (2001). *Corporate portals*. International Journal of Information Management, 21, 269-287.

Dickson D. (2014). '*UK Clinical Geneticists Ask for Ban on the Patenting of Human Genes*' (1993) 366 Nature 391, 391. The disclosure of an invention may render patent protection unavailable: see Ch 5 and 6. Ch 14 considers issues relating to secrecy, publication and gene patenting.

Dobija M. (1998). *How to place human resources into the balance sheet*?. Journal of Human Resource Costing & Accounting, 3(1), 83-92. https://doi.org/10.1108/eb029044

Doerzapf A., & Udolph, S. (2002). *Maximising return on employee relationships*. SAP Insider, -/(l), 20-29.

DoH. (2003). *DoH corporate plan* 2002/2003. Retrieved August 2003 from www. housing, nsw. gov.

Drahos P. (1999). '*Biotechnology Patents, Markets and Morality*' (1999) 21 European Intellectual Property Review 441, 445.

Drehmer D.E., Belohlav J.A., & Coye R.W. (2000). *An exploration of employee participation using a scaling approach.* Group and Organization Management, 25, 397-419.

Drucker P., 2000. "*The Coming of a New Organization*". https://hbr.org/1988/01/the-coming-of-the-new-organization.

Drucker P. (1993), *Post Capitalist Society*, Harper Collins, New York, NY Ednvinsson, L. and Malone M. (1997), Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower, Harper Business, New York.

Drucker P.F. (1992). *The new society of organizations*. Harvard Business Review, 70(5), 95-104.

Drucker P.F. (2001). *The essential Drucker*. Oxford: Butterworth Heinemann.

Dunford I. (2002). B2E: *The future looks rosy*. Retrieved March 2002 from www. computing, co. uk Analysis 1136393.

Dyer W. (1995). *Team building*: Current issues and new alternatives (3rd ed.), Reading, MA: Addison Wesley.

Earl M. (2001). "*Knowledge Management Strategies*: Toward a Taxonomy". JMIS, 18, 1,215-233.

Eckerson W. (1999). *PIumtree blossoms*: New versi on fulfi 1 s enterpri se portal requirements. Patricia Seybold report. Retrieved March 2003 from w'H'H'. e-global, es/017/017 ecker son plumtree.pdf.

Edvinsson L., Malone M. (1997). *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Roots*. New York: Harper Collins Publishers, 1997.

Edwinsson L. (2005). *Corporate longitude*. Navigation in a knowledge-based economy. - M .: INFRA-M, 2005. - 248 p.

Eliades D., 2003. Submission P24, 30 September 2003; GlaxoSmithKline, Submission P33, 10 October 2003.

Everything You Need to Know About Trademark Law. The Polaris Law Firm". The Polaris Law Firm. Retrieved 2018-07-29.

Executive Office of the President, Office of Management and Budget. (2003). Report on information technology (IT) spending for the federal government. Washington, DC: OMB. Retrieved September 9, 2003, from www. whitehouse. gov/om b/budge t/fy2004/she e ts/itspending. xls.

Fahy M. (2001). *Enterprise resource planning systems*. London: Chartered Institute of Management Accountants.

Fahy M. (2001). *Enterprise resource planning systems*. London: Chartered Institute of Management Accountants.

Farrell S. (16 September 2015). "KitKat goes unprotected as European court rejects trademark case". Retrieved 3 July 2016. First Krupp-Logo. Thyssen Krupp-Website.

Firer S. Williams S.M. (2003). *Intellectual capital and traditional measures of corporate performance* // Journal of Intellectual Capital, Vol. 4.

Flamholtz E. (1971). *A model for human resource valuation*: A stochastic process with service rewards. Accounting Review, 46(2), 253-267.

Flamholtz E. (1972). *Toward a theory of human resource value in formal organizations*. Accounting Review, 47(4), 666-678.

Flamholtz E.G. (1985). *Human Resource Accounting*. San Francisco: Jossey-Bass.

Fleming F. (2003). *My SAP from a customer perspective*: Auscom Ltd. Presentation at Saphire 2003, Sydney, Australia, May.

Florida R., Cushing R. and Gates G. (2002). '*When social capital stifles innovation*', Harvard Business Review, August.

Framework in Measuring Capital in the New Economy, C. Corrado, J. Haltiwanger, and D. Sichel, eds., Studies in Income and Wealth, Vol. 65, Chicago: The University of Chicago Press.

Freedman, A. (1997). *The undiscussable sides of implementing transformational change*. Consulting Psychology Journal: Practice and Research, 49(1), 51-76.

Freedman R. (2000). *The IT consultant*: A commonsense framework for managing the client relationship. SanFrancisco: Jossey-Bass/Pfeiffer. Full text of the Trademark Law Treaty.

Gardner J., Paulsen N., Gallois C., Callan V., & Monaghan P. (2000). *An intergroup perspective on communication in organizations*. InH. Giles &

Gardner J., & Jones, E (1999). *Problematic communication in the workplace*: Beliefs of superiors and subordinates. International Journal of Applied Linguistics, 9, 198-205.

