SILESIAN UNIVERSITY OF TECHNOLOGY

SCIENTIFIC PAPERS

POLITECHNIKA ŚLĄSKA

ZESZYTY NAUKOWE

ORGANIZATION AND MANAGEMENT

Scientific paper no. 165

ORGANIZACJA I ZARZĄDZANIE

Zeszyt Naukowy nr 165

Edited by

Aleksandra KUZIOR

Pod redakcją

Aleksandry KUZIOR

GLIWICE 2022

Wydano za zgodą
Rektora Politechniki Śląskiej

ISSN 1641-3466
ISSN 2720-751X

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Nakł. 30 + 44 Ark. wyd. 54 Ark. druk. 35,875 Papier offset 70x100, 80 g

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FOREWORD

This issue of Scientific Journals of the Silesian University of Technology of the "Organization and Management" series contains conceptual works and scientific articles dealing with current topics related to the development of modern society, science and technology. Here you can find articles of an interdisciplinary nature, referring to the issues raised within the sciences of management and quality.

The published works are the result of scientific research conducted by teams of scientists from Poland, as well as scientists and PhD students from other European countries. The thematic scope includes interdisciplinary works in the field of humanities and social sciences. Topics covered include: development of industry 4.0, society 4.0 and society 5.0, ontology and axiology of technology, technological and social innovations, dilemmas related to the development of artificial intelligence, cobotization and quality of life, quality of health care management, social and technological aspects of Smart City development, human resources management, shaping image, corporate social responsibility and sustainable development, energy management. Individual articles allow you to get acquainted with the latest trends in the development of modern societies, modern economy and modern technology.

I invite you to read and start a scientific discussion developing the topics taken.

Aleksandra Kuzior

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SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

COPYRIGHT – PROTECTION OF INTELLIGENT MAN OR ARTIFICIAL INTELLIGENCE?

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Purpose: The aim of the study is to indicate the essence of copyright in the context of what was, is, and may be. Drawing attention to the changing reality, the expansion of artificial intelligence as a potential author of a given work, who as the creator will be entitled to legal protection. If we assume that a snail and cancer can be a fish, a carrot can be a fruit, and a machine cannot be an inventor because it is just a tool, then what is copyright in human life? What is the difference between artificial intelligence in copyright law and the natural intelligence of a given author - creator, if both are intelligent creations? Why is there talk of a higher than natural intelligence in a situation in which it is not so much about something completely new and from the beginning, but about something that is simply better, faster, more accurate and more efficient in some respects than an intelligent man, whom this thing does not replace, but only helps.

Design/methodology/approach: The research method used in this article is the analysis of legal sources, scientific studies of interdisciplinary scope, supplemented by interviews, observations and experience of the author. The research procedure included the analysis of information sources, a review of Polish and foreign literature, an analysis of legal acts, a method of analysis and synthesis, a case study and logical deductive reasoning in the timespace of yesterday – today – tomorrow.

Findings: For centuries, man has wanted to be better, to overcome basically everything, including Nature, to create something that could have existed so far without his participation or with his indirect participation. The emergence of concepts related to artificial intelligence only seemingly suggests a desire to take control of man. Man is a realistic, rich structure composed of soul and body, which artificial intelligence does not have. Who will be the creator and who will be entitled to the rights and how they will be protected when the object of protection becomes the product of artificial intelligence. Thanks to the algorithms used, an artificial intellectual creator is able to quickly assimilate many things, but first he must know what. Here we come to a very important issue – who should "feed" artificial intelligence data so that the so-called biased algorithms are not created. At the moment, attributing copyright to machines and devices and granting them legal protection as a creator seems to be an action incompatible with the natural protection of man as a creator.

Research limitations/implications: The limitations of the results obtained may result from a limited research sample, including textual sample. They may result from too innovative invention of comprehensive use of artificial intelligence, which in the case of copyright is attributed to man. The trick is to come up with an innovative solution and construct some

unprecedented thing, but the success of this mainly depends on their widespread use. In many areas, artificial intelligence is to be used on the march, it will be more difficult to use it in areas that are inherently reserved for man with his creativity.
Originality/value: The presented research, suggestions and conclusions provide not only practical but also theoretical tips to scientists and average citizens, mainly those who are not aware of what copyright is, what copyright protection is, who it is supposed to cover and to what extent. One of the objectives of the legislation on the use of artificial intelligence is to increase the protection of creators. Creating regulations to effectively protect the rights given to people, perhaps in the future also artificial intelligence.

Keywords: man, law, nature and artificial intelligence.

Category of the paper: scientific work.

General

The unlimited and irrepressible drive of man, the competition of all with all, the desire to be the best at all costs depend increasingly on complex solutions, defined as the product of a new civilization, a new intellectual generation, technological progress, the need for human development and the environment in which he lives. Man becomes the creator of basically everything, constructs tools of destruction, designs and invents devices and robots, is the creator of all kinds of technologies, invents mathematical-logical algorithms that are able to not only support man, but are able to replace him and even defeat him, which does not seem to be anything special, provided that he acquires the ability to respect and use what is human, with what is artificial. Carl Gustav Jung, in the subject of the breakthrough of civilization, says: "man must guard against recognizing one as reality and the other as an illusion" (2017, p. 245 et seq.). The key question is not what man is able to invent and in what form, but whether such solutions are able to make a person happy?

Beginning in the eighteenth century, the world was revolutionized by technology and engineering. As a result of a mental change in the results achieved, humanity has come to the conclusion that it is impossible to develop without innovation (Chwalba, 2008). Man became the inventor, discoverer and constructor of many solutions, which over time became not only the result of the prestige or popularity of the author of a given work, but also a good as a commodity, the authenticity and use of which had to be legally secured. Humanity quickly realized that the good from which it is possible to derive benefits, including mainly material ones, is their thinking, the realization of visions, the product of imagination, the concept referred to as intellectual property, which is divided into two categories: industrial property and copyright.

Intellectual property rights, like other property rights, allow creators and owners of exclusive rights to derive financial or professional benefits from their rights. This is legally regulated in Article 27 of the Universal Declaration of Human Rights (enacted on 10.12.1948

in Paris), which states that every person has the right to the protection of moral and material benefits resulting from any of his scientific, literary or artistic activities. The importance of intellectual property was recognized in the first international acts: the Paris Convention of 20 March 1883 on the Protection of Industrial Property (Journal of Laws of 1932, No. 2, item 8) and the Berne Convention for the Protection of Literary and Artistic Works of 9 September 1886 (Journal of Laws of 1935 No. 84, item 515). These treaties are administered by the *World Intellectual Property Organization* (WIPO).

The broadly understood evolution of humanity for many years made the community aware of the need to regulate copyright and related rights, which only recently it was pointed out that they are a commodity and can be traded, bring income. Already in ancient times, the creation of a work led to the formation of legal relations, even when there was no law referred to as copyright yet. The origin of copyright derives from printing privileges. The first legal acts protecting copyright in the current meaning are the English *Statute of Anne* (1710) and the French acts of 1771 and 1773 (Grzybowski, 2003). However, much later the protection of personal copyrights developed, which took place at the end of the nineteenth century. According to S.M. Grzybowski, "Copyright, as an independent part of the legal order, can be spoken of when in this legal order it is possible to distinguish, think and in fact a system of legal norms regulating the relations arising in connection with the already completed creation of a 'work' or its actual creation, or even with the very intention of its creation" (1973, p. 34). Accepting such a solution also for artificial intelligence, it is appropriate to ask its supporters how to measure and how to connect the relations of an artificial creator on a legal basis, to isolate his thought, intention and intention.

Different concepts of copyright have led to the emergence of two systems:

- Romanesque *droit d'auteur*.
- Anglo-Saxon *copyright*.

The *droit d'auteur* system is common in European countries. Protection in this system focuses on the property and personal interests of creators. Two models are distinguished:

- **Dualistic model** (France, Italy Spain, Poland), characterized by the separation of two independent copyrights: economic law and moral right. The differences between these rights concern: duration, the principle of determining the rightholder, admissibility and rules of trade, protection measures.
- **The monistic model** (Germany) treats personal and property rights as components of a uniform, inalienable right serving the creator. Individual rights may be traded, except that this transaction is not based on the assignment of rights, but on the establishment of them to a person other than the author.

In turn, the extracontinental system – Anglo-Saxon *copyright* (USA, Australia), treats copyright as a set of economic rights, which, serving to protect the interests of the creator, are primarily to ensure the development of science and art.

Copyright is territorial, which means that a work is protected under the laws of a given country only in its territory (Barta, 2008).

In Russia, in 1830, the law on the protection of literary works appeared, in 1911 the law on copyright; in Prussia in 1837 the Federal Act, in 1901 the Act on Copyright on Works of Literature and Music and on The Law on Overlays, in 1907 the Act on Copyright on Works of Art and Photography. The Austrians included provisions on the protection of artists in the Western Galician Civil Code and the Act of 1895 on rights on works of literature, art and photography.

As a result of historical events known to us, nineteenth-century Poland had no chance for its own national legislation, including protecting creativity. It was only after regaining independence, in 1920, that Poland ratified an international act, the Berne Convention for the Protection of Literary and Artistic Works. The breakthrough came in 1926, when the Sejm passed the Act of 29 March 1926 on Copyright, establishing civil and criminal protection of personal and property rights of authors (Dz.U. No. 48, item 286), and the International Congress of Copyright Law was organized in Warsaw under the protector of President Mościcki. In the interwar period, the Act of 1926 was amended only once, in 1935.

For the development of Polish copyright law and its application, the creation in 1918 of the first organization in Poland managing copyright – the Union of Authors and Stage Composers, which operates to this day under the name of the Association of Authors ZAiKS, was of particular importance. At the same time, with the development of national laws, from the end of the nineteenth century, the provisions of international law were created and developed. The first and most important to this day Berne Convention for the Protection of Literary and Artistic Works was established on September 9, 1886, and has been ratified by almost 180 countries from all continents. The Universal Copyright Convention, also known as the Geneva Convention or Copyright Convention of August 18, 1952, eliminated formal obstacles to copyright protection in various legal systems. We know it commonly from the so-called copyright notice – reserving the author's economic rights to the entity mentioned in it, after placing a copy of the work in the appropriate place (inyrok SA in Łódź of 8.09. 2017, I ACa 150/17, OSAŁ*).* The Rome Convention of 26 October 1961 established international standards for the protection of performers, producers of phonograms and broadcasting organisations (Siekierko, 1962).

From times closer to us – the most important acts of international law include the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of 1994, two treaties of the International Intellectual Property Organization, the so-called WIPO Treaties on Copyright and Performances and Phonograms, from 1996. Directive 2001/29/EU of the European Parliament and of the Council of Europe of 22.05.2001 on the harmonisation of certain aspects of copyright and related rights in the information society (Dz.Urz. EU L 167, p.10), which, due to the scope and universality of these rights, seems to be an urgent matter, although it will not be easy.

Summing up the brief historical outline of copyright law, it should be emphasized that there is no such thing as the ideal pattern of copyright law, to which the evolution of law inevitably tends. Every law, including copyright, arises in the process of clashing views and interests of various social groups pushing for such and not other legal solutions. The thesis seems to be true that the current shape of legal regulations of individual countries and international regulations is a condition for the success of one of these groups, which has managed to introduce a system that best protects its interests by the method of small steps. One could say that this is a dispute of interests, i.e. the so-called business. In the process of evolution of culture and society, in legislative systems and in the science of law, the development of the idea of copyright as a specific sphere related to the creation of a work, i.e. an intangible object, it is about developing a model of legal norms regulating the relations resulting from the fact of creating a work as a result of an intellectual, spiritual process. Just as human relations are becoming more complicated, so there will be a need to develop copyright and related rights, in the use of creativity of increasingly sophisticated and sophisticated ways of creating and disseminating, not only in culture, but also in technology, economics, medicine, psychology and law. Although one thing has remained unchanged since Roman times: without the creator and his creation, there is no work. This does not mean that in a short time the author of the work may be a machine, robot, program or some algorithm, which as the creator will be entitled to legal protection.

Subject matter of copyright

Pursuant to Article 1(1) of the Act of 4 February 1994 on Copyright and Related Rights (Journal of Laws of 2021, item 1062, hereinafter: pr. aut.) 'the subject matter of copyright is any manifestation of creative activity of an individual nature, established in any form, regardless of the purpose and manner of expression (work)'. By definition, Article 1 of the Pr. Car specs. it follows that it should be: the result of the work of man (creator), in which creative activity of an individual character is manifested and which has been established. From which the simple conclusion that a work is an intangible good, i.e. a legal good, the essence of which is not determined by a material object, but by the intellectual, creative contribution of the author (man), manifested in the way of expressing the work, after determining carefully according to established patterns whether this product is a work or not, and in the event of unresolvable doubts about whether the product is a work, decides on the basis of art. 189 of the Act of 17 November 1964 – Code of Civil Procedure (Journal of Laws of 2021, item 1805, hereinafter: the Civil Procedure Code) the competent court in this respect. It should be emphasized that Article 1 of the Pr. Car specs. is a very important provision for all other articles of the Act in which works are referred to. In particular, this article should be read

together with Article 4, which defines what is not the subject of copyright (judgment of the Supreme Court of 23.01.2006, III CSK 40/50, LEX No 176385; judgment of the Supreme Court of 7.11.2003, V CK 391/02, OSNC 2004/12, item 203; judgment of the Supreme Court 30.06.2005, IV CK 763/04, OSNC 2006/5, item 92).

If, according to copyright law, a work is a manifestation of creative activity of an individual character, established in any form, regardless of the value of the purpose and manner of expression, the essence of which is determined by the intellectual contribution of the creator (man), on what basis and according to what criteria and patterns could at least the intellectual contribution of a computer program or algorithm as the author of artificial intelligence be determined?

Copyright holder

In Article 8 of the Polish Copyright Law, the legislator defined the subjective side of the copyright, emphasizing that "the copyright is vested in the creator, unless the Act provides otherwise" (Article 8(1) of the Copyright Act). According to the legislator, 'it is presumed that the author is a person whose name in this capacity is shown on a copy of the work or whose authorship has been made available to the public in any other way in connection with the distribution of the work' (Article 8(2) of the Copyright Act). "As long as the author has not disclosed his authorship, he is replaced by the producer or publisher in the exercise of copyright, and in the absence thereof – by the competent organization of collective management of copyright" (Article 8(3) of the Copyright Act), as indicated by the judgment of the Supreme Court of 5.07.2002, III CKN 1096/00, BSN 2003/2, item 10.

This is where the illusory space for multiple interpretations in the area of artificial intelligence appears. However, article 81 of the Convention on the Grant of European Patents, drawn up on 5 October 1973 in Munich (Journal of Laws of 2004, No. 79, item 737), requires that the European patent application identify the author. Article 60 provides that the right to a patent is vested in the author or successor in title. This leads to the conclusion that the inventor can only be a natural person with legal capacity. Experts and lawyers agree that there are many regulations on how an individual can transfer the rights to obtain a patent to other entities, e.g. companies, but there are no regulations on the empowerment of things and the transfer of their rights to other things. If the machine were to be considered the creator of the invention, then there would be doubts as to how other entities could acquire rights from it. The key issue is not to find a way to transfer rights, because the essence is the primary question – whether artificial intelligence is able to produce an invention without interference and direction given to it by man.

The essence of the regulation is to introduce the principle that the copyright holder is the creator of the work. Other entities may be entitled to copyright only if it results from the law or from a provision of the contract. Statutory exceptions may apply to producers and publishers of collective works (Article 11 of the Act), as well as employers employing, on the basis of an employment contract, e.g. creators of computer programs – who are employees of programmers (Article 74(3) of the Act on Copyright).

In terms of new solutions – artificial intelligence – many lawyers are of the opinion, and rightly so, that AI cannot be treated as anything other than just a tool. It is a program that needs to be written, equipped with appropriate data and set the direction of action. He has no capacity for abstract or creative thinking, even if the results of his work may give such an impression. According to Marcin Wychota , it would be possible, for example, to program a machine to comb the Internet to search for noteworthy technical solutions or to modify new patent applications and automatically file rights to them in other patent offices recognizing AI as a possible creator of inventions, which could marginalize the inventiveness of people. Andrzej Boboli speaks in a similar tone, emphasizing that he cannot imagine creating regulations that could in any way take away people's rights (Styczyński, 2022).

In addition, the statutory mechanism for the acquisition of economic copyrights by employers is provided for in Article 12 of the Act on Copyright and Related Rights. The Act allows them to obtain copyright authors on the basis of a civil law contract (an agreement on the transfer of economic copyrights), under which the creator decides to transfer the copyright to his work to another economic entity, which cannot be confused with the license agreement (despite the conclusion of the license agreement, the creator remains the sole holder of economic rights) (Bukowski, 1994).

The principle of the author's copyright should be applied accordingly to co-creation. The copyright of entities other than the creator concerns only economic copyrights (Article 17 of the Aut. Act), so that moral copyrights (Article 16 of the Author's Act) may be vested only in the creator, or after his death they may be exercised by relatives (Article 78(3) of the Aut. Act).

A special situation in which the author's economic rights are vested in entities other than the creator is his death, as a result of which these rights are inherited by law or will by the heirs of the creator (Nowińska, 1991), which we are increasingly dealing with (the case of Niemen, Jasienica, the heirs of Bolek and Lolek). Will there also be issues that will concern, for example, an architectural design, a machine design, a computer system or its software?

Author's economic rights arise when the work is established. It is about its externalization, enabling perception by people other than the creator. In accordance with Article 1(4) of the Pr. Car specs. the creation of protection does not depend on the completion of any formalities. It is also worth emphasizing that the author's protection of rights arises not only in the Polish, but in accordance with the Berne Convention and the TRIPS Agreement, to which Poland is a party, also at the moment of creating the work in any of the countries of this agreement.

Author's economic rights

From the content of Art. 17 of the Pr. Aut., the basic provision determining the scope of copyrights, it follows that the author has the exclusive right to use the work in all fields of exploitation. Article 50 also refers to the fields of exploitation – this provision contains an exemplary list of them. The author's and legal monopoly covers every form of exploitation of a work – a work, including the one that is not included in the aforementioned calculation. What's more, the content of the economic copyright also includes fields of exploitation arising with the progress of technology, which were not known at the time of the creation of the Act.

The very manner in which the content of copyright is framed determines the need to obtain multiple consent for the economic exploitation of an individual intangible property, if this good is used by equal entities (Kubala, 1995).

The provision of Art. 17 of the Pr. Car specs. the content of copyrights also includes the right to dispose of the work and the right to remuneration for its use. However, it can be assumed that the function of the provisions on fair use justifies the view that only the refusal to pay or the refusal to conclude a contract setting the amount and conditions for payment of remuneration constitutes a violation of copyright law. The plea of copyright infringement is also exempted by the prior submission to the court by the beneficiary of a request to establish an appropriate amount of remuneration.

An important limitation of the content of the exploitative copyright is the so-called exhaustion of copyright (Article 51 of the Copyright Act). Generally speaking, the essence of this institution is the freedom of material circulation, effective after its lawful marketing, and only the rental or lending of a given copy of the work is not covered by exhaustion. Currently, the Polish law provides for "Community exhaustions" of copyright. The essence of this construction lies in the fact that after the legal marketing of a work in the European Economic Area (EEA), the right to authorise the marketing of such a work in that territory is exhausted.

Transfer of copyrights

In Article 41 of the Act. Car specs. the legislator indicated that "unless the Act provides otherwise, author's economic rights may be transferred to other persons by inheritance or on the basis of a contract, and the purchaser may transfer them to other persons, unless the contract provides otherwise. From which it is a general conclusion that the Act on Copyright and Related Rights allows two possibilities of transfer of copyright: (Article 41(1)-(5) of the Copyright Act) on the basis of inheritance and on the basis of a contract" (Golat, 2001).

Article 41 pr. Car specs. contains general rules on contractual turnover. By allowing for a two-division of agreements in this area, which may be agreements on the transfer of economic copyrights and license agreements (Article 41(2) of the Author's Act). Secondly, paragraph 1 provides for the principle of transferability of economic copyrights, which may be transferred to other entities by inheritance or on the basis of a contract, unless further disposal has been expressly excluded in it (Article 41(1)(2) of the Act). When discussing the transfer of author's economic rights, attention should be paid to the content of Article 41(3), (4) and (5) of the Pr. Car specs. ineffective passage of them, as well as a ban on supplementing their scope with new fields of exploitation (judgment of the Supreme Court of 8.11.2000, V CKN 693/00, LEX No. 5247).

The transfer of economic copyrights to other persons by inheritance takes place on the general principles of civil law, regulated in Book IV of the Civil Code (Act of 23 April 1964 – Civil Code, Journal of Laws of 2022, item 1360, hereinafter: the Civil Code), i.e. on the basis of a will or by way of statutory inheritance, if no will has been drawn up or it has been drawn up defectively. In both cases of succession, if the will was drawn up by the testator in the manner prescribed by law or if it was not drawn up and the testator left heirs, the matter of the transfer of economic copyright seems simple. However, it is not a simple situation in which the author has not left a will or legal successors, and the case concerns copyrights to the work resulting from co-authorship.

Following the example of other legal orders, as well as the Polish Civil Code, the legislator provided for such a situation under Article 42 of the Copyright and Related Rights Law. Article 42 of the Pr. Car specs. contains a regulation modifying the general principles of inheritance, in the field of inheritance of economic copyrights, which applies only to co-authored works, and specifically shares in these rights in a situation where the co-author has not left a will containing dispositions in the event of death, his share, where in such situations the rules of intestate succession apply, and at the same time there are no relatives who could inherit from him by virtue of the Act (Art. 905 CC). In such a situation, instead of the State Treasury, the deceased co-author's share in the economic copyrights to the co-authored work is inherited by the surviving co-authors or their legal successors (order of inheritance), according to the shares attributable to them from inheritance.

If one of the co-authors died and the other survived it, then in accordance with Article 42 of the Pr. Car specs. assuming the occurrence of the conditions specified by it, the right to co-author of the work will fall to the surviving co-author.

Interpretation of Art. 42 of the Pr. Car specs. in the context of the general regulation, Art. 905 of the Civil Code requires that It be assumed that Art. 42 applies only when it is not possible to determine the administrative authority of the last place of residence of the deceased co-creator.

The doctrine and case-law emphasize: despite the fact that from the content of Article 42 of the Pr. Car specs. it does not follow in the context of Article 9 that this special solution also applies to the inheritance of economic copyrights to independent contributions to the co-author's work, constituting separate works created by the deceased co-author, although Article 42 does not refer only to the inheritance of shares in rights, but to the inheritance of these rights (Ślęzak, 2007).

Copyright and statutory community

Upon entering into a marriage between the spouses, a statutory community of property arises by operation of law itself, unless the future spouses have concluded a property agreement (intercourse) before the marriage. In a marriage where there is a statutory community of property, there are three estates; joint property and two personal assets. The affiliation of a given property is determined by objective considerations, not by the will of the spouses. According to the will of the legislator, the joint property includes items acquired by both spouses or one of them during the statutory community, unless the object by virtue of the act belongs to the personal property of the spouse (Article 31 § 1 of the Act of 25 February 1964 – Family and Guardianship Code, Journal of Laws of 2020, item 1359, hereinafter: k. r. o.).

The term "property" should be understood as property and other rights in rem, which is a branch of civil law regulating the creation, content, change and termination of the right of ownership and other rights to things and animals, and in exceptional situations also not to them – e.g. the use of the right (Gniewek, 2016).

The right in rem is an absolute law, that is, an effective *erga omnes* – towards everyone. In § 2 of Art. 31 of the Civil Procedure Code, the legislator indicated three examples of components that belong to the joint property of the spouses:

1. remuneration received for work or other gainful activities of each spouse, even if the enterprise is part of the personal property of one of the spouses,
2. income from joint and personal property,
3. funds accumulated in the open or occupational pension fund of each spouse.

Of particular importance are income from joint property and personal property, i.e. income that a thing or a right brings belongs to the joint property regardless of whether the item enters personal property or joint property. It is about natural benefits – civil benefits and benefits of the law.

In determining whether a given property enters the joint property, Art. 33 of the Civil Code is helpful, which enumerates the elements belonging to the personal property of each spouse. Pursuant to Article 33(1), the personal brief of each spouse includes property acquired by inheritance, bequest or gift, unless the testator or donor has decided otherwise. On the other

hand, in paragraph 9 of that article, the legislator mentioned as a personal element copyright and related rights, industrial property rights and other rights of the author, which explains that, in accordance with Article 33(1), the economic right acquired by one of the spouses by inheritance is his personal property, as well as, pursuant to Article 33(9), copyright and related rights and other rights of the author. The case is different in relation to benefits which, pursuant to Art. 31 § 2 of the Civil Procedure Code, enter into the joint property of the spouses, i.e. belong to both spouses remaining in the statutory community, unless the spouses decide otherwise by means of a civil law agreement.

Summary

Thelimited drive of man, the rivalry of all with everyone, the desire to be the first, the best at all costs, makes man more and more dependent on complex solutions, defined as the product of a new civilization, a new intellectual and technological generation. At the same time, thebasis of every development is not both a robot and a machine, it is always a man.

Thetechnologies and innovations that exist in the public space at their core contain the human factor, not the other way around. It is difficult to imagine that copyright would belong to an algorithm, mathematical compilation, some processor or disk drive, because copyright is closely related to the author-creator, the person who created the work or exploits or uses it with the consent of the author. Despite large-scale propaganda campaigns, making humanity aware of the vision of the expansion of the dominance of the use of artificial nature solutions, there are areas in which man will decide about it, not the machine.

The broadly understood evolution of humanity for many years made the community aware of the need to regulate copyright and related rights, which not so long ago were pointed out that they are a commodity and can be traded, bring significant income.

There is a lot of talk about the fact that artificial intelligence replaces something that does not seem precise, because artificial intelligence has to learn it from someone. Here we come to a very important issue – who should "feed" data to artificial intelligence so that the so-called prejudiced algorithms do not arise.

According to Kuzior A. and Czajkowski W., several fundamental questions should be asked about artificial intelligence – will artificial minds comparable to the human mind ever be built? How to build an artificial mind on the model of a human, if we do not know the latter well yet? Is it possible to build a creature that is mentally identical to man and is physically different from man, and is it possible to build a creature that is, in essence, mentally identical to man, but with a significantly higher IQ than the IQ of humans?

According to the authors of the above questions, the answer is impossible, because we do not know not only how to answer such questions, but even how to look for answers. What is possible at the moment is an attempt to search for them in the category of a thought experiment, which is not meaningless, because apart from the emotional delight resulting from the very fact of searching, assuming that man is a being not yet studied, any such invention will certainly contribute to a better knowledge of man. It seems apt to note that the list of questions related to the development of artificial intelligence may be infinite (Kuzior, Czajkowski, 2019).

Artificial intelligence systems are used much more often than we think. They are already so widespread that the legal regulation of this area in terms of copyright law seems to be a matter of time. As a pioneer in data protection, the European Union can play a similar role in regulating artificial intelligence.

The subject of legal transactions is often some license, patented pattern, sign, symbol and technology, the author and inventor of which is not a machine, but a man. It is expected that software such as, for example, system of Artificial Legal Intelligence (SalIN) will be able to replace a lawyer – the system will independently recreate the legal status, analyze the situation of the law firm's client and propose a solution to a given legal problem , but whether, for example, it will interrogate a witness and a convict. So what if there will beprogrammingand adapted to the automatic processing of documents – normative acts and jurisprudence, to evaluate official decisions or the achievements of legal doctrine , but to whom will copyright belong, to the individual or collective mind?

- Algorithms and modern tools can help any human being, but they will not replace it.
- The use of AI in substantive decision-making can to some extent replace even the court and eliminate the necessary human factor, which can lead to even greater abuses in the field of intellectual property protection or security reasons.
- Intellectual property – copyright in a company is not what the entrepreneur and his employees have in their heads, but everything that thanks to their own knowledge and abilities they have managed to create.
- Intelligent man is able to create great works, artificial intelligence can expand and improve them.
- An intelligent man should not compete with dead things that he himself invented, constructed and uses, his task is to use them in an optimal way to achieve the assumed goal.
- Modified foods have food qualities, but they will never reach or even come close to what has been obtained naturally. As well as with the help of programs, machines and devices, we are able to construct artificial teeth, dentures, eardrums, which is not the same as originality.

- Catcher is capable of almost anything – he can try to change nature or replace it, invent and establish what laws he wants and share them with whomever he wants, which will not change the fact that copyright related to emotions, feelings and feelings is only hiss. The future does not seem to be determining whether nature or artificial intelligence is more important, but how to combine it and use it for a common cause. No one is capable of inventing it like man, and no one is more capable than man of corrupting it.

What is artificial at the beginning will always be artificial, and what is true at the beginning will always be true.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

THE DARK SIDE OF THE INTERNET AND THE ONTOLOGICAL SENSE OF SAFETY

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Purpose: The purpose of writing this article was to argue that surfing dark, often unencrypted websites on the Internet disturbs their users' ontological sense of security. These sites, which only appear to be user-friendly on the surface, hide dark and dangerous content, the viewing of which often disturbs the value system, which may manifest itself in the destruction of personality, or in extreme cases, undermine the sense of human being.
Design/methodology/approach: The primary method of the research was a critical analysis of dark content and Internet content exemplifying the dark net. The main method was accompanied by a case-study method of selected websites, e.g. JBZD, which provides videos with hard content in addition to other, also educational, content. This is a very popular website among young people on the Polish Internet, which includes the hashtag "hard" with the help of suggested bookmarks.
Findings: Watching films saturated with brutality, frequently seeing scenes of death, inflicted in the most cruel way, has a destructive effect on a person. Frequent exposure to the dark part of the Internet, commonly known as the dark web, may contribute to the breakdown of the hierarchy of needs and, as a result, to the disintegration of personality, especially in children and adolescents, as it gives rise to states of apathy, atrophy of feelings and meaning.
Originality/value: The novelty of the article manifests itself in the selection of the research topic, which has not yet been subject to a thorough comprehensive analysis, especially from the perspective of the ontological sense of security of youth.

Keywords: Dark Web, Internet, virtual reality, online safety, ontological sense of safety.

1. Introduction

Analysing the issue of the influence of the Internet on the life of modern man, today, after many years of using this interactive technological medium of the information age, one can boldly risk the thesis that the life of modern man has been dominated by this relatively new space, of human existence, commonly referred to as virtual space, global network, digital world, cyber world, cyberspace, etc.

Virtual reality, is often equated with cyberspace. The term *cyberspace*, as it is known, is derived from the words *cybernetics* and *space* and was popularised by William Gibson, a Canadian writer who used the term in his 1984 debut *science fiction* novel *Neuromancer*. Our present-day, technology-saturated everyday life has been created according to a recipe originally contained in a visionary literary work. It is significant that, once again, a literary, technological metaphor has proved to be a harbinger of a future reality.

Today almost all of us agree, that the internet has completely changed our way of being, communicating, working, spending our free time, liking, passion, and our relationships with loved ones. To put it bluntly, virtual reality (VR) has radically and irrevocably changed our habits, customs, behaviour, routines, in a word, our previous way of being and living. The virtual world tempts us with a vast array of possibilities, so more and more of our activities are being transferred to this space. This is where we can be who we want to be. "If virtual reality works as it should, it is no different from the real world and changes as it does. There are no interfaces, gadgets or pixels. One minute you're putting an HMD[1] on your head and the next you're already in a completely different place. The feeling of 'being in a particular place' (regardless of where the programme you are running takes you) is called psychological presence by researchers and is a key characteristic of VR" (Bailenson, 2018).

On the Internet, it is possible to participate in a wide variety of computer games, distinguished by type - with regard to the aim of the game and the means of achieving it - and by genre - according to the perspective of the world presented in them, the time form of the game, the degree of imitation of the real world and the subject matter. They create virtually unlimited possibilities for the projection of vast virtual worlds, open to simulated, dynamic peregrinations. "The Internet, unlike traditional media, co-creates other new dimensions of reality, redefining the human way of thinking about space and what people consider real and viable. There is a strong belief in society that cyberspace compresses time and space like no other medium. The Internet is proving in many aspects of social life that it deserves to be called an expanded social space" (Kuzior, Janczyk, 2016).

Functioning in virtual reality, apart from its obvious, unquestionable benefits, unfortunately at the same time robs humankind of a sense of intimacy, a certain - but advisable - dose of mystery in relations, a sense of privacy, autonomy, truthfulness, freedom. Another result, extremely important from the perspective of the ontological sense of safety, is the lack of willingness and time to reflect on the purpose and meaning of existence in the world and finding one's own place in it. The problem of the atrophy of meaning particularly affects young people, who exist "in this world almost literally: without leaving home, thanks to which they get to know other worlds, as well as themselves. It is not clear whether the metaphor of the window, which was once invoked in relation to television and is now sometimes invoked in relation to

[1] HMD (Head Mounted Display) is a type of computer display device, that is put on the head and can handle stereoscopic 3D images generated by a computer.

the Internet, is accurate here. Either way, the Internet is a window through which one looks at the world and a window - the world that one looks at" (Golka, 2008).

Virtual reality, as a new dimension of modern reality, is vast, with many dimensions, countless worlds that we as adults would not always want to find ourselves in, so we would even less want our children to get lost in the nooks and crannies of this boundless abyss. The authors of 'Inside the Dark Web' argue, that in fact, the part of the web that we 'surf' is small, as it represents only a tiny percentage of the virtual space: "Search engines like google provide access to freely available content which is 03% of the Internet" (Ozkaya, Islam, 2019). However, a variety of threats lurk in this percentage-poor commercialised and censored space, a seemingly 'safe' sphere.

2. The (un)hidden side of the Internet

The space of the Internet - the World Wide Web, which was described in his memoirs by Timothy Berners-Lee, a British physicist and computer scientist, and is now known as the Internet - has dominated our daily lives to such an extent that, in fact, already today, it is not so much difficult for us to function without access to the Internet, but is slowly becoming simply impossible. Thanks to the rapid proliferation of satellite television, mobile telephony and the Internet, this network has encompassed almost our entire world and "is now a key element of our daily life, economy and safety" (Harari, 2017).

Increasing access to the digital world, which is the basis of the information society, as described by Japanese sociologist Tadeo Umesamo in 1963, is forcing contemporary people to take advantage of the possibility to exchange information on a global scale. The term "information society" refers to highly developed societies, which owe their prosperity, in almost all spheres of life, primarily to information, which, thanks to information technology, (mainly through the Internet) is the driving force behind the global development of these countries.

The theory concerning the role of information in the area of the economic structures of the state, which was undoubtedly supported by the process of globalisation, was continued in the late 1970s and early 1980s by, among others, Yoneji Masuda, who developed a comprehensive plan for the transformation of all spheres of life, which is likely to be realised in the information age. In his plan, Masuda envisaged the development of societies through the creation of a shared global space that would enable citizens to fulfil their needs in almost every area of human existence. "This global futurisation society will be a society in which everyone pursues the possibilities of one's own future, actualising one's own self futurisation needs by acting in a goal-oriented way. It will be global, in which multi-centered voluntary communities of citizens participating voluntarily in shared goals and ideas flourish simultaneously throughout the world" (Masuda, 1981).

In his book Masuda presents a visionary wholly new long-term vision for the 21st century, which he calls *Computopia*, that is, a world dominated by computers which, being networked, will become a force for social change, powerful enough to lead to the transformation of society into an entirely new type of human society, the information society. According to Masuda, this innovative technology of the 21st century will change social and economic systems in three successive stages. "The three stages of technological innovation, as they apply to the revolution in computer and communications technology, may be defined as replacement and amplification of the mental labour of man and the transformation of human society. This may be defined as follows:

- The first stage is automation, in which man's mental labour is includingly accomplished through the application of computer-communications technology.
- The second stage is that of knowledge creation, which entails the amplification of man's mental labour.
- The third stage is that of system innovation, a set of political, social and economic transformations resulting from the impact of the first two developmental stages"(Masuda, 1981).

The above-described three stages of the information epoch and its social consequences are shown in Figure 1.