Giergiel W. (2010). *Innowacje organizacyjne w zarządzaniu – benedyktyński model zarządzania sobą i organizacją* (w:) Nowe tendencje w zarządzaniu, pod red. M. Pawlak, Wydawnictwo KUL, Warszawa.

Gildner W. (2002). *Trends inHR service delivery*. White paper for Gildner Human Resources Outsourcing Forum. Retrieved March 2003 from www.gildner.net/White%20Paper%20-%20HR%20Service%20 Delivery %2 0 Trends.pdf.

Glover S.M., Prawitt D.F.,& Romney MB. (1999). *Implementing ERP*. Internal Block, P. (2000). Flawless consulting: A guide to getting your expertise used (2nd edition). San Francisco: Jossey-Bass/Pfeiffer.

Goldstein J. and Golod E., 2002. '*Human Gene Patents*' (2002) 77 Academic Medicine 1315, 1315.

Grant R.M. (1996). "*Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration*". Organization Science, 7, 375-387.

Greenblat E. (2002). *Auscom hurting on profit* of 3.6 billion. Retrieved October 2002 from www. theage. com. au/articles/2002/08/28/1030508 074093.html.

Guilding C., & Pike R. (1990). *Intangible marketing assets*: A managerial accounting perspective. Accounting and Business Research, 21(81), 41-49.

Guimera R., Danon L., Diaz-Guilera A., Giralt F. and Arenas, A., '*The real communication network behind the formal chart: community structure in organisations*' http://galadriel.ffn.ub.es/articles/email_networks.pdf.

Halal W.E. (1994). *From hierarchy to enterprise*: Internal markets arethenew foundation of management. Academy of Management Executive, 8(4), 69-83.

Hammerer G. (1996). *Intangible investments in Austria*. In Workshop on New Indicators for the knowledge based economy. Paris: Organisation for Economic Co-operation and Development.

Handbook 2019: *Managing Intangible Resources*. https://www.handbook.unsw.edu.au/ postgraduate/courses/2019/ACCT5920 (2019).

Harvey M.G., & Lusch R.F. (1999). *Balancing the intellectual capital books: Intangible liabilities*. European Management Journal, 17(1), 85-92. https://doi.org/10.1016/ S0263-2373(98)00065-6.

Hatch W. N., & Dyer H. J. (2004). *Human capital and learning as a source of sustainable competitive advantage*. Strategic Management Journal, 25, 1155−1178.

Hayek F.A. (1945). "*The Use of Knowledge in Society*". American Economic Review, 35, 519-530.

Hayek F.A. (1989), *The Pretence of Knowledge*. American Economic Review, 79, 3-7.

Hendriksen E.S., & Van Breda M.F. (1992). *Accounting Theory* (5th edition). Homewood: Irwin.

History of Trademarks. *Case details for trade mark UK*, United Kingdom Intellectual Property Office.

History. Samson Rope Co. Retrieved June 11, 2013.

Hogg M. A. (2001). *A social identity theory of leadership*. Personality and Social Psychology Review, 5, 184-200.

Hogg M. A., & Terry D. (2001). *Social identity theory and organizational processes*. InM.A. Hogg&D.J. Terry (Eds.), Social identity processes in organizational contexts (pp 1-12). Philadelphia, PA: Psychology Press.

Hogg M.A., & Abrams D. (1988). *Social identification*. London: Routledge.

Hogg M.A., & Mullin B.A. (1999). *Joining groups to reduce uncertainty*:

Subjectiveuncertainty reduction and group identification. In D. Abrams & M. A. Hogg (Eds), Social identity and social cognition (pp. 249- 279). Oxford,UK: Blackwell.

Hogg M.A., & Terry D. (2000). *Social identity and self-categorization processes in organizati onal contexts*. Academy of Management Review, 25, 121-140.

Hong Kong Trade Marks Ordinance section dealing with infringement: Cap 559, s.18.

How leaders influence organizational effectiveness Gary Yukl Management Department, University at Albany, Albany, NY 12222, USA. The Leadership Quarterly 19 (2008) 708-722.

Human Resources Technological Resources And Reputation, 2019. https://www.ukessays.com/essays/marketing/human-resources-technological-resources-and-reputation-marketing-essay.php.

Hunter L., Webster E., Wyatt A. (2005). *Measuring Intangible Capital*: A Review of Current Practice // Intellectual Property Research Institute of Australia Working Paper No., March, 2005.

Iacono Lo, Valeria and Brown, David - Beyond Binarism: Exploring a Model of Living Cultural Heritage for Dance. Dance Research Journal, Vol. 34, April 2016.

Ichniowski C., & Shaw K. (1999). *The effect of human resource management systems on economic performance: an international comparison of U.S. and Japanese plants*. Management Science, 45(5), 704−721.

In addition to recalling 38,000 pairs of the offensive shoes, Nike has diverted another 30,000 pairs from Saudi Arabia, Kuwait, Malaysia, Indonesia and Turkey to "less-sensitive" markets". 1997-06-25.

Indian Trademark Rules (PDF). www.ipindia.nic.in. Retrieved 2018-12-31.

Intellectual property, Black's Law Dictionary, 10th ed. (2014).

Intellectual, industrial and commercial property. Fact Sheets on the European Union. European Parliament. Retrieved 2018-12-06.

International Accounting Standards Board. (1998). *International Accounting Standard 38*: Intangible Assets. International Financial Reporting Standards. EC staff consolidated version as of 24 March 2010, International Accounting Standards Board, London.

Inozemtsev V. D., (2003). *Post-industrial society of the theory* / V.D. Inozemtsev // New philosophical encyclopedia - 2003. - Access mode: http://terme.ru/dictionary/879/word/postindustrialnogo-obschestva-teori.

Jaggi B., & Lau H.S. (1974). *Toward a model for human resource valuation. Accounting Review*, 49(2), 321-329.

Janson M. and Cecez-Kecmanovic D. (2003). "*Information Systems and the Participatory Ethos*", The European Conference on Information Systems ECIS 2003, Naples, Italy, 18-22 June.

Jerram C., Cecez-Kecmanovic D., Treleaven L. and C. Sykes (2002). "*Email and Assumptions*: a Study in Electronic (Misunderstandings". In Proceedings of the Thirteenth Australasian Conference on Information Systems ACIS 2002, Melbourne, Australia, Vol. 2, 509-521.

Johanson U. (1996). *Increasing the Transparency of Investments in Intangibles*. Available online at: http://www.sveiby.com/articles/OECDartUlfjoh.htm.

Johanson U., Martensson M. and Skoog M. (1999). '*Measuring and Managing Intangibles*: Eleven Swedish Qualitative Exploratory Case Studies', International Symposium on Measuring and Reporting Intellectual Capital: Experience, Issues and Prospects, Amsterdam, 9-10* June, 1999.

Joia L.A. (2000). *Measuring intangible corporate assets*: Linking business strategy with intellectual capital. Journal of Intellectual capital, 1(1), 68-84. https://doi.org/10.1108/14691930010371636.

Kanevsky V., & Housel, T. (1998). *The learning-knowledge-value cycle*. In G. von Krogh, J. Roos & D. Kleine, Knowing in firms: Understanding, managing and measuring knowledge (pp. 269-284). London: Sage Publications. https://doi.org/10.4135/ 9781446280256.n13.

Kaplan R. and Norton, D. (1996), *The Balanced Scorecard*: Translating Strategy into Action, Harvard Business School Press, Boston.

Kasatkina V.V., 2011. *Intellectualization of the economy: a theoretical analysis*. dis. ... Cand. econ Sciences: 08.00.01; [Place of protection: Under the Financial University under the Government of the Russian Federation at FGOBUVPO]. - Moscow, 2011, 175 p.

Kaufmann L., & Schneider Y. (2004). *Intangibles*: A synthesis of current research. Journal of Intellectual Capital, 5(3), 366-388. https://doi.org/10.1108/14691930410550354.

Keown A.J., Martin J., Petty J.W. and Scott D.F. (2008). Foundations of Finance: Logic and Practice of Financial Management, 6th ed., Prentice Hall, Pearson Education International,Upper Saddle River, NJ.

Kirkbi AG v. Ritvik Holdings Inc. 2005 SCC 65, Supreme Court (Canada).

Knickerbocker I., & McGregor, D. (1941). *Industrial relations and national defense*: A change to management. Personnel, l(July), 49-63.

Knowledge and the Flow of Information. Cambridge, MA: MIT Press, 1981.

Koch C., & Buhl H. (2001). *ERP supported team working in Danish manufacturing*. New Technology, Work and Employment, 16, 164- 177.

Koka B.R and Prescott J.E. (2003). '*Strategic Alliances as Social Capital*: A Multidimensional view', Strategic Management Journal, 23:795-816.

Kotler Ph., Haider D., Rein L., 1993. *Marketing Places*, The Free Press New York 1993.

Kraemer K.L. & Dedrick J. (1997). *Computing and public organizations*. Journal of Public Administration Research and Theory, 7, 89-113.

Lagrost C., Martin D., Dubois C., & Quazzotti S. (2010). *Intellectual property valuation*: How to approach the selection of an appropriate valuation method. Journal of Intellectual Capital, 11(4), 481-503. https://doi.org/10.1108/14691931011085641.

Lambert S.J. (2000). *Added benefits*: The link between work-life benefits and organizational citizenship behavior. Academy of Management Journal, 43, 801-816.

Lammers C.J., & Szell, G. (Eds.). (1989). *International handbook of participation in organizations*. Oxford: Oxford University Press.

Laurent D. (2002). "*Understanding External Relationships in the Knowledge Era*: An Exploratory Study that Applies Social Network Analysis to the World Wide Web", unpublished Honours Thesis, School of Information Technologies, Sydney University.

Law of the Jungle: Burroughs Descendants' Suit Says Adult Movie, Game Violate Trademark". Los Angeles Times. Retrieved December 26, 2012.

Lech M. (January 20, 2018). "The oldest registered trademarks in the world". Trademark Blog.

Lee Lock L. (2003), '*Does your Community Leave a Digital Footprint*?', KM Challenge 2003, Melbourne, April 2003. (Proceedings published by Standards Australia)

Léger P.M. (2010). *Interorganizational IT investments and the value upstream relational capital*. Journal of Intellectual Capital, 11(3), 406-428. https://doi.org/10.1108/14691931011064617

Lev B. (2000). *Intangibles: Management, measurement, and reporting*. Washington: Brookings Institution Press.