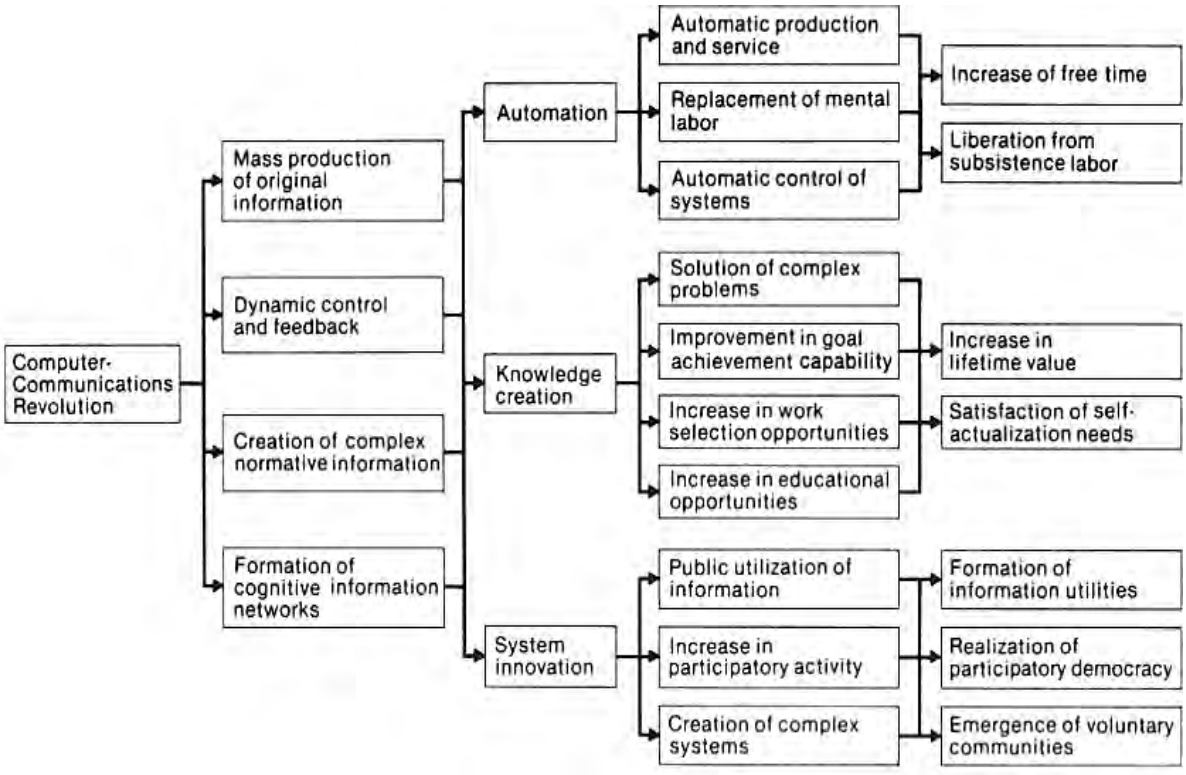

Figure 1. Computer-communications technology Revolution and Its Social Impact (Masuda, 1981).

The social changes taking place in the context of the development of the information and telecommunications sector and computerisation were to become the information society, initially only in Japan, and then, gradually implemented by all people in the world, both socially and individually. Masuda's concept was fundamentally guided by the same positive goals, i.e.: defence of states, socio-economic development, space exploration, social welfare, universal access to education, information, social welfare, contentment, national prestige, in a word, a comprehensive solution to the problems that most societies in the world face on a daily basis.

Meanwhile, this information age of great opportunity has spawned unimaginable dangers, with the "technical means generated allowing crime to develop on an unprecedented scale. In particular, money laundering, illegal speculation and many other ways of breaking the law using information technology create a threat hitherto unrecorded. From today's perspective, we can add to this a whole list of other acts of lawlessness, such as the stealing of information from computer systems, terrorism using the Internet and mobile telephony, etc." (Wielecki, 2012).

The wide gates of the Internet - have opened their doors to the dark side of human activity, providing unlimited opportunities to realise the darkest desires hidden from the light, the equally dark implications of which are usually shrouded in a heavy veil of universal silence. This space, like the dark side of the moon, hides under the name of the Dark Web.

2.1. Sites with violent content

In the absence of real physical threats and the resulting apparent sense of safety and comfort, an increasing number of users of all ages are fearlessly immersing themselves in the virtual world, often drowning in a deluge of information, often saturated with violent content, often conveyed in a dispassionate manner. The brutalisation of life, with which the Internet is saturated, combined with the anonymity and thoughtlessness of Internet users, is increasingly becoming the natural perspective of reality, becoming the norm, robbing young people of their sense of purpose and sensitivity to the injustice of others, and depriving them of the chance for deeper reflection.

Not so long ago, certain areas of the Internet were intended for users over the age of 18 and were not generally accessible, censorship was in place, so, for example, erotic and pornographic content was not accessible to children, and informed parents could apply the so-called age restriction option, thanks to which the proposed material was adapted to the age of the users. Some areas of the Internet could be accessed using appropriate browsers, which were difficult

to access at the time, programmes (e.g. VPN[2]) which changed the IP[3], i.e. the address from which the user usually connects.

Today, the situation has changed dramatically. A lot of content that until recently was reserved for adults and was censored is now easily accessible. These sites do not verify age in a way that protects their access for underage users. By simply entering a date (it is often possible to click on a date already entered), users can quickly and easily access a part of the Internet that has been labelled dangerous cyberspace. It is precisely the access to sites with so-called non-age-appropriate content that can threaten the ontological sense of safety, especially of those users who are entering adolescence.

These days, the lower age limit for young people to start sexual intercourse is decreasing. One only has to look into the browsing history of many 12- to 15-year-olds to easily see this fact. Adolescents, who in many cases have already had sexual initiation, acquire this knowledge based on content obtained from the Internet. Unfortunately, the content they find on the Internet is often saturated with brutalisation and instrumental treatment of the partner, which not only distorts the concept of love, but above all threatens the formation of healthy partnerships. It is true that in schools, there is a subject called LSW (knowledge for life), but the content concerning erotica and sex is often inadequate to reality, moreover it is discussed in later stages of education and is often outdated and therefore not very interesting.

In addition, the use of these sites poses certain risks, since they are often frequented by paedophiles who seek out minors and try to obtain photographs or other important information in order to meet, date and cruelly harm them. Perhaps this problem is already obvious, as there are widespread campaigns to make both children and parents aware of the dangers and of the aspects to which parents should pay attention when talking to their children.

2.2. Sites with the violent content

Increasingly, psychologists and sociologists are speaking out about games, which generate a multitude of dangers in children and young people, in the form of aggression and the brutalisation of life. However, against the background of the dangers and all the evil hiding in the Internet, this is only a small percentage of the cause of aggression among young people. Another online danger is hegemony, stalking and bullying, which are the order of the day among the Internet community, whether in social media or in the area of so-called entertainment in the form of online games. However, the greatest danger lies in cyberspace, which is

[2] VPN - virtual private network, a VPN is virtual, i.e. it exists in space and allows you to connect from a virtual IP address. On the network, the user leaves many traces, in the form of information about themselves, i.e.: the browser used, the broadcast address, the town, and sometimes the physical address to the nearest few metres, etc. The use of VPNs is intended to increase online safety. Every Internet user should have knowledge of - at least - the basic rules of Internet use, in order to protect themselves from dangerous contacts, viruses, tracking programmes, etc.

[3] Changing the IP address helps to hide our location and thus protects us from being tracked by, for example, an internet service provider.

increasingly dark and dangerous, even though on the surface it may appear to be a completely risk-free space.

This brings us to meme portals, which are popular with a wide range of Internet users, especially young people, i.e. short films, photos and images that Internet users visit to amuse themselves and improve their mood. Users of these sites create memes, then comment on them, evaluate them, thus forming a kind of specific community that stimulates each other. No account is required to view the content posted there. Most often popular events, situations, from the area of politics, sport, culture, advertising spots, etc., are presented in the form of memes, which, thanks to the frequency of their display, become viral (read: popular on the Internet). It would seem that meme sites should not generate negative emotions among children and young people, so it is not surprising that parents do not perceive any danger for their children in these seemingly humorous portals. Nothing could be further from the truth.

Just a few years ago, hard-content websites were only a topic of conversation among teenagers, who unsuccessfully tried to break ciphers and all sorts of Internet barriers to be able to access them, but today, during school breaks, children and young people already browse the popular JBZD website every day, which makes hard-content films available in addition to other, also educational, content. It is a very popular site on the Polish Internet with a name that, using hashtags (words that categorise topics, e.g.: knowledge, humour, politics, films, games, sports, hobbies, trivia, etc.), redirects users to topics of interest. New posts go to a so-called 'waiting' board, a category of new memes that can be commented on, and those that are rated the highest are moved by the administrators to the 'home page', thus becoming known as the best memes, So where is the danger here?

Well, the danger lies a little deeper, because on this seemingly innocent page, among the proposed tabs is the hashtag "hard". Admittedly, in order to access these tabs, an account is required, which is subject to an age limit of 18, which in most European countries is legally the same as the age of majority. However, this safeguard is infantile and easy to circumvent. All you have to do is create an account, confirm your e-mail address, enter your date of birth (you can enter any date, as no proof of identity is required) and from then on, without any restrictions, you can start exploring the dark corners of reality via the Internet. In the "hard" section, there are videos showing extremely violent content, in which, for example, ISIS executes people by shooting, slitting throats, raping and massacring. When, for example, people are cut, bones, veins, muscle fibres are visible. These scenes are accompanied by the unimaginable screams of the victims who meet this fate. It is enough to imagine that a 10-year-old boy, after finishing his lessons, browsing through funny memes, driven by curiosity, decided to dive into the depths of the Internet, sets up an account on the 'JBZD' portal to go deeper, then clicks on the hard tab, where he watches the drastic scenes without any censorship.

The content pages mentioned above are very popular with many internet users, especially young people, and there are many more portals similar to JBZD, e.g. Sadistic offers very similar content categories. However, with the exception that on Sadistic, the content is top-down and

concerning "hard" topics. Young people are usually curious by nature and unreflectively reach for such content, hence sadistic or JBZD-type portals are very popular in schools and spread extremely quickly. The danger of using such sites, especially with children and adolescents who have not yet crystallised axonormative rules for interpersonal behaviour, is that the system of values, goals and aspirations is disturbed.

As a kind of curiosity, it should be considered that during a certain period of activity of the JBZD portal there was a help action for one of its users. This action was the JBZD administrators' response to the father's post - in which he asks for financial support to treat his sick daughter. Surprisingly, the required amount was raised in a very short period of time. This is perhaps the only one of the positive sides to the story of this portal.

2.3. Dark Web - the descent into the underworld....

The biggest concern at the moment is violence and the realisation that young people are being depraved by the violent behaviour they regularly see online. As we delve down the rabbit hole we are slowly reaching an increasingly dark area, usually the hidden part of the internet, also known as the *Dark Web darknet, deep web* etc[4]. This inaccessible space, inaccessible to the average user, is the darkest corner of the dark site of the web, which cannot be accessed by accident, as special software is required to get there. The most widely used network is TOR. "The URL of these sites is usually made up of a string of sixteen apparently random letters and numbers that end in '.onion' instead of any of the usual domain identifiers such as .com or .org. Because the sites are not designed to be found by search engines, users must either know the exact URL they want or use one of the available gateway sites. Any site that has an .onion domain name is contained within the Tor network and is not part of the internet. The hidden network of sites is colloquially referred to as Onionland" (Ormsby, 2018). This is a very dangerous area of the Internet, where people are able to get their hands on absolutely everything, from music files and commercial movies, often pre-release, or seemingly harmless acts of copyright infringement, to weapons, human organs, hardcore pornography and all sorts of perversions. "Numerous criminal activities are going on in the deep web including drug dealings (selling or buying), contract for assassinations, pornography industry including child pornography, sales of human body organs, human trafficking an d sex trafficking, transactions for illegal shipment of arms, sales of stolen goods, sales of hacked cyber identity information, terrorism activities, and many more" (Ozkaya, Islam, 2019).

The main users of this very dark space are primarily contract killers, such as murderers, rapists, kidnappers, hackers, etc. "For some, the dark net is the encrypted world of Tor Hidden Services, where users cannot be traced, and cannot be identified.

[4] Due to the exceptionally cruel scenes, brutal, bloody, awe-inspiring video footage, photos that are posted on the dark web, I will limit myself to only a few aspects of this shocking underground world. This is because the purpose of the article is not to eulogize, much less promote this type of content.

For others, it is those sites not indexed by conventional search engines: an unknowable realm of password protected pages, unlinked websites and hidden content accessible only to those in the know. It has also become a catch-all term for the myriad shocking, disturbing and controversial corners of the net - the realm of imagined criminals and predators of all shapes and sizes" (Bartlett, 2016).

The dark web is a deeply hidden web that exists for real and functions alongside the well-known indexed web. However, Google's popular web browser won't find its sites, and YouTube, Facebook or WhatsApp won't play material posted there. Compared to the 3% surface web "the deep web is of massive size is 4,000-5,000 times larger than that of surface web" (Cf. Ozkaya, Islam, 2019). The above-described a snapshot of the deep search interface are shown in Figure 2.

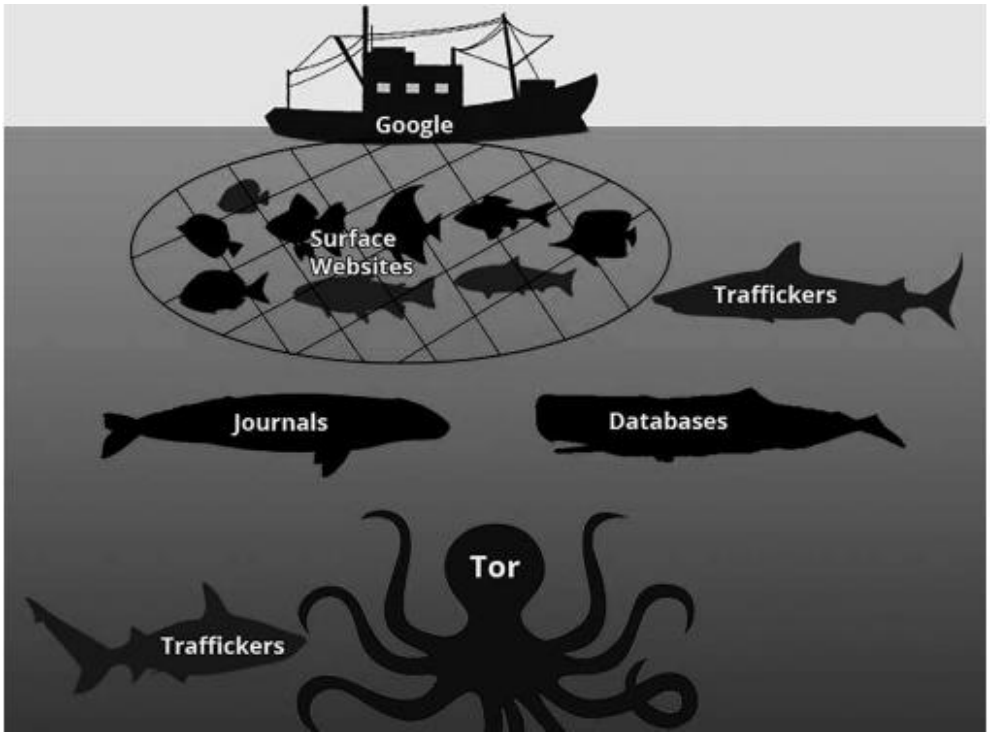

Figure 2. The Dark Web activities (Ozkaya, Islam, 2019).

The information, content and people that are on the Dark Web are a huge threat to all internet users and especially to young people and children. Hackers - internet users who have the ability to manipulate IP addresses - have incredible IT skills, are able to manipulate data and then access, for example, the cameras on unsuspecting users' laptops in order to then blackmail, extort, threaten or otherwise pressure them.

It is comforting to know that only a small number of young people today know how to access the Dark Web, as it is a complex process that requires knowledge of how operating systems work, which often makes it difficult to overcome the necessary safety measures. Unfortunately, like mushrooms after rain, tutorials and articles are now appearing on the Internet that instruct step-by-step how to get into this hidden and encrypted space.

3. Ending

Day by day, more and more people live in the conviction that they have no influence on the rushing current of events, so they settle for the illusion of living in virtual space, sinking deeper and deeper into Castells' 'timeless' time and 'spaceless' space. Timeless time creates a culture of 'true reality', being 'merely an emergent, dominant form of social time in network society, just as the space of flows does not negate the existence of places' (Castells, 2008). We thus live in two worlds simultaneously, that is, the physical and the virtual. Moreover, these worlds, interpenetrating each other, not only force contemporary people to function simultaneously in these diametrically opposed realities, but, above all, shape our consciousness and force a change in the pace and quality of life, to an extent unmatched by previous generations. Each of these worlds has very different conditions: different values, forms of expression, needs, expectations, skills, as well as different sensitivities, which creates a certain epistemological and axiological confusion, the effect of which may be the loss of meaning and existential emptiness to which young people in particular are exposed.

The effect of living in several dimensions at the same time is paradoxically, a permanent lack of time to reliably perform our daily duties, on which our lives and their quality depend. And most importantly, it is important to remember that this modern world of the internet, is 'an underworld set apart yet connected to the internet we inhabit, a world of complete freedom and anonymity, and where users say and do what they like, uncensored, unregulated, and outside of society's norms. It is a world that is as shocking and disturbing as it is innovative and creative, a world that is also much closer than you think.

The dark net is rarely out of the news - with stories of young people sharing homemade pornography, of cyberbullies and trolls tormenting strangers, of political extremists peddling propaganda, of illegal goods, drugs and confidential documents only a click or two away appearing in headlines almost daily - but it is still a world that is, for the most part, unexplored and little understood" (Bartlett, 2016).

Young people are influenced by what they see on the Internet, and viewing drastic, extremely violent content has a negative impact on their minds and psychological development, distorts the concept of love, empathy and makes it difficult to function normally in society.

On an optimistic note, many Internet users avoid the Dark Web out of fear or because they lack the skills to get there. Sometimes people who have no 'bad' intentions try to get into this part of the Internet. The reason may be that they are looking for information hidden by particular governments, concerning their own or other countries' information, they want to access hard-to-get films, commercial music, sometimes they want to buy products without paying taxes, etc. However, the dangers that lurk on the Dark Web, according to many Internet users, are not worth the risk, in the form of data theft, the seizure of bank accounts or identities.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

INTRODUCTORY REMARKS ON ONTOLOGY OF TECHNOLOGY

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Purpose: Technology, understood as a complex and evolving system, still lacks a systematic theory. Such a theory would be both theoretically and practically important. The paper presents an outline of such a theory.
Design/methodology/approach: Conceptual analysis availing of general ontology, using analogies with such branches of philosophy as the philosophy of science, and drawing upon general knowledge about history of technology.
Findings: A method of classification of the problems of the ontology of technology has been constructed and its usefulness – demonstrated. A certain number of trends in the evolution of technology have been identified.
Research limitations/implications: The field studied in this paper is very broad. Further studies of its sub-fields identified in the present text are badly needed.
Practical implications: Social/political implications can be regarded as a type of practical implications.
Social implications: The paper can have some social implication, though rather indirect: analytically clear and substantially comprehensive ontology of technology should support broadly understood technology policy and especially its more direct theoretical foundation – axiology of technology (a part of technology assessment).
Originality/value: The paper presents a systematic overview of the problems of the ontology of technology.