Lev B. (2001), *Intangibles*: Management, Measurement and Reporting, Brooking Institution Press, Washington DC.

Lev B., & Schwartz A. (1971). *On the use of the economic concept of human capital in financial statements.* Accounting Review, 46(1), 103-112.

Liebowitz J. and Suen C. (2000), '*Developing knowledge management metrics for measuring intellectual capital*', Journal of Intellectual Capital, Vol , No.l, 2000, pp54-67

Lim L.L., & Dallimore P. (2004). *Intellectual capital: management attitudes in service industries.* Journal of Intellectual Capital, 5(1), 181-194. https://doi.org/10.1108/ 14691930410512996.

Lippitt G., & Lippitt R. (1986). *The consulting process in action* (2nd ed.). San Francisco: Jossey-Bass/Pfeiffer.

Listening to what the world says: *Bilingualism and earnings in the United States*. Review of Economics and Statistics, 87(3), 523-538. https://doi.org/ 10.1162/0034653054638256.

Lixinski Lucas Intangible Cultural Heritage in International Law.www.oxfordscholarship. com/ view/10.1093/ acprof:oso/9780199679508.001.0001/acprof-9780199679508 (2019).

Locke E. (1999). '*Some Reservations about Social Capital*', Academy of Management Review, 24(1), January: 8-9.

Lukicheva L.I. (2002). *Reserves for improving the efficiency of managing intangible assets of high-tech enterprises* // Collection of scientific works "Organizational and economic problems of management"; by ed. Yu.P. Aniskina. - M .: MIET, 2002. - pp. 57-64.

Machlup F. *Semantic Quirks in Studies of Information*. In The Study of Information // Eds. Machlup F., Mansfield U. New York: John Wiley & Sons, 1983, p. 641-671.

Malhotra Y. (2000). *Knowledge assets in the global economy*: Assessment of national intellectual capital. Journal of Global Information Management, 8(3), 5-15. https://doi.org/10.4018/jgim.2000070101.

Managing M. 1999. *Codified knowledge* // Sloan Management Review, Summer. – 1999. – P. 75-93.

Mantovani G. (1994). *Is computer-mediated communication intrinsically* apt to enhance democracy in organizations? Human Relations, 47, 45-63.

Manville B., & Ober J. (2003). *Beyond empowerment*: Building a company of citizens. Harvard Business Review, 87(1), 48-53.

Marr B. (2005). *Management consulting practice on intellectual capital*: Editorial and introduction to special issue. Journal of Intellectual Capital, 6(4), 469-473. https://doi.org/10.1108/14691930510630895.

Marr B., Schiuma G., & Neely A. (2002). *Assessing strategic knowledge assets in e-business*. International Journal of Business Performance Management, 4(2-4), 279-295. https://doi.org/10.1504/IJBPM.2002.000119.

Martin M. (2010). *Kierunki i priorytety rozwoju małych i średnich firm innowacyjnych w Polsce.* Raport o innowacji gospodarki Polski w 2009 roku, pod red. T. Baczko, PAN, Warszawa.

Mayo A. (2000). *The role of employee development in the growth of intellectual capital*. Personnel Review, 29(4), 521-533. https://doi.org/10.1108/00483480010296311.

McCutcheon G.A. (2008). *EVVICA™*, a valuation model for intellectual asset-rich businesses. Measuring business excellence, 12(2), 79-96. https://doi.org/10.1108/ 13683040810881216.

McInerney C.R., & Koenig M.E. (2011). *Knowledge management* (KM) processes in organizations: Theoretical foundations and practice. Synthesis Lectures on Information Concepts, Retrieval, and Services, 3(1), 1-96. https://doi.org/10.2200/S0032 3ED1V01Y201012ICR018.

McKenna, 2002. *Emprowering employees* https://www.bing.com/ search?q=mckenna% 2C+2002.+emprowering+employees&form=EDGEAR&qs=PF&cvid=aad2639ca5774bfa9d404680 c66c51ea&cc=UA&setlang=uk-UA.

Microsoft Corporation. (2002, April 16). *Q&A: Information technology: An engine for global economic growth*. Seattle, WA: Microsoft Corporation. Retrieved July 1,2003, from www.microsoft.com/presspass/features/ 2002/apr02/04-16glcqa.asp.

Milost F. (2007). *A dynamic monetary model for evaluating employees*. Journal of intellectual capital, 8(1), 124-138. https://doi.org/10.1108/14691930710715097.

Morse W.J. (1973). *A note on the relationship between human assets and human capita*l. Accounting Review, 48(3), 589-593.

Mortensen J., Eustace C., & Lannoo K. (1997). *Intangibles in the European economy*. In Centre for European Policy Studies workshop on intangibles in the European economy. Brussels: Centre for European Policy Studies.

Mouritsen J. et al. (2000), *A Guideline for Intellectual Capital Statements*, Danish Agency for Trade and Industry, (see www.efs.dk).

Nahapiet J. and Ghoshal S. (1998), '*Social Capital, intellectual capital, and the organizational advantage, Academy of Management Review*, 23(2):242-266 Putman R. (1995), 'Bowling Alone: America's Declining Social Capital', Journal of Democracy 6: 65-78.

Nash H. (1998). *Accounting for the future, a disciplined approach to value-added accounting*. Available online at: http://home.sprintmail.com/~humphreynash/overview.htm.

Nelson R.R. and Winter S.G. (1982), *An Evolutionary Theory of Economic Change*, Cambridge, MA: Harvard University Press Nonaka, I. (1991), "The Knowledge Creating Company", HBR, Nov-Dec., pp. 96- 104.

Nicol D. and Nielsen J. (2001). '*The Australian Medical Biotechnology Industry and Access to Intellectual Property*: Issues for Patent Law Development' (2001) 23 Sydney Law Review 347, 362–363.

Noe R., Hollenbeck, J., Gerhart, B., & Wright, P. (2003). *Human resource management* (4th ed.). New York: McGraw-Hill Irwin.

Nonaka I. (1994), "*A Dynamic Theory of Organizational Knowledge Creation*". Organization Science, 5, 1, pp 14-37.

Nonaka I. and H. Takeuchi (1995), *The Knowledge-Creating Company*. New York: Oxford University Press.

OECD (2010), *Innovation Strategy*, OECD, Paris.

OECD (2011), OECD Science, *Technology and Industry Scoreboard* 2011, OECD, Paris.

OECD Economic Policy Papers, No.4, OECD, Paris.

OECD Secretariat based on Corrado et al, (2005).

Ogan P. (1976). *A human resource value model for professional service organizations*. Accounting Review, 51(2), 306-320.

Olejniczuk-Merta A. (2013). *Innowacje społeczne*. (w:) Konsumpcja i Rozwój nr l/2013.

Organisation for Economic Co-operation and Development (1999). *Measuring and reporting intellectual capital*: Experience, issues and prospects. Amsterdam: Organisation for Economic Co-operation and Development. Available online: http://www.oecd.org/ sti/ind/2750309.pdf.

Orlikowski W. J. (2002), *Knowing in Practice*: Entacting a Collective Capability in Distributed Organizing. Organization Science, 13 (3), pp. 249-273.

Packard Ashley (2010). *Digital Media Law*. John Wiley and Sons. p. 162. ISBN 9781444318203.

Palumbo G., G. Giupponi, G., L. Nunziata, and J. Mora-Sanguinetti (2013), "*The Effectiveness of Civil Justice*: A Cross-country Economic Analysis", OECD Economic Policy Papers, No. 5, OECD, Paris.

Pande P., Neuman, R., & Cavanagh, R. (2000). *The six sigma way*: How GE, Motorola, and other top companies are honing their performance. New York: McGraw-Hill.

Paris Convention: Article 6 bis, Paris Convention.

Parra M.G., Simo, P., & Sallan, J.M. (2006). *La evolución del capital intelectual y las nuevas corrientes*. Intangible Capital, 2(13), 277-307.

Penrose E. (1959), *The Theory of the Growth of the Firm*. New York: Wiley.

Penty A.J. *Post-industrialism. London*: Allen and Unwin, 1922, 157 p.

Perspectives on Global Development 2013. *Industrial Policies in a Changing World* // OECD Development Centre. – 2013. – http://www.oecd.org/development/pgd/pgd2013.htm.

Petrash G. (1996). *Dow's journey to a knowledge value management culture*. European Management Journal, 14(4), 365-373. https://doi.org/10.1016/0263-2373(96)00023-0.

Petty R., & Guthrie, J. (2000). *Intellectual capital literature review*: Measurement, reporting and management. Journal of Intellectual Capital, 1(2), 155-176. https://doi.org/ 10.1108/14691930010348731.

Pfeffer J. (1998). *The human equation*. Boston: Harvard Business School. Playboy Enterprises, Inc. v. Welles, 279 F.3d 796 (9th Cir. 2002).

Pherson M', P.K. & Pike, S. (2001). *Accounting, empirical measurement and intellectual capital*. Journal of Intellectual Capital, 2(3), 246-260. https://doi.org/10.1108/ EUM0000000005659.

Pieńkowska M. (2010). *Innowacyjność przedsiębiorstw przemysłowych* (w:) Raport o

innowacji gospodarki Polski w 2009 roku, pod red. T. Baczko, PAN, Warszawa.

Polanyi M. Tacit Knowing: *Its Bearing on Some Problems of Philosophy*. Reviews of Modern Physics. 1962; 34(4). – P. 601-616.

Polanyi M. (1962), *Personal Knowledge*. Chicago, IL: University of Chicago Press.

Polanyi M. (1966), *The Tacit Dimension*. London: Routledge & Kegan Paul Ryle, G. (1949), The Concept of Mind. Chicago IL: University of Chicago Press Schon, D.A. (1983), The Reflective Practitioner. New York: Basic Books Spender, J.-C. (1996).

Program Innowacje Społeczne, NCBiR, Warszawa 2012.

Pszczółkowski T., 1978. *Mała encyklopedia prakseologii i teorii organizacji*, Ossolineum, Wrocław.

Rao A.L. (2014). *Human Resource Accounting: A frame work for better Financial Accounting and Reporting*. IOSR Journal of Business and Management, 16(4), 86-90. https://doi.org/10.9790/487X-16428690.