Keywords: ontology, evolution of technology.

Category of the paper: viewpoint, general review.

1. Introduction

The phrase “ontology of technology” contained in the title of this text is much less frequently used than the “philosophy of technology” (Rapp, 1981; Borgo, Vieu, 2009, Vallor, 2022). For this reason, a few brief remarks on this phrase should be formulated (Durante, 2022).

Let us commence with a comment on the word “ontology”. It has been in use in philosophy since 18th century and has designated a branch of it. Sometimes it has been used as a synonym of “metaphysics”, sometimes – as the name of a part (the most general one) of metaphysics (Thomasson, 2009).

In this paper the term “ontology” will be used in the way close to (though not identical with) the one proposed by the great German philosopher – Edmund Husserl: he introduced the notion of “regional ontologies” that study the most fundamental and general properties of various domains (“regions”) of the Being (the Reality, the Whole…) To avoid too long and too detailed considerations, I will limit myself to giving some examples. Social ontology and ontology of works of art, ontology of mathematical objects and ontology of everyday life – these are. perhaps, the most widely known examples of regional ontologies.

Now, I would like to say a few words on the reasons that prompted me to use the phrase “ontology of technology” as the name of the intended field of my studies. Firstly, in accordance with some very general philosophical views I do accept, I want to distinguish two types of philosophical discourse (in particular: about technology): descriptive (ontology) and normative/evaluative (axiology). I tend to believe that just in the philosophy of technology (and in some other branches, e.g.- political philosophy or historiosophy) these two discourses are too often intermingled - I formulate this opinion in a cautious way: its justification would demand a separate analysis. (Mitcham, 2022) I should add that, in my opinion, axiologies of technology presuppose ontology of technology. This relation should be characterized by the way of analogy with mathematical theories: e.g. both Euclidean and non-Euclidean geometries presuppose propositional calculus.

I would also like to draw reader’s attention to an analogy between philosophy of technology and philosophical anthropology (= philosophy of man). Still today at least “folk philosophical anthropology” (cf. “folk psychology”, “folk physics” etc.) contains ideas about man as being “inherently bad” or “inherently good” (many similar also). Such opinions have very little, if any, sense. Similarly, in my view, to ask whether technology is “inherently good or “inherently bad” has no more sense. Of course, technology can (and should) be evaluated. But how to evaluate technology – rationally? (Grunwald, 2009) To sketch an answer to this question, let us avail again of the analogy with the philosophical anthropology.

Already Aristotle discussed many various sorts of moral and intellectual virtues (virtues can be understood as values characterizing human beings). Just this analysis demonstrated that it is impossible to "aggregate" all these virtues into one "all-embracing" Virtue. It should also be noted that Aristotelian definitions of virtues presuppose descriptions of various types of situations in which people find themselves at times and analyses of various kinds of actions undertaken by them in those situations. In short – ethics presupposes (explicitly or implicitly) ontology of man, and of action, (more profound analysis would demonstrate that also – this of society). – Similarly, any rational evaluation of technology (its axiology) should be based on a systematic description of technology – on an its ontology (Banse, Grunwald, 2009).

The decision to use the term "ontology" as a name for the analyses to be carried out in the present text has had a few motivations. The most important has been presented in the previous passage. The intention to apply some ideas taken from general ontology (Durante, 2022) has also played a role. And last but not the least: the domain to be studied here overlaps with an area of interest of social ontology (today well-established discipline connecting social philosophy and general/theoretical sociology), and with that of the ontology of Nature (a term less often, for various reasons, used than the previous one, but – in my opinion – designating a legitimate field of philosophical analysis; incidentally a field of particular importance in the time of the global ecological crisis).

Still two terminological remarks. First: As noted above, the word "ontology" is sometime used as a synonym of the word "metaphysics". But even if the denotations of these two terms are regarded as identical, their connotations can be different. The term "metaphysics" suggests close relations with, say, religion or poetry, while "ontology" – rather with logic or physics. – Just the last associations fit better with my intentions.

And second – on the word "object" (Beth, 2009; Preston, 2009). It will be used here in the way characteristic for ontology (at least, for many its currents): both a stone and the whole Universe, a John Smith and the whole humanity, the set of complex numbers and the number "two", the history of Japan, and the life of Burek (a dog), a concrete chemical reaction… – these are all objects.

At the end of these introductory remarks I want to present an assumption determining the structure of this text: While studying some domains of the Reality, it is convenient to distinguish two aspects of the given domain: its structure and its history; for instance, social ontology (in the most conventional meaning of this term) focuses on the structures of social reality, while historiosophy – on its history Thus, the second chapter will be devoted to the analysis of the structure of technology, and the third one – to the analysis of the historical process of the technology development (of its evolution) In the last, fourth, chapter, I will formulate some remarks on the issues that should be analyzed in the future.

2. A "structural" ontology of technology

I would like to start this chapter with some very general methodological remarks concerning the importance of classifications (taxonomies), in particular – of the classifications of scientific (philosophical) problems. I think that one can offer at least three arguments supporting the "importance-thesis". The first one might be named "logical": Theoretical problems are not, so to say, "logically independent". On the contrary, they are in various ways interconnected. If to accept the opinion that a single solved problem generates (at least: most often) a certain number of new problems, one must accept the thesis that the total number of (unresolved) problems increases. It can be also assumed that knowledge of the "problem-surrounding" of a problem is one of preconditions of its understanding. If so, some instruments representing "location" of this or that problem are more and more important.

The second argument may be called "heuristic": a classification of problems should help to find still unnoticed (thus: unresolved) problems.

And the third one I would like to name "pragmatic". Even philosophy, not to say about so-called "applied sciences", is not (at least: not only) developed for its own sake. In the epoch of the exponential growth of the production of scientific texts a "map" ("maps") of problems become more and more practically indispensable.

If you accept these arguments, you should accept my decision to divide philosophy of technology into fields, sub-fields etc. (Of course, acceptance of this general decision does not entail acceptance of the specific way in which I have realized this decision; perhaps a better division could be proposed.)

The motivated in the "introductory remarks" division of the philosophy of technology into its ontology (the only subject of this paper) and its axiology (the subject of the paper of Przybylska-Czajkowska, 2022) is the first step. The division of the ontology of technology into the "structural" and "dynamic" (or, if you prefer, "historical") is the second one. Now, the third step will be made: The "structural" ontology will be divided into "internal" and "external".

Though the labels ascribed to the two sub-fields of "structural" ontology suggest what is the nature of their problems, a few words should be made on this distinction. The "internal" ontology contains – among others – a classification of technical objects and/or relations between them. And the relations between technology and other element of the social/natural world constitute the subject of the "external" part of the "structural" ontology of technology. No more steps in this classification are intended. Thus, let us pass to the "internal" ontology.

This part of my considerations will be commenced with some, rather short, comments on the definition of the term "technology" (Mitcham, 2022; Mitcham, Schatzberg, 2009). Quite a lot of place (time etc.) has been devoted to the discussions around this problem. I am not going to join these debates: I am not convinced that definition of technology is necessary. I think that an alternative strategy of the characterization of various domains (of art, of sport, of religion…),

in particular – of technology, can also be useful. Briefly put (though more formal characteristic might be given): This strategy is based on indicating a group of objects undoubtedly belonging to the given domain (here: to technology) and on indicating other objects connected with the objects of the first group by relations of some special kinds. (Two methodological remarks. The first step could be characterized as so-called ostensive/deictic definition. And as regards the second step, the analogy between this strategy and the so-called recursive definitions – e.g. of natural numbers – may be helpful.)

I would even risk the thesis that the characteristic of the "core" of technology is a rather simple task. Especially, if one starts from an idea fundamental for the modern European: the idea – most explicitly expressed by such thinkers as Kant, Fichte or Husserl – of both the distinction, and strong interconnections between Subject and Object (by the way, it seems to me that a pair of engineering sciences concepts – this of "controller/regulator" and of "controlled/regulated system" – can be regarded as a special case of these two philosophical terms). If some relations between Subject and Object are – as philosophers, following Hegel, like to speak – "mediated" by another object, this "mediating" object deserves the name "instrument" or "tool" (Beth, 2009).

I have used both these terms because – from the historical point of view – some natural objects (a stick, a stone etc.) should be regarded as instruments though not as artifacts. On the other hand, not all artifacts can be regarded as instruments (e.g. various pails of rubbish etc., also – the ozone hole; the instrumental status of such artifacts as, for instance, Egyptian pyramids or Stonehenge monuments, would deserve not conceptual but substantial debate). It seems obvious that that technology includes instruments (tools) and (some) artifacts. – In this way the "core" of technology has been defined. Now let us make the next step.

Material objects are actual (and not only potential) instruments if some humans can use them – if they have certain skills (if they dispose some practical knowledge). These skills (this knowledge) will also be regarded as a part of technology. A question arises here: which skills should be regarded as a part of technology? For instance: is literacy a part of technology? I would say that in some historical periods (e.g. in the 21st century) the answer should be positive. In the Ancient times – rather negative. The same can be said about "mathematical literacy".

Let us stress now that the concept of instruments can be – to use a term adapted from mathematics – iterated: some instruments can be used to produce instruments necessary to produce other instruments… – Theoretically, the number of iterations is not limited. A similar remark might be made in relation to skills: skills can be produced by trial and error or by instruction. And the skill necessary to instruct can be produced also by instruction. Etc.

Still today we use knives and hammers – to butter bread or to fix a nail in the wall. These objects can be characterized as instruments of consumptions. But think about airplanes or computers and about instruments necessary to produce these objects. And instruments necessary to produce these very instruments. Etc. Etc. – I want to suggest here two things.

First that the whole technology owned by a society (at a given time and place; e.g. the global society in the year 2022) can be regarded as one object (not necessarily as one system – in the very strict sense of this word) that can be characterized in a certain number of ways. Secondly, the highest number that can be (theoretically!, practically – only very roughly estimated) ascribed to an instrument could be regarded as a characteristic not only of this particular instrument but of the whole technology.

I would like to make an additional comment on the iterated definition of instruments and on skills to use them: An assumption is accepted here: There exist instruments that control instruments that control other instruments…, but these "initial" (or, viewing from another side, "end") – in this chain – instruments are controlled by humans (possessing necessary skills). This assumption seems to be – still today – (almost) obvious. But what about more or less distant future: is self-regulated (totally autonomous) technology possible? – In the epoch of the development of Artificial Intelligence such a question does not seem to belong to philosophical and/or literary speculation. It is a question deserving serious debates. – Here, I have to limit myself to this remark

Ending these considerations on (the concept of) technology, I would like to make a general remark on the structure of social world. I think that it is neither necessary nor possible to draw sharp border lines between various domains of social worlds: between politics and sport, between science and art… It does not mean that we should not distinguish these areas. I only want to stress that these areas overlap. – If you accept this opinion, you should also accept (if hypothetically only) that any of these domains – including technology – could be viewed as fuzzy subset (in the precise sense of the mathematical theory of fuzzy sets) of the social reality

Such an approach would result in regarding such domains of the social reality as religion. poetry, or language (Coeckelbergh, 2022) as elements of technology (though, perhaps, of very small degree of membership). And , on the other hand, in regarding technology as part of art or politics. – So much about the "core" of technology.

Let us now pass to the "mereology of technology" (I apply here the term coined hundred years ago or so by the Polish logician – Stanisław Leśniewski; this term refers to theory of relations between parts and wholes; in spite of some similarities, these two concepts should be understood as fundamentally different from those of "element" and "set" characterized in the theory of sets developed by Cantor, Zermelo, and others; Vermaas, Garbage, 2009)

To present a systematic mereology of technology, one should write a whole (rather large) book. At this place, very short remarks on the field will be given. Let us start from reminding the notion of simple machines. According to the standard view, their set contains: lever, wheel and axle, pulley, inclined plane, wedge, screw. – They are elements (parts) of more complex machines.

Leaving aside moral considerations, there is little doubt that from descriptive/historical perspective there are reasons to regard also (domesticated) animals – e.g. oxen, horses or camels – as instruments/tools.

Formulation of this remark gives opportunity to say a few words on technical systems. Ox pulling plough is one of simple technical systems. Also: horse or tractor.

It seems that separately "great" technical systems should be analyzed. Perhaps the railway network is the first instance of this type of systems, and the Internet – the most complex one. (Dietrych, 1985). The first aspect of the "greatness" of such systems can be very simply defined: these systems encompass either whole globe or a large part of it (say, a whole continent). And to describe the second aspect we could use the term "complexity". How to measure it? – It seems that the simplest way is to estimate the number of different types of technical objects constitutive for the given system. The interconnection between these two aspects seems to be fundamental for grasping the specificity of the "great" technical systems. It should be added that defining this class of technical systems is not only the question of classification/taxonomy. More importantly, this taxonomical decision is motivated by the conjuncture that just the systems of this type play very special role in society – in economy, politics and culture.

Railway network or Internet – however complex (composed of very different sub-systems) – are rather "specialized" systems. But there exist objects that can be regarded as complex technical systems but rather "universal". I mean here towns and cities (Illies, Ray, 2009). Let me stress that in this context I use (for the sake of brevity) these terms in a rather narrow sense – as designating material/technical systems. In other contexts (especially those of social sciences and humanities) these terms can be used in more broad sense: as denoting systems composed of humans, material systems and symbolic/cultural sphere. Returning to the narrow interpretation of these concepts, let us add that so-called "smart cities" confirm this interpretation of cities as "universal" technical system in particularly evident way.

As stressed above, technology comprises not only various non-human objects but also – human skills (Mitcham, 1994). And to the description of skills also, the mereological concepts should be applied. A systematic discussion of this issue would need large references to philosophical anthropology and philosophy of action. Such references are not possible here. Let me give but one instance illustrating the intuition I mean: Let us consider the skills of jet pilot. They make up very complex system of perceptive skills, of ability of (fast) analyses of various (both natural and social) situations, of the relevant knowledge of technology and weather (the basis for diagnoses), of decision-making… (Kroes, 2009).

I would like to end this part of my considerations with s discussion on an issue that can be classified as belonging both to the "internal" and to the "external" parts of "structural" ontology (Brey, 2022).

Instruments/tools, technical procedures, technological knowledge can be classified in various ways. (Let me stress that at least some of these classifications seem to be equally important, therefore complete classification should be multidimensional.) As one of the most important classifications can be regarded the one that is based on a classification of the (material) world. According to a widespread view, we can distinguish matter, energy and information (Brey, Soaker, 2009). If we accept this view, we can introduce the classification of

instruments/tools into matter preserving/transforming, energy preserving/transforming and information preserving/trans- forming. – This classification can be developed. For instance, we can distinguish devices affecting inorganic and – organic matter (or both), transforming chemical energy into mechanical, nuclear into electrical etc. In short: the structure of technology (more precisely: a "dimension" of this structure) reflects the objective structure of the world. Thus, ontology of technology presupposes ontology of the Nature.

Having said this, we have entered the "external" part of the structural ontology of technology. This part contains analyses concerning the relations between technology and – "our" world. Some comments on this formulation seem desirable.

Firstly – on "our" world. This phrase is to denote a part of the Universe comprising our planet (including Homo sapiens, other species, artifacts etc.) and its "surrounding". How large is this part depends on our real (material and not formal, set-theoretical or other mathematical) relations (interactions) with the Universe. And anticipating further considerations (on the dynamics of technology), I would say that just due to the development of technology "our" world is getting greater and greater. It should be also noted that we do not know how large "our" world at the given moment is: we neither know precisely which part of the Universe exerts (significant - ?)) influence on our planet nor we know what are all effects of our activity on ("our" part of) the Universe.

Secondly – on the structure of "our" world. I think that we should divide (conceptually, theoretically) "our" world into two parts: "human" and "extra-human". There is no doubt that these two "worlds" overlap and interact. Humans and their material artifacts belong to the border-area ("intersection") of these two worlds. Perhaps, another formulation could be complementary (or alternative?): The whole "our" world could be viewed as "human" and the Nature as a part of it. The whole "our" world can be also viewed as the Nature and the "human" – as its sub-part. Without continuing these considerations, I would like to stress that these conceptual deliberations and troubles reflect real and profound ontological problems and difficulties. Despite these difficulties we should not forget that technology is a part of the world studied by physics (chemistry, biology…) and that investigated by sociology (psychology, cultural anthropology….). And this conceptual distinction is an instrument to remind us the importance of these problems.

According to our conceptual decisions, "external" ontology studies relations between technology and "the rest" of "our" world (Brey, 2022). I think that it is both convenient and substantively justified to distinguish two basic types of these relations. To put it more precisely, I assume that two types of relations between humans and the world can be distinguished, and thus two types of instruments: The first type of relations can be named "transformative", and the second – "cognitive". It is obvious that these two types of relations are interconnected; it is also evident that some instruments can be used as "transformative" or "cognitive" (e.g. some medical instruments used both for diagnosis and for treatment). But, making as previously emphasized, analyses of interrelations (interconnections, interactions) presuppose

making distinctions. In the context of these considerations, it could be said that the structure of technology (owned by the given society – localized in a fragment of the social Space-Time), reflects (more or less exactly) the relative importance of the "transformative" and "cognitive" attitudes (interests) of the members of the given society.

The issue discussed in the last passage directs us to a more general problem – that of human needs. The last concept, quite widely used in psychology, is often rejected by many philosophers and social scientists. Without going into this matter, I want just to declare my opinion: I am convinced that this concept is not only useful but – just indispensable (But one should distinguish between general opinion on the importance of this notion and opinions on the methodological and empirical values of this or that theory of needs). In my opinion, good theory of needs should be founded on a good theory of man (philosophical anthropology). Does such theory exist? At this moment, I know no answer to this question.