Raporcie o innowacyjności gospodarki Polski, Instytut Nauk Ekonomicznych PAN, Warszawa 2009.Restatement (Third) of Unfair Competition § 9 (1995).

Richardson, Gary (April 2008). "*Brand Names Before the Industrial Revolution*". NBER Working Paper No. 13930. doi:10.3386/w13930.

Riesman D. *Leisure and work in postindustrial society* / D. Riesman // Riesman D. Abundance for What? and Other Essays. N.Y., 1964. P. 162-183.

Robinson W.P. (Eds.), *Handbook oflanguage and socialpsychology* (2nd ed.). London: John Wiley & Sons.

Rodgers W. (2003). *Measurement and reporting of knowledge-based assets*. Journal of Intellectual Capital, 4(2), 181-190. https://doi.org/10.1108/14691930310472802.

Rodov I., & Leliaert, P. (2002). *FiMIAM: Financial method of intangible assets measurement. Journal of Intellectual Capital*, 3(3), 323-336. https://doi.org/ 10.1108/14691930210435642.

Roger W. Dyer Jr., *Monetary Damages under the Lanham Act*: Eighth Circuit Holds Actual Confusion is Not a Prerequisite, 77 Mo. L. Rev. (2012).

Rogozińska-Mitrut J. (2019). *The Influence of the Social Innovations on the Competitiveness of the National Economy*.

Rogozińska-Mitrut J. (2018). *Ryzyko i niepewność w procesie wyboru ekonomicznego,* [w:] Współczesne problemy w nauce o zarządzaniu i ekonomii, red. Naukowa: Janusz Soboń, Grzegorz Drozdowski, wyd. 1, Arte, Gorzów Wielkopolski.

Rogozińska-Mitrut J. (2017). *Workshop on creative management*, Russian University of Cooperation, wyd. „11 th FORMAT", Moskwa-Warszawa-Varna 2017.

Rogozińska-Mitrut J. (2017). *Хрестоматия – практикум по креативному менеджменту*. *Case Study of Creative Management*, „11 Формать", Moskwa.

Roman R., Hayibor, S. and Agle, B. (1999), '*The relationship between social and financial performance*', Business and Society 38(1), 109-125.

Roos G., Pike S., Fernstrom L.: *Valuation and reporting of intangibles* — state of the art in 2004. Learning and Intellectual Capital. – 2005. 2(1). P. 21-48.

Rowley T., Behrens, D. and Krackhardt, D. (2000), '*Redundant Governance Structures: An Analysis of Structural and Relational Embeddedness in the Steel and Semiconductor Industries*' Strategic Management Journal 21:369-386

Royal Society, Keeping Science Open: The Effects of Intellectual Property Policy on the Conduct of Science (2003), 13. See also L Andrews, 'Genes and Patent Policy: Rethinking Intellectual Property Rights' (2002) 3 Nature Reviews Genetics 803, 806. Processes for challenging and enforcing patent rights are discussed in Ch 9.

Salinas G., & Ambler, T. (2009). *A taxonomy of brand valuation practice*: Methodologies and purposes. Journal of Brand Management, 17(1), 39-61. https://doi.org/10.1057/bm.2009.14.

Sánchez P. et al. (2001). *Measuring Intangibles to Understand and Improve Innovation Management* (MERITUM Final Report). European Commission, Brussels. Section 21, Trade Marks

Act 1994.

Savage C. (1996), *Fifth Generation Management*, (www.kee-inc.com).

Scandecor Development AB v. Scandecor Marketing AB et al. [2001] UKHL 21.

Schulze W.S. «*The two schools of thought in resource-based theory*: definitions and implications for research» // Advances in Strategic Management. – JAI Press, Greenwich. – 1994. – Vol. 10A.

See Jane Coleman, Secondary Trademark Infringement: A Short Treatise on Contributory and Vicarious Infringement in Trademark Archived 13 September 2012 at Archive.today (Revised, Sept. 2010).

Senge P. (1990). *The fifth discipline*. New York: Doubleday.

Serenko A., & Bontis, N. (2013). *Investigating the current state and impact of the intellectual capital academic discipline*. Journal of Intellectual Capital, 14(4), 476-500. https://doi.org/10.1108/JIC-11-2012-0099.

Skyrme D. Capitalizing on Knowledge. *From e-business to k-business*. Oxford. – 2001. – P. 455.

Soboń J., Rogozińska-Mitrut J. (2018). *Цифровая экономика: социально-экономические и управленческие концепции*, Коллективная монография.-М.: Научный консультант.

Soboń J., Rogozińska-Mitrut J. (2018), *Человеческие ресурсы в инновационной экономике: ретроспектива и перспектива развития*, Коллективная монография.- М.: Издательство «Научный консультант».

Soboń J., Rogozińska-Mitrut J. (2018). *Креативный менеджмент. Учебник, М.: Издательско-торговая корпорация*, «Дашков и Ко».2-е изд.

Soboń J., Rogozińska-Mitrut J. (2018). *Глобализация и национальные стратегии социально-экономической политики*, Коллективная монография.- М.: Издательство «Научный консультант».

Some Well-Known U.S. Trademarks Celebrate One Hundred Years". U.S. PTO Press Release no. 00-38. U.S. Patent and Trademark Office. June 15, 2000. Retrieved June 11, 2013.

Spellerberg A. (2001), '*Framework for the Measurement of Social Capital in New Zealand*', (see www.stats.govt.nz).

Stone D.N., & Warsono, S. (2004). *Does Accounting Account for Knowledge*?. In Handbook on Knowledge Management 1 (pp. 253-269). Berlin: Springer Science+Business Media.

Strategia Rozwoju Kraju, 2020, *Aktywne społeczeństwo*, konkurencyjna gospodarka, sprawne państwo. Załącznik nr l, Warszawa 2012.

Sullivan Ann Marie, Cultural Heritage & New Media: *A Future for the Past*, 15 J. MARSHALL REV. INTELL. PROP. L. 604 (2016) https://repository.jmls.edu/cgi/viewcontent.cgi?article=1392&context=ripl.

Sullivan O', K. (2009). *Strategic Intellectual Capital Management in Multinational Organizations*: Sustainability and Successful Implications. Hershey: IGI Global.

Sullivan Patrick H. (2000). *Value-driven Intellectual Capital*. How to convert intangible corporate assets into market value. John Willey&Sons, Inc, 2000. – 562 p.

Sullivan Patrick H. *Profiting from Intellectual Capital*: Extracting Value from Innovation. John Willey&Sons, Inc, 1998. – 366 c.

Sveiby K.E. *Intellectual capital and knowledge management* // http://www.sveiby.com.au/IntellectualCapital.html.

Sveiby K. (1997), *The New Organizational Wealth*: Managing and measuring Knowledge-Based Assets, Berret-Koehler, San Francisco, CA Wall, B. and Doerflinger, M. (1999), 'Making Intangible Assets Tangible', Knowledge Management Review, Sept/Oct 1999 World Bank on Social Capital (2003), www.worldbank.org/ poverty/scapital/ methods.

Sveiby K. and Risling, A. (1986), *Kunskapsforetaget* (the Know-How Company), Liber, Mahno.

Sveiby K.E. (1998). *Measuring Intangibles and Intellectual Capital* – An Emerging First Standard. Available online at: http://www.sveiby.com/articles/EmergingStandard.html.

Sveiby K.E. (2010). *Methods for Measuring Intangible Assets*. Available online at: http://www.sveiby.com/articles/IntangibleMethods.htm, TBMP Sec. 300 et seq., additional text.

Szymański A.I. (2012). *Wpływ innowacji na rozwój przedsiębiorstwa*. Seria wydawnicza: Encyklopedia zarządzania, Kraków.

Teece D.J. *Managing Intellectual Capital*: Organizational, Strategic and Policy Dimensions. Oxford University Press, 2000. – 300 p.

Tepsie Project, Part 1. *Defining Social Innovation*, 2012.

The Berne Convention for the Protection of Literary and Artistic Works, 1886.

The Economist (2014). Johnson: *What is a foreign language worth*?. The Economist, 11th March 2014. Available online at: http://www.economist.com/blogs/ prospero/ 2014/03/language-study.

The History and Development of Trademark Law (PDF).

The Standish Group. (2003, March 25). *Latest Standish Group CHAOS* report shows project success rates have improved by 50%. West Yarmouth, MA: The Standish Group. Retrieved July 1, 2003, from www. standi shgr oup. com/press/article.php?id=2.

The STIckler: inside the latest trademark protection gTLD discussion – Blog – World Trademark Review". Retrieved 3 July 2016.

Thornton G. (2013). *Intangible Assets in a Business Combination*: Identifying and valuing intangibles under IFRS 3. Available online at: http://www.grantthornton.be/ Resources/ Intangible_assets_in_a_business_combination_Nov_2013.pdf.

Thorp J. (1998). *The information paradox*: Realizing the business benefits of information technology'. Toronto: McGraw-Hill Ryerson Limited.

Tocqueville, A. (1835/1966). *Democracy in America*. New York: Harper & Row.

Trade marks identify the goods and services of particular traders. Signs that are suitable for distinguishing products or services of a particular enterprise from that of other companies are eligible for trade mark protection". Retrieved 2012-12-22.

Trademark Rules, 2019. https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf.

Trist E. (1981). *The evolution of socio-technical systems*: A conceptual framew or hand an action research program. Occasional PaperNo. 2, Ontario Quality of Working Life Centre, City, June.

TT Toys Toys is the only company in the world that can boast a vast catalogue of models developed under license of the most important car manufacturers (Ferrari, BMW, Mercedes, Porsche, Maserati, Citroen, Peugeot, Renault, etc.)". Archived from the original on 18 February 2013. Retrieved 2 January 2013.

Turban E., & Frenzel L.E. (1992). *Expert systems and applied artificial intelligence*. Upper Saddle River: Prentice Hall.

U.S. Trademark Reg no. 11210, filed Apr. 07, 1884, reg. May 27, 1884. Accessed June 11, 2013. USPTO Fee Schedule, additional text.

Understanding Copyright and Related Rights (PDF). *World Intellectual Property Organization*. p. 4. Retrieved 2018-12-06.