3. A "dynamic" ontology of technology

According to the decision discussed at the beginning of this text, we are passing now from the "structural" to the "dynamic" ontology of technology (incidentally, while writing this paper, I found on the Internet information about a relatively new field of study - 'technology dynamics'). It should be clear that in the previous chapter technology was viewed as a complex of objects existing in a "short" interval of time (one for which the assumption that this complex is not changing is – at least approximately – valid). And in this chapter technology will be viewed as developing complex of objects. In other words: we will focus on a process – a process that can be recognized as evolution: technoevolution/evolution of technology (Lem, 2014).

By analogy to the division of "structural" ontology of technology, also the "dynamic" ontology will be divided here into two parts: "external" and "internal". However schematic this divide may be, it should also be useful. In particular – to emphasize the conviction I accept that both the perspectives in which the history of technology can be viewed ("from inside" and "from outside") are equally important. Let me add that this approach is also motivated by the lessons that can be, I think, learnt from the philosophy of science: Quite a lot of time has been spent on debates between proponents of internalism (e.g. Imre Lakatos) and those – of externalism (e.g. Thomas Kuhn). According to the opinion I do share (it can be only declared here; for a justification a separate text would be necessary), these debates have been – at least to a large extent – waste of time and effort.

Before passing to more detailed analyses, I want to make here a remark on the most general ontological concept to be used in this chapter, i.e. to the concept of "process". The objects denoted with this term are similar in some respects to such objects like material things or sentences: in particular, processes can be parts (in the mereological sense of the word) of larger

objects (processes) and can be composed of more elementary objects (parts: processes). To invoke a well-known instance: Anabolism and catabolism are processes that make up metabolism; on the other, both these processes are very complex – both composed of many more elementary processes.

Before I pass to the discussion of these two fields ("internal" and "external"), I would like to formulate some general comments on the subject, concepts and problems of the "dynamic" ontology of technology.

First comment – on the subject: One could say that this part of the ontology of technology shares its of interest with the history of technology, but – contrarily to this branch of historical sciences – it focuses its attention not on individual facts (inventions, inventors' activities etc.) but on historical trends and their determinants (Headrick, 2011). To underline this characteristic of "dynamic" ontology of technology, one could suggest an alternative name for this domain: historiosophy (= philosophical history) of technology.

And second: any serious "dynamic" ontology of technology (or, if you prefer, its historiosophy) presupposes that its area of study does exist. Wanting to avoid the feeling of paradox, let us put this remark in an alternative way Any serious historiosophy (of technology or of science, of religion or just of universal history) assumes that the history of the given field does exist – that the history is "something more" than just a collection (a sequence) of events. In other words, it assumes that not only individual events exist but also that trends (tendencies, regularities, mechanisms…) do exist.

Third remark: The assumption formulated in the previous comment can be rephrased as follows: History of technology is a(n) (actual) process. This formulation directs our attention to general ontology that distinguishes processes as a special sort of histories (sequences of events). Without discussing this issue, let us give a few simple instances: a sequence of the drawn numbers (in a lottery) does not represent a process and the sequence of numbers representing temperature of one's body in a short time represents a process (development of an illness). In still other words: by process is understood a deterministic history (determinism can be stochastic). If a history is not deterministic – it is not a process (A set of difficult problems has been indicated here. In a larger text much more attention should be given to these issues).

Fourth, such a large process as the history of technology can be regarded as an evolutionary process (Lem, 2014). Having accepted this thesis, we can speak about evolution of technology. Introducing this notion is, I believe, very important. It suggests significant analogies between history of technology and such processes as general history of human culture, the history of life on the Earth, and even – the history of the Universe.

Having made these short remarks, let us pass now to the "internal" ontology – to the description and analysis of the evolution of technology, as seen "from inside". A whole book would be necessary to present – systematically and comprehensively – evolution of technology, even if viewed only in this way. Thus, I will confine myself to presentation of a list of trends accompanied by their characteristics.

The list can be regarded as hypothetical – and in a double sense: First, in the case of each presented trend, its very existence and its characteristic should be regarded as hypothetical (to be confronted with empirical/historical material.) And second: In still more hypothetical way, it will be suggested that these trends (all?, most of them?) are among the most important internal trends in the evolution of technology.

The first trend: from simple and primitive instruments to more complex and less primitive (e.g. stone tools: from Paleolithic to Neolithic). Having at our disposal a taxonomy of tools, we could make more precise this formulation. We could speak about evolution of (such "species" of tools as) knives and spears, listers and ploughs, or cars and planes. It seems to me that this hypothesis (cf. remark above) has quite strong intuitive-empirical support.

The second: toward greater and greater differentiation of instruments. I mean differentiation in a double sense. To avail of a biological analogy: On one hand, the increase of the number of "species" – cars and planes, satellites and spaceships, computers and mobile phones…. – to name but the very view out of the immense number of the new "species" developed in the 20th and 21st centuries. And on the second one: Have a look a tool kit of a plumber or other mechanic – ten, twenty or perhaps even more, types of screwdrivers only... The increasing differentiation of a single "species": the rise of "sub-species".

The third trend: toward new applications (Rosenberger, 2022) of already existing tools. As it is well-known, wheel was one of the most fundamental inventions in the history of human civilization. Firstly, due to its revolutionizing role in the development of the means of transportation – the development that has had great many – more or less direct – consequences: civilizational, cultural, economic, political, social… But, secondly, it has had other innumerable applications: quern-stones and water-wheels, elements of clocks, turbines and electric motors. And much more recently: computer. For the last seventy-five years or so it has quickly gone a long way from a very limited number of applications to the almost all-embracing kinds of use. (Of course, it is but a part of the story; various processes – in particular: miniaturization – have played enormously great role in this process.)

The next (fourth) trend. In short: from individual devices to – one global techno-system (techno-sphere; note the analogy with the concept of eco-/bio-sphere) This trend, except for its two hypothetical aspects it shares with the other trends presented here, has still one aspect of this kind – predictive. As far as I can guess, one global techno-system has not existed, and – in the near future – will not. But in a more distant future, the existence of such a system is, I suppose, possible. To estimate the probability of the realization of this possibility,

more profound (and methodologically comprehensive) analysis would be necessary. Due to this (very hypothetical) prediction, the analysis of this trend would deserve special attention.

Now, let us finish the debate over this prediction, and let us return to this trend viewed in the perspective of the current and the past history. Some elements of the image seem to be evident: the history of the technology begins with individual tools. The agricultural revolution is connected with the rise of "complexes of tools" (comprising some tools for soil cultivation, but also some pottery for the storage of grain etc.), and the (first) industrial revolution – with the rise of factories (systems of machines).Last but not least, let us mention the world-wide systems: of (civil) aviation, of the mobile network, and of the Internet.

In describing the fifth trend, I will avail of one of the central ideas of the Leslie White's theory of cultural evolution. As its key element White regards the development of technology, and – as the central part of this development – the evolution of the energy production. According to White, five epochs of this evolution can be distinguished. In the first one man uses energy of his body (of his muscles). In the second – he uses the energy of domesticated animals (! – animals as instruments/tools). In the third one – that of plants, in the fourth – of natural resources (such as coal, oil etc.) and in the fifth epoch – nuclear energy.

The sixth trend can be regarded as analogous and complementary to that described by White. This trend was characterized by Gerhard Lenski. In his view, the development of the instruments of communication (transfer of information) is one of the most central elements of the cultural evolution. He distinguishes four epochs: In the first (it could be, I think, called pre-human) parents pass genetic information to their children in the way similar to that characteristic for (other) animals. In the second, people pass their own experiences by demonstrations, gestures etc. In the third – signs, language and logical thinking becomes the basis of human communication. In the fourth – writing starts to play crucial role in communication (Lenski's model should be confronted with that of the great English biologist John Maynard Smith).

With the seventh trend, I pass to analyses of the "human side" of technology. There is little doubt, that the number of the types ("species") of human skills has increased. I do not want to claim that all skills our ancestors possessed in the more or less distant past have survived until today. Quite contrarily: many, sometime very sophisticated, skills have died out. But great many new ones have been born. And, it can be supposed, that the second process is faster than the first one. Thus: a positive balance between these two processes.

The previous trend characterizes, so to say (using, not incidentally, a popular term), "global human capital". But this global capital can be analyzed in another way. We can analyze also the differentiation (or: social distribution) of this global capital. The issue is more complex than the one discussed above. The respective trend may also be more complex. For this reason, my discussion of this problem will be rather sketchy. Look first at the contemporary situation. On one side: very complex and sophisticated skills of jet pilots or managers of nuclear power plants. On the other: (some) McDonald's employees or the workers on the production line

(Realization of A. Smith and W. H. Taylor's ideas). If to pay attention to the most general aspect of this trend, one could suppose that the distance between the most complex labor force and the simplest has been increasing. So much about the sixth trend.

And a remark on the development of technology. In whatever way we would like to describe this process theoretically (as more or less directional, deterministic, etc.), and whatever its theoretical explanation we would offer, a simple empirical fact remains: the difference between technology that existed one hundred thousand years ago and technology existing today in enormously great. If so, as an empirical fact (to be interpreted, accounted for etc. but not – questioned) must be recognized the accumulation of technological innovations, and – particularly – their generation (Buchanan, 2009; Dors, Overveld, 2009).

Following analyses of Jose Ortega y Gasset, I would like to outline a model of a trend characterizing the process of generation of the technological innovations.

According to this prominent Spanish philosopher, periodization of the evolution of technology should be based upon analysis of the interconnections between man and his technology. Ortega y Gasset distinguishes three types of technology: (1) technology of incidence/chance, (2) technology of craftsmen/artisans, and (3) technology of technicians. We should, as I believe, to add to this list the fourth element: (4) technoscience (Buchanan, 2009).

So much about "internal" dynamics of technology. Let us pass now to the "external" perspective. It should be both substantially justified and convenient to distinguish two parts of this perspective: On one hand, the influence of the "external" reality on technology; on the other – the influence of technology on the "external" reality.

How we could describe the first domain? I want to start from some well-established facts and from some questions these facts generate.

First fact: technology has developed in different parts of the worlds (civilizations/cultures, societies etc.) in various ways. Particularly: the pace of technological development has been extremely different. Still in the 20th century you could have found some (though very few) groups using Paleolithic tools, some (a bit more numerous), using Neolithic technologies, the majority – owning modern technologies, and – very few – disposing ultramodern technologies.

And second fact: even the most technologically advanced societies have developed in various epochs with different pace.

What factors can account for these (evident, undisputable – in any serious way) facts? Historical sciences deliver a certain number of answers to this question. For a detailed overview of the relevant ideas a separate (and rather large) text would be necessary. But they often differ as to details only; thus, they can be classified and connected into few groups. It seems to me that one can start from three groups of theories.

The first group contains conceptions emphasizing the role of the natural environment. They often distinguish three general types of the environment (Note that this taxonomy is not "purely" ecological/geographical: it starts from relations between humans and natural environment). One of these types can be characterized as "easy-to-live" (e.g. Polynesian islands), the other – as "difficult-to-live" (e.g. Greenland). Both are regarded as not conductive (though for different reasons) to technological development. Only "intermediate" environment (neither "too-easy" nor "too-difficult") is regarded as "technology-favorable" (Note the Aristotelian intuition present in this conception).

To the second group you can include theories stressing the importance of social relations (social structures, social institutions). It seems to me that these theories are "structurally", so to say, analogous the previous ones: Both the "anarchic" and "totalitarian" societies are, according to these theories, unfavorable for technological development. Only societies with strong but limited power/authority can support development of technology.

And the third group. It could be called "culturalist". It comprises theories focusing on the world views (philosophies in the very broad sense of the word): on the images of the world (as "mysterious" or "cognizable") and of the man (as "autonomous" or "dependent"). Culture in which "cognizability" of the world is connected with the "autonomy" of man is, according to these theories, most supportive to the development of technology.

Ending these few passages, I would stress the connections of the issues mentioned there with two widely debated in historical social sciences problems: of the rise of modernity/capitalism, and of the specificity and the role of Europe.

Let us now turn to the second domain of the "external" ontology: to the changes in the influences of technology on the world. I would like to emphasize here the importance of the word "changes": My fundamental, history-based, intuition is that it has little (if any) sense to speak about the role (particularly: "positive" or "negative") of technology - regardless of time and place.

I think also that it should be convenient to make a further distinction and speak about the influence of technology on the natural world and on the social world (that these two types of influences are interconnected is evident and needs no further comments).

Remarks on the influence of technology on the natural world (Kuenkel, 2019) I would like to start with some words on the recently very popular term: "Anthropocene". This term expresses, in a concise way, very important idea: the whole "our" natural world has become an object of our (though not intentional) activity. This idea entails a related one: of the historical process of the growth of the power of mankind over its natural environment. These two interconnected ideas seem to contain (much) more than a "grain of truth". But they need further analysis. This analysis should consider the necessity of distinguishing two concept: of the power of mankind over its natural environment and the "power" of technology over the natural world. Perhaps the growth of "power" of technology over Nature will turn out connected with the

weakening of human power over technology? – In this question substantial and analytical problems are intermingled. Their unraveling has to remain a task for another occasion.

And now some comments on the influence of technology on the social world. It is a huge subject (a multi-voluminous book could be written). I would like to concentrate our attention on three interrelated issues: on transport, on communication, and on urbanization.

Viewing transport from the technological perspective, we would not have to distinguish between transport of things and transport of people: wooden carts and ships, cars and airplanes – these and similar devices have been used for both types of transportation. But if we are speaking about social consequences of the development of transport, this distinction is important: e.g. the economic consequences of long-distance trade in grain or beef on one side, and the cultural consequences of international tourism on the other – are different. I am going to focus on the transport of people. And not on many its consequences but on one of them only.

Incidentally, the consequence I mean here is also a result of the process of urbanization. Just for the sake of order: urbanization has been an effect of the industrial revolution(s). The growth of such mega-cities like New York, London or Shanghai and Mexico-City is a part/consequence of urbanization. Some additional economic and political factors have decided that only some of mega-cities (New York rather than Shanghai, London rather than Mexico-City) have become "worlds-in-miniatures" – places in which live people of various races, speaking great many languages etc. There is little doubt that development of transportation has contributed considerably to this process.

Another technological development – the development of the Internet – seems to have an opposite consequence: if you can talk with other people via Internet you can leave you home (office etc.) But it is not so. People are in touch with others "on-line", but for various reasons they travel if they can.

4. Final remarks

The last ten-fifteen decades have been time of very quick and very profound changes – perhaps the most quick, and the most profound – throughout the history of mankind to date. It has been the time of two world wars, of genocides, of many man-caused disasters… But it has been also the time of great development of medicine, of great successes in the struggles with pandemic and mass hunger… – There is no way to formulate one, total, definitive and unambiguous valuation of this epoch (Perhaps it could be added: it is "more impossible" in relation to "our" epoch than to any previous one. Briefly put, we may have lived in the most "paradoxical" times).

Therefore, this epoch has been and will remain a subject of many academic debates, political controversies and ideological quarrels. Some points seem, however, beyond any meaningful discussion. Beyond any discussion is the fact of the immense development of technology (probably greater than that in the whole previous history). Beyond any discussion is the large impact of technology on the virtually all domains of our individual and social life.

But technology, just due to its great power, contributed to the immensely variegated, extremely ambiguous image of the (still un-ended) epoch. – Therefore, no simple assessment of technology in general, and of the contemporary (20th-21st centuries) technology particularly, can be formulated (Briggle, 2022).

On the other hand, just for the same reasons, we are today much more aware that assessment of technology (Grunwald, 2000, 2009; Vermaas, 2022) is much more necessary than ever: Such concepts as the industry 4.0 (or the fourth industrial revolution), transhumanism (Hansson, 2009) or technological singularity… – direct our attention to the future of technology. They make us ask questions about the current and future trends of the technology development (Hitachi, 2020).

To ask these questions and seek answers to them, we have to understand technology. And here a new problem arises: To use the phrase proposed by the prominent Polish philosopher and writer Stanisław Lem: we live in the epoch in which "megabyte bomb" has exploded. There is no place and time here to discuss the various factors that determine this phenomenon. Also, there is no place and time to analyze its various consequences. But there is little doubt that these are (at least: to a considerable degree, if not - mainly) negative.

I am convinced that philosophy has today an important role to play: to (try to) counteract the negative consequences of the "megabyte bomb" explosion. How? – This question is easy to be formulated and difficult to be answered. Nevertheless, the main idea can be presented rather simply: The main task of philosophy is to construct "synthesis" ("syntheses"?) of the knowledge about man, about the world s/he lives in, and about the problems her/his activity in the world generates (Kuzior, Czajkowski, 2019, 2021). (The exact meaning of the term "synthesis", the methodology of its construction… – these are the problems that make difficult the possibly complete and justified answer to the question with which the present passage has been commenced.) This thesis can be applied to all branches of philosophy. In particular – to the philosophy of technology.

This conviction has determined the construction of this text: The concept of "synthesis" comprises, in my opinion, at least two ideas: First – the idea of possibly simple, transparent, consistent and compact language. And second – the idea of a "map" (or – of a certain number of trees /graphs/) presenting the structure of problems.

It is obvious that construction of a "synthesis" is a difficult task. Particularly, it cannot be said in advance which is the best strategy to realize this task Thus, many attempts should be undertaken.

My text is but the first step toward a version of philosophical synthesis of knowledge about technology. Over the next few years, I hope to make next steps.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

ACADEMIC POTENTIAL OF POLISH CITIES. FROM CENTRES OF ADVANTAGE TO CENTRES OF VULNERABILITY

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Purpose: The purpose of the article is to compile a list of Polish cities according to their academic potential.
Design/methodology/approach: The starting point of the article is to indicate the significance of human capital and education to build the economic position of Polish cities. The main part of the analysis is based on the data prepared by the Ministry of Education and Science on the number of universities, the number of students, the structure of majors and ministerial scholarship holders in 2021.
Findings: The analysis allowed for the preparation of a proposal to classify Polish cities according to their academic potential. Cities with absolute advantages, lower potential, but compensated by unique characteristics, cities difficult to classify, cities exceeding their size and rank in terms of academic potential, and cities representing the greatest challenge to build human capital and shape pro-investment policy were included in the division.
Originality/value: The article is based on the latest data provided by the Ministry of Education and Science. The results may prove to be useful for local governments and persons responsible for shaping regional development policies.

Keywords: Socio-economic geography, higher education, regional development.

Category of the paper: Research paper.

1. Introduction

The significance of higher education for urban development is determined by several factors. Academic centres not only contribute to the concentration of a relatively young and educated population, but also in the long run their aim is to create intellectual added value. Depending on the size, rank and dominant function of a city, its academic centres can either concentrate the local resources of a learning cohort of people up to the age of twenty or - due to its national attractiveness - lead to a spatial concentration of students coming from various places.

There is no greater doubt that the assessment of the academic potential of Polish cities depends not only on the absolute number of universities located within their area or the number of students, but also on the structure of majors offered, the share of students in the local population and their scientific achievements.

Since the mid-twentieth century, the opinion that the explanatory value of natural and material capital resources in explaining the spatial differentiation of welfare is limited is increasingly commonly shared among development researchers, and the list of determinants should in this case be extended to non-economic and qualitative dimensions (Pogonowska, 2004; Sachs, 2003). Recent decades have brought the development of views that valued the significance of knowledge and cultural content in determining the level of economic development (Sachs, 2003). Human capital, i.e. knowledge and skills of individuals (Becker, 1994, p. 15) that enable them to create economic value, is considered the basis of sustainable economic growth and social development (including Hansen, Winter, 2014; Schwab, Xavier, Sala-i-Martín, 2016).

It is sometimes emphasized that some definitional aspects of human capital could be encountered in some early works which date back to the beginning of the twentieth century. In 1906 in his renowned essay "Protestant sects and the spirit of capitalism" Max Weber described the role of one's qualifications and education in determining their level of consumption (Trutkowski, Mandes, 2005, p. 50). In 1916, Lyda Judson Hanifan drew up some conclusions regarding the correlation between the accumulation of knowledge among individuals and the level of wealth of rural areas. In other words, Hanifan highlighted the importance of regionally allocated human resources in the form of pupils' literacy skills (Putnam, 2008, p. 34). Some time later, in 1957, a report published by the Canadian government defined the system of universities and schools as crucial public infrastructure (Growiec, 2011, p. 34). It is also worth noticing that Jane Jacobs (2014, p. 151), one of the most prominent figures in the development of urban studies, in her text from 1961 praised the value of social cohesion which she defined as city's human capital.

Fast forward to the modern times. The availability of talent appears to be a key factor in the location of companies from the modern service sector (Micek et al., 2017; Skowroński, 2017). What's more, areas with high human capital gain an advantage over other areas in terms of productivity, wage growth and employment (Gwosdz et al., 2019; Murzyn-Kupisz, Działek, 2017). It is also noted that high human capital resources translate into higher income, greater propensity to use services, and greater public involvement.

Current data of the Ministry of Education and Science on the base of academic centres, the number of majors, their structure and the number of ministerial scholarship holders may constitute the basis for describing the academic potential of Polish cities. In order to present this information in a broader context, it has been extended to include the parameters of the size of the working-age population.

2. Findings

In 2021, only nine cities had a university base exceeding ten centres (Table 1). These were the following voivodeship cities: Warsaw, Wrocław, Poznań, Kraków, Łódź, Gdańsk, Katowice, Szczecin and Białystok. They gathered a total of 210 out of 484 national higher education institutions (43.4%). It is worth paying attention to the scale of disproportions within the above-mentioned top rankings. In the capital city alone, there were 63 universities in 2021 (which accounted for over 13% of all institutions). On the other hand, the five most affluent cities in higher education institutions have 156 universities (i.e. over 32% of institutions). Immediately behind the leaders, there are a further three voivodship capitals: Lublin, Bydgoszcz and Kielce, which host 9 universities each (which account for 1.89% of the national resource, respectively). Further down the list there are Rzeszów, Olsztyn, Opole, Gorzów Wielkopolski and Zielona Góra. Their common feature is not only a low number of universities, but also being overtaken in this respect by some cities with a lower administrative rank, such as Radom and Bielsko-Biała.

Data on the number of majors offered and the number of students largely confirms the information about a significant concentration of academic potential within the above-mentioned nine cities. They account for over 60% of the offered majors and over 70% of the total number of students. Also now, the position of the undisputed leader is occupied by Warsaw, which educates almost a fifth of Polish students (228,000, which is 18.52% of the total pool) gathered within over 1,000 majors (13% of the national offer). It is worth noting, however, that despite a much more modest university base than in the case of the capital city, Kraków's universities provide education in over 800 majors (10.67% of the national offer) to over 131 thousand students (10.67% of the total). The academic position of Poznań and Wrocław is very strong and comparable in scale. Both cities boast over a hundred thousand students (which translates into 8% of the total). Four subsequent voivodeship cities educated approx. 4-5% of the share of the general pool of students. They are: Łódź, Gdańsk, Katowice and Lublin. In 2021, approximately 60,000 students were educated in each of these centres. In this context, two classes of voivodeship capitals can be distinguished on a working basis - those which, in terms of the number and share of students, are at the end of the list of voivodeship cities, and those which, due to the reported indicators, are overtaken by some cities with a lower administrative rank. The former include Białystok, Bydgoszcz, Kielce, Rzeszów, Olsztyn and Opole. There are around 20 thousand people studying there, i.e. approx. a 2% share in the title category. Gorzów Wielkopolski and Zielona Góra have even lower potential in this respect. Both cities fulfilling the role of the capital of the Lubusz Voivodeship, even if included together, currently educate just over 10 thousand people, which is less than 1% of the student cohort. Thus, Bielsko-Biała (6 thousand students, 0.5% share) or Gliwice (17 thousand students, 1.4%

share) turn out to be larger academic centres than Gorzów Wielkopolski and Zielona Góra, included separately.

The results are slightly different when the number of students per every thousand people of the working-age population is taken into account. High results - exceeding 300 students - are recorded in Wrocław, Katowice, Lublin and Rzeszów. On the other hand, Kraków is only slightly below the above-mentioned threshold. The presented data leads to at least partial softening of the absolutely hegemonic position of Warsaw, which was previously drawn based on absolute quantitative data. Thus, Kraków and Wrocław can be described as very attractive academic centres. They attract students so much that this process has a significant impact on the structure of their population. In a similar way, the high position of Lublin and Rzeszów indicates the presence of academic potential, which is not necessarily revealed when referring to absolute numerical data on the size of the cohort of students receiving education. However, the position of higher education centres in Lubusz, Gorzów Wielkopolski and Zielona Góra, remains low. While the last of the mentioned cities with its result at the level of 110 students per one thousand people of the working-age population does not look very favourable compared to other voivodship capitals, the value for Gorzów Wielkopolski - 39 students per one thousand people of the working-age population - can be assessed as very low.

The division of majors offered by the cities allows for the preparation of a specific map of academic specializations. For the purposes of the analysis, some of the disciplines taught were assigned to five qualitative categories (Table 2), which may be particularly important from the point of view of enhancing the innovative and creative potential of the cities. What is meant here are the majors which - on one hand - contribute to the cultivation of hard technological, IT and business skills, not omitting - on the other hand - linguistic and artistic disciplines also very useful for the description and creation of the present.

Interestingly, Gliwice is becoming an academic centre that specializes in IT as well as technology and engineering disciplines. Undeniably, in terms of integers, universities in the largest cities offer more places in the majors considered. In this case, however, what is interesting is the internal structure of the disciplines taught within each city. For Gliwice, there is therefore a clear shift towards information technologies (16.4%) and engineering and technical sciences (64.3%), with a simultaneous low saturation with business (9.9%), linguistic (1.7%) and artistic (0.9%) majors. The high share of these two disciplines is also a characteristic of Bielsko-Biała. Although they do not gather nearly 80% of students of all majors, as is the case in Gliwice - every third student in Bielsko-Biała represents information technology sciences (12%) or engineering and technology sciences (22.8%). The above-average percentage of engineering and technology students is also a characteristic of Gdynia (27.6%), with the difference that the city is also characterized by a high proportion of students of majors that fit into business and administration issues (42.9%). The last of the mentioned clusters of disciplines also achieves high values in Warsaw (26.1%), Toruń (32.3%) and Opole (30.1%). Returning to information technologies, in relative, but also absolute values, Warsaw (9%) and

Wrocław (8.2%) are very important centres of higher education. When it comes to engineering and technology, Kraków is becoming a leader among the largest Polish cities of academic education (21% of shares and over 27,000 students). Katowice turns out to be a city with an above-average high potential for higher education in terms of both linguistic and artistic majors, which may confirm earlier observations available in literature about the concentration of creative capital within Upper Silesia and Zagłębie (Gwosdz, Sobala-Gwosdz, Czakon, 2021). Considered independently, linguistic disciplines turn out to be popular in Poznań (10.6%), while the artistic ones are popular in Łódź (6%).

With the use of the collected and processed data, several conclusions regarding vulnerabilities or weaknesses of academic cities can also be presented. It should be noted that Katowice's relatively strong ties with the linguistic and artistic profile are accompanied by low results regarding the number of students of information technology (5.1%) and engineering and technology (2.7%). This is an additional argument for Metropolis GZM to be considered as one administrative entity, with individual cities filling different areas of specialization. Although this sentence may sound obvious, the collective information indicates a much greater potential of GZM as a whole than the cities analysed separately. In other words, while Warsaw, Kraków and Wrocław are strong centres of higher education, even without taking into account their functional area, Metropolis GZM can only compete with them as a whole.

A similar situation of specialization and complementing the areas of relative weakness also takes place in the Tri-City, where the relatively low share of students of information technology, linguistic and artistic disciplines in Sopot and Gdynia are compensated by their higher percentages in Gdańsk.

When discussing the potential shortcomings of the educational offer of the cities, it is worth paying attention to the relatively weak position of some voivodship capitals in terms of artistic majors. While in the case of the largest academic centres - Warsaw, Kraków, Wrocław, Poznań - their share in the structure of students is 3-4%, for smaller voivodeship capitals - Lublin, Olsztyn, Gorzów Wielkopolski - this ratio is below 1%.

Information on the number of scholarships awarded by the Minister of Education and Science (previously the Minister of Science and Higher Education) for the years 2012-2022 shows the scale of spatial concentration of scientific achievements (Table 3, Table 4). Within the ten cities from the top of the list, there are over 5.3 thousand students from the general pool of 6.4 thousand scholarship holders (which constitutes over 82% of this group). Moreover, the concentration measures for the five strongest cities in the ranking turn out to be high. They concentrate 4.1 thousand of scholarship holders, i.e. 64% of the pool, while Warsaw and Kraków higher education institutions in the period in question can boast about 20% concentration of scholarship holders. In fact, both cities, in terms of the absolute number of scholarship holders, clearly exceed the barrier of one thousand, significantly distancing Poznań, holding third place in the ranking (595 scholarship holders). This information can be further illustrated by a tabular summary of the ten national universities whose students in the

last ten years (2012-2022) were awarded the highest number of ministerial scholarships. The list is opened by the Jagiellonian University in Kraków (834 scholarships, 12.96% share) and the University of Warsaw (759 scholarships, 11.80% share), which received immeasurably more distinctions than the Adam Mickiewicz University in Poznań (267 scholarships, 4.15% share).

Looking again at the summary by city order, four classes of voivodeship capitals can be distinguished on a working basis. Apart from the aforementioned Warsaw and Kraków, i.e. the centres with the unquestionably highest share of scholarship holders, one can also mention voivodeship cities with a high, moderate and low percentage of scholarship holders. The second category includes Poznań (9.25%), Wrocław (8.29%) and Lublin (6.12%). Voivodeship capitals with a moderate share of scholarship holders are Katowice (4.93%), Łódź (3.93%), Toruń (3.58%), Gdańsk (2.86%), Kielce (2.81%), Rzeszów (2.67%) and Białystok (2.21%). Below the threshold of 2% share in the total pool there are cities-voivodeship capitals with the lowest potential in terms of academic achievements of students. These are: Szczecin (1.8%), Olsztyn (1.69%), Bydgoszcz (1.62%), Zielona Góra (0.75%) and Opole (0.75%). A common feature of those voivodeship centres, which obtain less than 1% of the share of scholarship holders, is being overtaken by cities with a lower administrative rank (Gliwice 1.38%; Siedlce 0.99%; Radom 0.95%).

3. Instead of a summary - a proposal for the classification of cities with academic centres

The table below (Table 5) is a proposal for a synthetic summary of all previously presented information. Selected urban centres, due to their potential in the title scope, were assigned to four separate qualitative descriptive categories. The first one was filled by Warsaw, Kraków, Wrocław and Poznań, i.e. urban centres which, by all means, have the greatest academic potential. Not only do they have the largest number of students and higher education institutions, but they also rank high in the ranking of the number of students per 1,000 people of the working-age population, but also receive the highest share of ministerial scholarships. Taking all this into account, the first category was called the absolute advantage zone. The situation of the second subgroup of cities, i.e. the zone of compensatory advantages, is more complex. This list includes Katowice, Łódź, Gdańsk, Lublin, Kielce and Rzeszów. Due to the smaller university base, they cannot directly compete with the above-mentioned leading academic centres. However, they are able to compensate for some of their shortcomings with the help of some component features, relative measures or relations with neighbouring local government units. As it is in the case of Katowice and Gdańsk, whose position within the Municipal Functional Area (or the official metropolitan body) is much higher than in the case

of functioning in the comparisons separately. Compensation for deficiencies in absolute position may also include: a relatively large number of students per 1,000 of the in the working-age population (Lublin), a relatively high share of scholarship holders (Kielce), or signs of specialization in engineering and technology (Rzeszów). It is difficult to unequivocally assess the position of several subsequent voivodeship capitals: Białystok, Szczecin, Olsztyn, Bydgoszcz, Toruń and Opole. Obviously, their university base is correspondingly smaller than that of the leading cities. At the same time, however, they do not show any signs of compensation, which means that in most of the measures taken, they do not differ significantly from the average value for all cities with higher education institutions. Due to the lack of any characteristic features, this zone was referred to as question marks. Certain controversies may arise from distinguishing another subcategory of urban centres - outperformers (Gliwice, Gdynia, Bielsko-Biała). As the etymology of the term may indicate (to outperform - achieve better results), this group includes those centres which, in certain dimensions, show greater academic potential than their rank would directly imply. This should be understood as - for example - the number of students exceeding some voivodship cities, signs of specialization in the field of pro-innovative majors, or high examination achievements of students. Although controversial, this category is worth further analysis and observation. As a consequence of separating outperformers, it was also decided to draw up a separate vulnerability zone. It includes two voivodship capitals - Zielona Góra and Gorzów Wielkopolski - which have very low results in virtually all of the measures included. They not only attract a small number of students, but also they are not characterized by significant students' achievements. Therefore, Zielona Góra and Gorzów Wielkopolski definitely constitute a challenge in the context of shaping regional human capital and pro-investment policy.

Table 1.
Universities and colleges, students, majors in 2021

No.	City	Number of universities	Share of universities (in %)	Number of majors	Share of majors (in %)	Number of students	Share of students (in %)	Students per 1,000 people of the working-age population of the city	Share of part-time students (in% within the city)
1	Warsaw	63	13.02	1002	13.00	227,944	18.52	223.4	39.75
2	Wrocław	28	5.79	510	6.61	105,953	8.61	284.7	35.55
3	Poznań	24	4.96	522	6.77	102,932	8.36	336.3	37.15
4	Kraków	23	4.75	816	10.58	131,304	10.67	287.2	24.81
5	Łódź	18	3.72	440	5.71	66,644	5.41	177.9	36.66
6	Gdańsk	16	3.31	323	4.19	68,215	5.54	252.3	37.23
7	Katowice	14	2.89	265	3.44	52,768	4.29	313.4	28.82
8	Szczecin	12	2.48	303	3.93	31,172	2.53	135.8	30.57
9	Białystok	12	2.48	173	2.24	24,828	2.02	140.4	27.36
10	Lublin	9	1.86	385	4.99	59,634	4.84	303.7	24.57
11	Bydgoszcz	9	1.86	227	2.94	24,702	2.01	124.8	50.85
12	Kielce	9	1.86	135	1.75	18,316	1.49	165.6	36.50
13	Radom	7	1.45	70	0.91	7,694	0.63	63.2	55.91
14	Bielsko-Biała	7	1.45	55	0.71	6,326	0.51	66.0	57.00
15	Rzeszów	6	1.24	184	2.39	35,824	2.91	306.4	33.56
16	Toruń	5	1.03	190	2.46	26,468	2.15	229.5	31.54
17	Olsztyn	5	1.03	143	1.85	17,901	1.45	179.1	24.88
18	Częstochowa	5	1.03	134	1.74	13,184	1.07	106.7	35.95
19	Gdynia	5	1.03	65	0.84	11,249	0.91	80.4	50.69
20	Tarnów	5	1.03	47	0.61	5,146	0.42	82.3	36.13
21	Opole	4	0.83	170	2.20	19,313	1.57	261.8	36.14
22	Łomża	4	0.83	32	0.42	3,017	0.25	80.5	39.24
23	Gorzów Wielkopolski	4	0.83	37	0.48	2,804	0.23	39.8	34.49
24	Sopot	2	0.41	13	0.17	2,538	0.21	131.8	51.93
25	Gliwice	1	0.21	81	1.05	17,057	1.39	167.2	21.32
26	Zielona Góra	1	0.21	99	1.28	9,002	0.73	110.5	34.49
Total value*		484	100	7710	100	1,230,988	100	141.7	36.11

*The data in the table does not add up to 100%, the table is a fragment of a larger data set.

Source: the author's elaboration based on data from the Ministry of Education and Science and the Local Data Bank of Statistics Poland.

Table 2.