Understanding Industrial Property (PDF). *World Intellectual Property Organization* (WIPO). Retrieved 2018-12-07.

Understanding Industrial Property. *World Intellectual Property Organization*. Retrieved 2018-12-06.

Valyukh A. International Economic Aspects of Innovative Nature Using in the Context of Sustainable Development. *International Journal of New Economics and Social Sciences (IJONESS)*. 2016. № 1 (3). С. 285–294.

Van den Berg H.A., 2005. *Model of Intellectual Capital Valuation*: A Comparative Evaluation. Business Performance Measurement: Intellectual Capital Valuation Models. Hyerbydad, India: Le Magnus University Press, 2005; P. 121-158.

Verbano C., & Crema, M. (2013). *Measuring IC following a semi-qualitative approach*: An integrated framework. Intangible Capital, 9(3). 539-558. https://doi.org/10.3926/ic.427.

Vernadsky V.I. Collected Works: in 24 tons / Edited by Eric Mikhailovich Galimov. - M .: Nauka, 2013. - ISBN 978-5-02-038093-6.

Vermeulen A. M. P., Jong D. P. J. J., O, & Shaughnessy K. C. (2005). Identifying key determinants for new products.

Verzuh E. (1999). *The fast-forward MBA in project management*. New York: John Wiley & Sons.

Forrest V. 2019. *Intellectual Property & Intangible Assets*. http://sphvalue.com/news-resources/ articles-publications/intellectual-property-intangible-assets.

Volkswagen werk Aktiengesellschaft v. Church, 411 F.2d 350, 352 (9th Cir. 1969).

Weick K.E. (1995), *Sensemaking in Organizations*. Sage.

Weick K.E. and K.H. Roberts (1993), "*Collective Mind in Organizations*: Heedful Interrelating on Flight Docks". Administrative Science Quarterly, 38, 357- 381.

Weisbord M. (1987). *Productive workplaces*: Organizing and managing for dignity, meaning and community. San Francisco: Jossey-Bass.

Werner C., Hammerer, G., & Schwarz, K. (1998). *Measuring intangible investment, intangible investment from an evolutionary perspective*. In Measuring and reporting intellectual capital: Experiences, issues and prospects. Amsterdam: Organisation for Economic Co-operation and Development.

Westmore B. (2013), "R&D, *Patenting and Productivity*: The Role of Public Policy", OECD Economics Department Working Papers, No. 1047, OECD, Paris.

What are intellectual property rights? *World Trade Organization*. World Trade Organization. Retrieved 2016-05-23.

What is "technical documentation", 2019. https://www.transcom.de/transcom/ en/technische-dokumentation.htm.

What is Intellectual Property? (PDF). *World Intellectual Property Organization* (WIPO). Retrieved 2018-12-07.

Wiig K. *Assessment of the State of Intellectual Capital in XY Corp*. / Working Paper, Knowledge Research Institute, Inc. 1999. – №4. – P. 17-23.

Wiley N. (1994), The Semiotic Self. Cambridge: Polity Press.

Wiscombe, 2001. *Using technology to cut costs*. Workforce, (September). Retrieved August 2002 from www.workforce.com/archive/fea- ture/22/29/82/index.php.

Workforce (2001). *HR statistics*. Workforce, 79(10), 54-61.

World Intellectual Property Organization (1997). *Introduction to Intellectual Property*: Theory and Practice. Kluwer Law International. p. 23.

www.stat.gov.pl, GUS 2012, 2014.

Yakymchuk A. Yu. Information provision for the management of ecological and economic security of the state in the conditions of military-political instability / A. Yu. Yakymchuk // Sov. in the 11th scientific-practical conference on international participation "Problems of management of social and humanitarian development" (December 1, 2017). - Dnipro: DRAID NAPA under the President of Ukraine, 2017. - P. 114-116.

Yakymchuk A., Zaitsev D., Valyukh A. Bezpieczeństwo ekologiczne na Ukrainie: doświadczenie Polski. *Akademiia. Jakuba z Paradyża w Gorzowie Wielkopolskim*. 2017. С. 96–105.

Yakymchuk A., Valyukh A., Zaitsev D. The Estimation of Natural Capital of Ukraine. *International Journal of New Economics and Social Sciences (IJONESS)*. 2017. № 1 (5). P. 57–64.

Yin R. (1994). *Case study research-design & methods* (2nd ed). Newbury Park, C A: Sage Publications.

Young A. (1998). *Towards an Interim Statistical Framework*: Selecting the Core Components of Intangible Investment. Paris: Organisation for Economic Co-operation and Development. Available online at: http://www.oecd.org/sti/ind/1943301.pdf.

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MANAGEMENT BY THE ENTERPRISE INTANGIBLE ASSETS

Reviewed by *prof. dr hab. Lech Kościelecki*
dr hab. Zenon Trejnis, prof. WAT

First edition
Cover desigh Sofiya Popiordanova

Size 70×100/16
Printed sheets 14,75

Printing-office of Prof. Marin Drinov Publishing House
of Bulgarian Academy of Sciences
1113 Sofia, Acad. Georgi Bonchev Str., Bl. 5

www.press.bas.bg

ISBN 978-619-245-005-2