Number and percentage of students of majors important from the point of view of pro-innovation policy in 2021

No.	City	Number of students					Share of students					
		Information technology	Engineering and technology	Business and administration	Linguistic	Artistic	Information technology	Engineering and technology	Business and administration	Linguistic	Artistic	Total
1	Warsaw	20,489	29,806	59,422	14,360	8,376	9.0	13.1	26.1	6.3	3.7	100
2	Wrocław	8,739	17,835	26,596	9,464	2,479	8.2	16.8	25.1	8.9	2.3	100
3	Poznań	6,237	11,832	26,882	10,927	2,488	6.1	11.5	26.1	10.6	2.4	100
4	Kraków	8,434	27,510	31,205	10,774	3,152	6.4	21.0	23.8	8.2	2.4	100
5	Łódź	5,035	6,702	14,673	3,391	4,024	7.6	10.1	22.0	5.1	6.0	100
6	Gdańsk	5,520	9,432	16,253	4,904	1,659	8.1	13.8	23.8	7.2	2.4	100
7	Katowice	2,703	1,451	9,763	5,453	3,027	5.1	2.7	18.5	10.3	5.7	100
8	Szczecin	1,942	5,535	7,477	2,095	833	6.2	17.8	24.0	6.7	2.7	100
9	Białystok	1,457	3,940	4,392	1,006	340	5.9	15.9	17.7	4.1	1.4	100
10	Lublin	3,720	8,518	9,506	4,914	494	6.2	14.3	15.9	8.2	0.8	100
11	Bydgoszcz	1,567	3,595	5,339	1,559	927	6.3	14.6	21.6	6.3	3.8	100
12	Kielce	182	3,657	4,120	986	211	1.0	20.0	22.5	5.4	1.2	100
13	Radom	361	1,566	1,223	366	142	4.7	20.4	15.9	4.8	1.8	100
14	Bielsko-Biała	761	1,441	1,015	614	58	12.0	22.8	16.0	9.7	0.9	100
15	Rzeszów	2,270	7,347	7,373	2,608	448	6.3	20.5	20.6	7.3	1.3	100
16	Toruń	762	254	8,559	2,209	565	2.9	1.0	32.3	8.3	2.1	100
17	Olsztyn	979	2,734	2,556	1,211	137	5.5	15.3	14.3	6.8	0.8	100
18	Częstochowa	1,093	2,568	2,833	1,597	314	8.3	19.5	21.5	12.1	2.4	100
19	Gdynia	551	3,110	4,827	207	0	4.9	27.6	42.9	1.8	0.0	100
20	Tarnów	302	279	1,348	460	176	5.9	5.4	26.2	8.9	3.4	100
21	Opole	1,312	2,167	5,814	1,299	143	6.8	11.2	30.1	6.7	0.7	100
22	Łomża	254	192	768	96	0	8.4	6.4	25.5	3.2	0.0	100
23	Gorzów Wielkopolski	170	198	535	257	0	6.1	7.1	19.1	9.2	0.0	100
24	Sopot	0	679	401	0	26	0.0	26.8	15.8	0.0	1.0	100
25	Gliwice	2,799	10,970	1,686	287	160	16.4	64.3	9.9	1.7	0.9	100
26	Zielona Góra	788	1,838	1,817	702	219	8.8	20.4	20.2	7.8	2.4	100
Total value*		85,289	179,415	293,677	87,626	31,996	6.9	14.6	23.9	7.1	2.6	100

*The data in the table does not add up to 100%, the table is a fragment of a larger data set.

Source: the author's elaboration based on data from the Ministry of Education and Science and the Local Data Bank of Statistics Poland.

Table 3.
Scholarship holders of the Minister of Science and Higher Education / Minister of Education and Science in 2012-2021 (data by city)

No.	City	Number of universities with scholarship holders	Number of scholarship holders	Share of scholarship holders
1	Warsaw	32	1,445	22.46
2	Kraków	16	1,194	18.56
3	Poznań	15	595	9.25
4	Wrocław	14	533	8.29
5	Lublin	8	394	6.12
6	Katowice	6	317	4.93
7	Łódź	11	252	3.92
8	Toruń	2	230	3.58
9	Gdańsk	7	184	2.86
10	Kielce	7	181	2.81
11	Rzeszów	5	172	2.67
12	Białystok	5	142	2.21
13	Szczecin	6	116	1.80
14	Olsztyn	2	109	1.69
15	Bydgoszcz	6	104	1.62
16	Gliwice	1	89	1.38
17	Siedlce	1	64	0.99
18	Radom	5	61	0.95
19	Zielona Góra	1	48	0.75
20	Opole	4	48	0.75
21	Częstochowa	2	30	0.47
22	Pułtusk	1	15	0.23
23	Zamość	1	13	0.20
24	Gdynia	2	12	0.19
25	Słupsk	1	10	0.16
26	Koszalin	1	9	0.14
27	Chełm	1	9	0.14
28	Bielsko-Biała	2	6	0.09
Total value		192*	6,433	100

*The data in the table does not add up to 100%, the table is a fragment of a larger data set.

Source: the author's elaboration based on data from the Ministry of Education and Science and the Local Data Bank of Statistics Poland.

Table 4.
Scholarship holders of the Minister of Science and Higher Education / Minister of Education and Science in 2012-2021 (data according to universities - top 10)

No.	Name of University	Number of scholarship holders	Share of scholarship holders (in %)
1	Jagiellonian University in Kraków	834	12.96
2	University of Warsaw	759	11.80
3	Adam Mickiewicz University in Poznań	267	4.15
4	Nicolaus Copernicus University in Toruń	226	3.51
5	Wrocław University of Science and Technology	222	3.45
6	Warsaw University of Technology	211	3.28
7	University of Silesia in Katowice	158	2.46
8	Maria Curie-Skłodowska University in Lublin	156	2.42
9	University of Wroclaw	139	2.16
10	Jan Kochanowski University in Kielce	137	2.13
Total value of the top 10 universities		3,109	48.33

The data in the table does not add up to 100%, the table is a fragment of a larger data set.

Source: the author's elaboration based on data from the Ministry of Education and Science and the Local Data Bank of Statistics Poland.

Table 5.
Academic potential - summary (selected cities)

No.	City	List of advantages / weaknesses	Quality category
1	Warsaw	+ The largest number of universities, students and majors + High share of students of information technology as well as business and administration + The largest number of ministerial scholarship holders + The largest number of projects co-financed by the National Science Centre - Not the highest student share per 1,000 people of the working-age population in the city	Absolute advantage zone
2	Kraków	+ The second highest number of majors and students (despite the fact that the university base is half that of Warsaw) + The share of students per 1,000 people of the working-age population of the city is higher than Warsaw + Second best result in the country in terms of the number of ministerial scholarship holders + The Jagiellonian University as an independent university with the largest number of ministerial scholarship holders + High share of engineering and technology students + Second best result in terms of the number of projects co-financed by the National Science Centre	
3	Poznań	+ Third largest independent centre in terms of the number of universities, students and majors (fourth in the ranking taking into account urban functional areas) + The highest value of the student share per 1,000 people of the working-age population of the city + Third in terms of the number of ministerial scholarship holders + Third in terms of the number of projects co-financed by the National Science Centre + High share of students of linguistic majors + Third in terms of the number of projects co-financed by the National Science Centre	
4	Wrocław	+ Second highest number of universities + Fourth highest number of ministerial scholarship holders + Fourth in terms of the number of projects co-financed by the National Science Centre - There is no clear profiling in terms of majors important from the point of view of pro-innovation policy	
5	Katowice	+ High share of students of linguistic and artistic majors + High student share per 1,000 people of the working-age population of the city - One of the lowest shares of engineering and technology students among voivodship capitals - The region's potential is revealed only when Metropolis GZM is taken into account as a whole - Low number of projects co-financed by the National Science Centre	Compensatory advantage zone
6	Łódź	+ High share of students of artistic majors + In terms of the number of projects co-financed by the National Science Centre, a slightly better situation than entire Metropolis GZM - Relatively low student share per 1,000 people of the working-age population in the city - Not represented in the list of top 10 universities with the highest number of ministerial scholarship holders in 2012-2022	

Cont. table 5.

7	Gdańsk	+ Sixth independent centre in terms of the number of universities, students and majors + As part of the Municipal Functional Area, the fifth centre in terms of the number of projects co-financed by the National Science Centre - No clear profiling in terms of important majors from the point of view of pro-innovation policy - Low number of ministerial scholarship holders - Not represented in the list of top 10 universities with the highest number of ministerial scholarship holders in 2012-2022 - The region's potential is revealed only if it is considered together, as the Gdańsk-Sopot-Gdynia metropolitan area	
8	Lublin	+ High student share per 1,000 people of the working-age population of the city + Relatively high number of students as for the university base + Relatively high number of majors offered + High on the list of ministerial scholarship holders - No clear profiling in terms of majors important from the point of view of pro-innovation policy - Low percentage of students of artistic majors	
9	Kielce	+ Tenth place among the cities with the largest number of ministerial scholarship holders in 2012-2022 + Jan Kochanowski University as a university in the list of top 10 universities with the highest number of ministerial scholarship holders in 2012-2022 - No clear profiling in terms of majors important from the point of view of pro-innovation policy - Low percentage of IT students	
10	Rzeszów	+ High student share per 1,000 people of the working-age population of the city + High share of students of engineering and technology majors - Low number of projects co-financed by the National Science Centre	
11	Białystok, Szczecin, Olsztyn, Bydgoszcz, Toruń, Opole	- Lower potential in terms of the number of universities, students and majors - In general no clear profiling in terms of majors important from the point of view of pro-innovation policy - Student share per 1,000 people of the working-age population of the city at the average level - Not the highest number of ministerial scholarship holders	Question mark zone
12	Gliwice	+ Relatively high number of students + Relatively high number of ministerial scholarship holders + Clear profiling in terms of information technology as well as engineering and technology majors	Outperformer zone
13	Gdynia	+ Relatively high number of students + Clear profiling in terms of engineering and technology as well as business and administration majors	
14	Bielsko-Biała	+ Clear profiling in terms of information technology as well as engineering and technology majors	

Cont. table 5.

15	Zielona Góra, Gorzów Wielkopolski	- Small number of universities, majors and students - Small number of ministerial scholarship holders - Low value of the student share per 1,000 people of the working-age population of the city - Low results in the eighth grade final examinations and secondary school final examinations - The lowest number of projects co-financed by the National Science Centre	Vulnerability zone

Source: The author's categorization based on the data of the Ministry of Education and Science and the Local Data Bank of Statistics Poland.

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SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

QUALITY IN EDUCATION – SUCCESS OF MANAGEMENT OR SYSTEM. THEORETICAL CONSIDERATIONS

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Purpose: The article attempts to discuss the qualitative perception of education in the context of the management of a modern educational institution. The purpose of the article is to show that quality and management converge, not only because of the competitiveness of the educational market, but also because of the relationship with the organization and the ways it is administered.
Desingn/methodology/approach: The paper is the result of a literature review.
Findings: The developed article, in its theory, points to the need to develop a modern view of the processes of educational quality and management in education. This is because they require a redefinition of the director's functions and competencies, as well as changes in education management training systems. In a slightly broader context, the perceived changes relate to the issue of systemic subordination of principals and schools, which does not translate into real quality education, but into dependence on official orders. Quality, is not just about meeting requirements, but also about meeting expectations, which, according to European assumptions, should lead to improvements in education. The proposed article, as a theoretical concept, is the basis for an in-depth study of the currently functioning quality of education and to fully clarify whether the changes we are experiencing will be the success of prudent management or the implemented system.
Research limitations/implications: Viewed from the perspective of the issues of quality and educational management, as a subject well-embedded in its discipline, there is a dearth of current publications on current changes in education. The article, as a theoretical and somewhat critical look, encourages further research and discussion.
Originality/value: The article is developed on the basis of contemporary knowledge of researchers of quality and management issues. The value of this article is to take a critical look at current developments, because in its theory it draws attention to the issue of necessary and in-depth research of this topic.

Keywords: education, quality, management, system.

Category of the paper: Conceptual paper.

1. Introduction

Changes and reforms of the educational system have outlined the specific nature of their functioning over the past years. The observed transformations, gradual but effective in certain periods, have always been identified with changing sectors of authority. However, over the last decade, the scope of school activities has been gaining a much faster pace as a result of the dynamics of reforms and social expectations. In this perspective, the question of the nature of supervised teaching quality, its authenticity and the effectiveness of school management arises. Not without significance in these circumstances is the autonomy of schools, teachers and parents who, on the basis of a legislatively referred requisition, are still looking for other, indirect ways to improve the quality of education and upbringing of the young generation. We now find these tasks not easy to accomplish, as they are carried out in the conditions of Polish educational law regulations and its standards.However, Lawn points out that education has become a field of audit, judgement and action, in which the goal is primarily the quality and effectiveness of education and the possibility of its comparison with world or European standards (Lawn, 2011, p. 264) to which the public has access. Assuming that the theoretical implications of the development of education are not fully reflected in its practice, looking from the perspective of the expectations of the 21st century, the effectiveness of these transformations is at an increasingly higher level. In the conditions of demographic decline, globalisation and constant changes, Cieśliński and Orzech are looking for another direction of change, that is: hypercompetition on the education market. According to their opinion, the school has become the subject of external pressure and manipulation (Cieśliński, Orzech, 2019, p. 180).

In such conditions, the expectations of the educational authorities and the subordination of schools to central management raise a number of doubts about the real and not artificially created quality of education and management of the institution.

2. Quality and educational services in the terminological and interpretative discourse

A qualitative view of education assumes that when dealing with some kind of objectivity, arguments for rational evaluation are constantly sought. As the terminology of quality itself is defined in various ways (Rusinko, 2005; Sower, Fair, 2005; Bielawa, 2007, 2011a; Mantura, 2011; Szczepańska, 2011; Blikle, 2014), Franciszek Mroczko points out that, like many concepts in the field of social sciences, it changes its meaning along with the development of civilization. It is a capacious, ambiguous concept, intuitively understandable, and its

interpretation depends on the context in which it will be used (Mroczko, 2012, p. 20). However, according to the concept of Kara et al. (2005) there are no universal definitions of quality (Kara et al., 2005, pp. 5-19). Therefore, for the purposes of this study, the concept of quality from the borderline of social sciences is adopted, which defines it as the sum of affective assessments made by each client in relation to each attitude object, that creates customer satisfaction, where the term customer is defined as any internal or external stakeholder of the organisation, and the attitude object is defined as a specific subject of interest. This definition refers to aspects of customer satisfaction other than strict definitions of process and service quality (Wicks et al., 2009, pp. 82-111), including educational services. In addition, the study assumes that the quality of education can be considered from two closely related perspectives. From one perspective these are "external" activities, which at various levels of the education system (macro, meso and micro) introduce strategies to ensure high quality of education in schools and organise educational situations that are conducive to this. As an alternative, it is their "internal" reception. The juxtaposition of the quality of school work (always in the broad context of the conditions of its work) and the quality of life of students/teachers creates the possibility of full insight into external - formal activities (institutions and people employed by them), as well as internal - informal, which are a subjective perception, motivating or not motivating for development, work on oneself and meeting the requirements of a rapidly changing world (Nowosad, 2010, p. 11). Despite definitional difficulties, UNESCO has identified the basic principles underlying the quality of education:

- the first concerns the cognitive development of students as the main, explicit goal of all education systems (the success of achieve this goal by systems is one of the indicators of their quality),
- the second emphasises the role of education in promoting the values and attitudes of responsible citizenship and in nurturing creative and emotional development (United Nations Educational…, 2004, in: Laurie et al., 2016).

Both the achievements of students, as well as all activities aimed at implementing socially expected attitudes, have become a priority in implementing a much higher quality of education. This assumption can be considered correct, but it seems incomplete due to the dynamically changing world. On top of that, Robert Laurie, et.al., based on the opinion of other researchers, describes three models of quality education. The prime, referred to as the economic model, indicates quantitative, measurable results, understood as a measure of quality - student retention rates, rates of return on investment in education in terms of earnings and cognitive achievements as measured by national or international tests (Barrtett et al., 2006). The second, concerns the humanistic approach and defines education as a process. Currently, humanistic approaches are described using terms such as learner-centred, participatory and democratic. Each of the two models takes into account contemporary issues related to human rights and environmental sustainability (Kumar, Sarangapani, 2004). The third of these is the literal 'learning as a connection' model, which involves local consideration as a model that combines high-quality

education, everyday knowledge with abstract and academic concepts, so that the two can be linked together. Learning as a connection model is based on a constructivist educational perspective (Barrtett et al., 2006).

The penetration of quality management models into educational policy, and consequently into school life, results in schools being forced to undergo many different processes. Cieśliński and Orzech emphasise that a modern school through these models also participates in marketing processes, which in turn leads to a situation where the teacher has become a service provider, while the student and his parents are their consumers (Cieśliński, Orzech, 2019, p. 180). Dobijański and Wyrębek, believe that referring to the definition process, we encounter certain problems in this terminology. It is extremely difficult to even translate most definitions of quality into the language of education. The mere use and determination of the meaning of the term client evokes great emotions, because it is used to describe both students, parents and bodies running and supervising the school (Dobijański, 2008, p. 11; Wyrębek, 2009). Uryga claims that on the wave of the dynamic development of the Western economy, patterns of economic thinking are becoming more and more popular. The "applicant" transformed into the role of the "customer" better suited to the new realities. Giving the school the characteristics of a service enterprise, and parents the characteristics of service recipients, has taken decades. In Poland, however, it happened quite abruptly, with the collapse of the socialist state (Uryga, 2021; Keddie et al., 2018). It should be emphasised that the explanation of this terminological relationship also results from the perception of the school as an organisation (Dorczak, 2015; Wyrębek, 2009) and the teachers working in it as a team. Hence, referring to many studies, one can notice the occurrence of this type of narrative (Farnicka et al., 2018, pp. 69-86; Jurczak, 2017, pp. 43-56; Górka-Strzałkowska, 2014).

3. Quality and freedom as commercialization in education - researchers' narrative

Contemporary education, perceived through the prism of quality in the field of education, upbringing and management, imposes specific requirements on school institutions. Their scope results from a number of acts and executive regulations, but also from unusual duties and functions performed as part of the accepted cooperation with other institutions for the benefit of the school and partnership. For many years scientific discussions on the recognition of schools in the context of the free market have been undertaken. This fact opens a new way to increasingly broader polemics for the qualitative recognition of the needs and activities of these institutions.

Assuming that the use of the free market in education refers to classical economics, which is also confirmed by the researcher of this issue, Robert Pawlak. As specified by him, this concept guarantees freedom, development and competitiveness (Pawlak, 2015, pp. 232-233). This neoliberal approach shows how a number of benefits can be achieved, and they relate to:

- competition between schools, leading to an improvement in the quality of education (improvement of the didactic offer of schools, employment of the best teachers and dismissal of the weakest),
- funding schools along with the principle "money follows the student", limiting the excessive influence of officials and politicians deciding on the distribution of money to schools and transferring more power to parents,
- the possibility of choosing a school conducive to equal opportunities for children and youth from poor families and integration of society, but also the diversification of schools, the creation of new institutions and the liquidation of the weakest of tchem,
- teachers' salaries vary, and their amount is not determined by rigid and uniform pay systems, but by teachers' effort, teaching achievements and pedagogical skills (Pawlak, 2015, pp. 232-233).

From the perspective of marketization of education, the effect of these activities should be definitely higher quality of education, and the introduced competitiveness of educational institutions will be associated with the number of its customers and profits (Łuczyński, 2011). The contemporary reality of school management, unfortunately, is still a supervisory role, full of control, instead of autonomous coordination of educational, upbringing and social tasks. These changes are intensely felt today in the education system. They bring concerns about independence, but also a rational assessment of the educational services provided, top-down controlled and supervised by the education authorities. Is high quality education possible in these circumstances? From a theoretical point of view, it cannot be ruled out, but the measure of this assessment will not be the actual involvement of customers, a team or and/or the entire organisation, but the willingness to formally achieve the goals set from above. Furthermore, Uryga clearly points out that the role that a Polish parent of a school-age child receives for the production is understood as a fanciful collage of inconsistent elements. Coercion intertwines with voluntariness, subordination with partnership, commitment with marginalisation. Playing an educational role by thousands of Polish parents is proof of the existence of great amounts of their good will, as well as the overwhelming power of social adaptation (Uryga, 2021). The identification of education with the organisation and its qualitative view result from the fears brought by the current changes. Striving for independence, more efficient education and administration becomes a distant task in terms of practical implications. Rudnicki believes that education (in this study understood as an organisation) is a tool for making changes both in the individual and social dimension. It can also be an instrument for maintaining order, normalising and petrifying the rules of operation of the executive power. This duality contains the strength

of pedagogical activity, thanks to which we can prepare ourselves for both adaptive and emancipatory forms of participation in culture and socjety (Rudnicki, 2018, p. 56). However, as far as the rational and free identity of the organisation and its clients can be felt in this preparation, their doubts about the normative assumptions will require changes. Certainly, the autonomy or even freedom of the organisation from politics as the goal of reforming education becomes an important and key task not only for management, but also for shaping a much higher quality of functioning of education. Giroux rightly states that hardly anyone is interested in understanding pedagogy, education as practice for freedom. As schooling becomes more and more legislated, all traces of critical education are being replaced by training and the promise of economic security. This is critical reading of the world, but also intervening in the larger social order as part of the responsibility of the conscious citizen/client (Giroux, 2010) or organisation, that guarantees unconditional freedom and the possibility of criticism as a tool of democracy. Nevertheless, freedom also has responsibilities and privileges that Shah clearly sees. These include better access to information, more efficient administration, greater use of school resources, reduced workload, better time management and improved quality (Shah, 2014). Taking a closer look at the educational capital, we can see a rather personalised subject of its functioning subjected to constant criticism. Mazurkiewicz notes that today's expectations are higher than before, and unfortunately the criticism is stronger. It is difficult to deny this, because the modern world generates previously unknown problems that create a more complicated context for all educational institutions (Mazurkiewicz, 2012, p. 7). It is these unknown problems that cause and activate curiosity, the desire for change. The society does not want to look at the quality of education and its management from the perspective of returning to the past, but from the perspective of a clear, partnership and free future. This specific search for new intersubjective views on the quality of education raises a number of doubts in the field of management. This is due to the fact that we/customers (students/parents), organisations (schools, educational institutions) and teams (teachers) face inevitable changes in the coming future. The modern school must meet them. It can even be assumed that this will not be an easy task, because from the perspective of the current and upcoming transformations (Industry 4.0 - digital industrial revolution, Society 5.0), it is definitely more difficult to conclude that education is fully prepared to provide digital educational services at a high quality level.

4. Quality in education and institution management - theoretical considerations

The pressure exerted by the social and scientific achievements of the 21st century on the sphere of education relates to two directions of its functioning. The first refers to the quality of educational services provided, and the second to the management of an educational institution.

Thus, by combining the expected quality with management, we obtain the so-called "full" and socially desirable school. Referring to the very perspective of managing an institution/ organisation, in this article I will not discuss management models (managerial, entrepreneurial, competitive, democratic, centralised, non-interfering (Sysko-Romańczuk et al., 2012, p. 25), but I will turn to the terminology and views of researchers on the subject.

According to Bielski, management is planning, i.e. organising the course of activities, acquiring and deploying the necessary resources (human and material), i.e. organising structures and controlling the achievement of goals (Bielski, 1997, p. 232). As perceived by experts in the field, it is a set of activities directed at the resources of the organisation and used with the intention of achieving the goals of the establishment in an efficient and effective manner (Griffin, 2017). Speaking of management as organising, controlling, achieving goals in an operative, creative and qualitatively high way by an organisation, the rightness of using this terminology in education was also noticed by Stanisław Kowalewski (1981, p. 7, in: Gawrecki, 2021, p. 25) and Jerzy Kurnal (1990, p. 22). They state the dependence of knowledge about management in education on the general theory of organisation. The school specificity is best described as a management method aimed at meeting the needs and giving educational benefits in a way that satisfies the service provider and the service recipient. In other words, it is about striving to achieve the internal and external goals of the school organisation by meeting the needs and expectations of all school stakeholders (employees, students and other entities) (Żebrok, 2015, pp. 107-121) in the best possible way. It is easy to observe the fact that also in defining or discussing this terminology we find signs of a qualitative approach to both the management of the institution and education itself. Szafran points out that as a consequence, there was a need to develop a modern view of management processes in education, to redefine the functions and competences of the headteacher, and to change the management training systems for schools. In a broader, European context, this problem was quickly noticed. In Poland the legal regulations developed in the early 1990s, despite the passage of more than 20 years, remained almost unchanged (OECD, 2012; Rada Unii Europejskiej, 2013, in: Szafran, 2018, p. 93).

5. Instead of a summary

Reforming the education system (which we are currently experiencing painfully in Poland) will not improve the quality of school work in any way, will not have a positive impact on the quality of the core curricula, nor will it contribute to raising the prestige of the teaching profession, nor will it bring about a qualitative change in the perception of students (Chmura-Rutkowska et al., 2015; Hernik et al., 2014, in: Rudnicki, 2018, p. 58). The goals of educational reforms are not set for the comfort of students and teachers (not to mention parents), but for the

achievement of political and economic goals by educational, political and party authorities (Rudnicki, 2018, p. 58). Referring to the attempt to give a general definition of the term quality, quoted at the beginning, it should be said that not only new concepts, but also their definitions and interpretations, will constantly appear in the humanities and social sciences (Śliwerski, 2022, p. 22). The reason is the dynamics of intensive development in the sphere of science, technology, culture and their reception, which we are observing these days. Another argument is social possibilities and expectations, which in a specific way will co-decide, and even dare to say impose new approaches to quality, which social sciences will be forced to take into account and redefine. This welcome reinterpretation of contemporary quality in education also has practical implications. Szafran believes that looking at the contemporary Polish school, despite the world-renowned successes of our educational results, it is worth considering some issues a bit deeper and ensuring that the essence of education and upbringing (Szafran, 2018, p. 92), its quality and freedom in resource management are not lost in this market rhetoric. In conclusion, it is worth paying attention to the emerging doubts as to the implementation of new requirements in terms of quality, but also the management of an educational institution. They result not so much from the criticism of fundamental expectations formulated with regard to the education system, but rather from the observation of the often painful clash between policy assumptions and educational practice (Szafran, 2018, p. 92). As a society, we should think about the direction of changes and the effects we want to achieve in the future.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

INDUSTRY 4.0 AND THE LIMITATIONS OF RHETORIC OF TECHNO-OPTIMISM IN POLISH POPULAR SCIENCE DISCOURSE

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Purpose: The basic premise of this article is the claim that technology is largely socially constructed. Invoking Armin Grunwald's framing of the hermeneutic approach to technology assessment, we analyse discourses on Industry 4.0 in polish popular science.
Design/methodology/approach: The conclusions were reached by analysing the basic metaphors used to describe Industry 4.0 in popular science discourse. We were juxtaposed the techno-optimistic narrative of Industry 4.0 with some findings from science and technology studies (STS). As theoretical basis we used Armin Grunwald's hermeneutical model of technology assessment.
Findings: In the course of the work we find that narrative about Industry 4.0 in polish popular science is characterized by naïve techno-optimism. We also indicate on the deterministic model of development of technology and technological fetishism contained in the narrative about Industry 4.0.
Research limitations/implications: Similar research can be conducted on broader, international scale.
Social implications: Paper can raise awareness of the persuasive nature of the discourse on Industry 4.0. It can also contribute to changing perceptions of the overall nature of Industry 4.0 challenges, in which case Industry 4.0 ceases to appear as a solution to all social and environmental problems and begins to be seen as a challenge that requires comprehensive reforms.
Originality/value First paper analyzing the rhetoric of Industry 4.0 in polish popular science.

Keywords: Industry 4.0, Narratives, Technology Assessment, Rhetoric, Techno-optimism, Science and Technology Studies (STS), Popular science.

Category of the paper: Research paper.

1. Introduction

Industry 4.0 is about integrating people and digitally driven machines with the internet and information technologies. The aim of this integration is to increase production efficiency, reduce costs, reduce environmental impact, improve and diversify manufactured goods. The main technologies driving the Industry 4.0 include: Internet of Things, artificial intelligence, blockchain, autonomous vehicles, 3D printing and advanced robotics.

The narratives describing the effects of the introduction of Industry 4.0 are heterogenous. On the one hand, one can point to a techno-optimistic narrative, which links the development of industry 4.0 with efficiency, profit, competitiveness, progress and sustainable development (Poniewierski, 2020; Kagerman et al., 2013; Manyika et al., 2013; Schwab, 2016; Morrar et al., 2017; Piccarozzi, Aquilani, Gatti, 2018), on the other hand, there is talk of technological unemployment (Kuzior, 2017; Harrari, 2017), dehumanization (Kuzior, Fobel, 2019), the power of algorithms, the extractive attention economy, capitalism of digital supervision, gender and racist stereotypes built in algorithms (Noble, 2018) and even in the most radical form about the extermination of “unnecessary” masses of the population (Frase, 2016). It is clear that such shots have the features of caricature - we are dealing either with a hyper-optimistic or hyper-pessimistic narrative. Such narratives prevail in journalistic terms, but are also found in more systematic studies. What is very often lacking in the discourses on automation of work - industry 4.0 - is the awareness that technology is to a large extent socially constructed. Meanwhile, as shown by Science and Technology Studies (STS) , which, since the 1980s, has pointed out the illusory nature of the "deterministic and linear model of scientific and technological development, in which the progress of science and technology follows a predetermined plan, written in nature, and is essentially unaffected by society, politics, the economy (this embodies the Enlightenment postulate of 'freedom of scientific research')" (Stankiewicz, 2015, p. 40). Thanks to the findings of the Science and Technology Studies (STS), not only have we begun to see "the ideological and illusory nature of such a deterministic and autonomous model of technology development" (Stankiewicz, 2015, p. 40), but we have also seen that "technological innovations are co-determined by different social groups: from users (consumers, patients), to civic organizations, industry circles, counter-cultural groups to corporations and states" (Stankiewicz, 2015, p. 40). To the factors shaping the development of technology listed by Piotr Stankiewicz, the latest take also adds the visions of the future contained in various types of technology narratives (Grunwald, 2016).

Unfortunately, in the narratives appearing in the discourse about Industry 4.0, there is a belief that technological development is deterministic, that all we can do is adapt to this development. From this perspective, the basic assumption - often not fully realized - is the belief that the creation of technology is a simple consequence of reading the laws that govern the world. This misconception is closely related to the European philosophical tradition, especially

to the Enlightenment idea of progress. This misconception can be largely responsible for today's perception of technology as directly related to the order of nature. This approach promotes passivity in our relationship with technology. If technology is the result of reading the laws contained in nature, we must as citizens accept the successive phases of its development with all its negative consequences. However, such conclusions are incompatible with the results of empirical research on science and technology. Seeing, therefore, the development of technology as a deterministic process is not only wrong, but leads to passivity, to a situation in which we as citizens recognize that we have no influence on the world around us.

2. Hermeneutical Approach to Technology Assessment

As an antidote to this erroneous and harmful image, we propose the concept formulated by Armin Grunwald in the work entitled *Hermeneutic side of Responsible Research*. Grunwald shows that the way we talk about technology largely influences its shape. In this approach - it can be called the hermeneutic approach to technology assessment - it is recognized that one of the main factors determining the development of technology is the narratives of the future. According to Grunwald, assessing new and emerging technologies and research (NEST - New and Emerging Science and Technology) can be done through narrative assessment. As Grunwald believes: the main sources of creating and assigning meaning to scientific and technological innovations are related to technological visions of the future. This means that by analyzing and interpreting NEST-related narratives, we can evaluate a specific technology or specific research programs before they are applied to society. This is important because once a technological innovation has been introduced, it is extremely difficult to withdraw - even when the balance of social losses and benefits clearly indicates the harmfulness of a given solution (Bińczyk, 2012, p. 27). In this sense, Grunwald's proposal seems to overcome the so-called the control dilemma framed by David Collingridge. This dilemma shows a specific difficulty related to the control of innovation - "either it is too early to effectively predict the impact of a given technology, or it is too late, because innovation is already so closely related to other elements of culture and society that it cannot be transformed" (Bińczyk, 2012, p. 27). Grunwald points out that science and technology are associated with elements of culture and society at a very early stage. That is why analyzing the content of culture is so important for the control of science and technology. Bernard Reber - the publisher of the Responsible Research and Innovation Set series - points to the possibility of building anticpatory governance based on Grunwald's concept, which could be an alternative to the precautionary principle of Hans Jonas.

According to Armin Grunwald the impact of futuristic visions can be realized in two ways:

- "Techno-futuristic stories and images can change the way we perceive current and future development of technology (…). Frequently, the societal and public debate about the opportunities and risks associated with new types of technology revolves around the stories to a considerable extent, (…). Positive visions can contribute to fascination and public acceptance and can also attract creative young scientist to engage themselves there, just as negative visions and dystopias can cause concern and even mobilize resistance as was feared in particular in the early debate on nanotechnology.
- Techno-futures exert a particular great influence on the scientific agenda which, as a consequence, partly determines what knowledge will be available and applicable in the future. Directly or indirectly, they influence the views of researcher and, thus, ultimately also exert influence on political support and research funding" (Grunwald, 2016, p. 9).

3. Fictions and metaphors as powerful forces

3.1. Early intuitions in the philosophy of Giambattista Vico

The first intuitions about the key role of narratives in shaping the civilization process can be found in the philosophy of Giambattista Vico (1668-1744) in the form of the concept of the imaginative universals. According to Vico mythological figures (imaginative universals) in early stages of developing civilizations were principles by which societies build its culture, those figures were permeating every aspect of their life. According to Paolo Fabiani who is explaining philosophy of Vico, the key to understanding this approach is concept of epistemological function of fantasy. "Fantasy is what controls our existence for the most part of our life; only a minimal part is concerned with the meditation on immaterial entities, and even less is turned to the consideration of ideas thought in their pure essence. Human beings have formed the habit of believing real what is familiar to them (their fantasies). This has meaning only if considered in an analogical and metaphorical sense. In this case, human beings should be truly conscious that what they believe are analogies and metaphors, maintaining the planes of the ineligibles and of the fantasies constantly distinct" (Fabiani, 2009, pp. 197-198). It is important to notice that this power of fantasy was embedded in the forms of myths, stories and legends. In that sense Fabiani can write that: "The myths are the production of the creative human faculty, of fantasy; myths are poetic works. All techniques, all the actions performed with a precise aim are myths; the progressive dominion over nature, the clearing of forests, hunting, the cultivation of fields become myths. These are not actions in the same way we understand them; they are not done for an advantageous finality, though they may carry final

usefulness. These are ritualized operations that an imperfect mind has produced and that through the myth tries to structure itself shaken as it is by violent passions and with an intellect lenient in imagination" (Fabiani, 2009, p. 115) For our purpose to reveal the meanings behind techno-optimistic metaphors of Industry 4.0 it is important to notice that for Vico the natural form of *fantasia* is the fable, and as Vico says, every fable is a metaphor in brief. If we will remember that in Vico's philosophy *fantasia* is the power to form transcendental intelligibilities necessary for all thought and custom, we will also be able to shift this insight in to the cultural conditions of XXI century and to recognize the power of metaphors to shape the current technological development.

3.2. The role of metaphors in our lives – conception of George Lakoff and Mark Johnson

Contemporary the most important conception showing the metaphor as a tool of cognition and action is "Metaphors We Live By" – book written by George Lakoff and Mark Johnson (published in 1980). According to Lakoff and Johnson metaphor is not only a stylistic ornament, but a central component of everyday language use - it influences the way we perceive, think and act. This means that, as the authors note, metaphors guide our lives.

In an epistemological context, metaphors can be described as rationality enriched by imagination, since the categories of our everyday thinking are mostly metaphorical and reasoning is based on metaphorical implications and inferences, everyday rationality therefore requires imagination. In addition, the metaphors we use are not a matter of chance, but are deeply embedded in our experience, forming coherent systems organised around certain concepts, which receive a certain structure only by virtue of the fact that we only understand them through metaphors.

Among the types distinguished by Lakoff and Johnson, structural metaphors occupy a special place. These metaphors organise and reflect the way we comprehend whole classes of phenomena, which is systematically and coherently reflected in language.

4. Techno-optimistic narrative of industry 4.0 - main metaphors

Ever since the Fourth Industrial Revolution was announced at the Hanover Fair in 2011, an intense discourse has been taking place in the public sphere regarding the social impact of Industry 4.0. In addition to substantive arguments, metaphors are also emerging which, by appealing to our deeply ingrained perceptions of technological development, influence the way the Fourth Industrial Revolution is perceived. By unveiling these metaphors and juxtaposing them with the results of the reflection on the social impact of technology carried out within STS, we seek to point out the conventionality of the assumptions on which the rhetoric of techno-optimism is based. In this way, it becomes possible to think of future

technological development not as a pre-set scenario for which there is no alternative, but as a variety of possibilities that we can pursue in accordance with the values we care.

We have narrowed our analysis of the metaphors that organise thinking about Industry 4.0 to Alexander Poniewierski's book 'Speed. No limits in a digital world'. We did so for several reasons. Firstly, Poniewierski's book is so far the only book written in Poland about Industry 4.0 that is not aimed at scientific analysis, but rather at popularising knowledge. This means that one of the aims of this book is to reach the widest possible audience. At the same time, it is difficult to find another position that is so highly rhetorical in nature. The very large number of metaphors and other stylistic devices makes it easy to grasp its persuasive character. As we will try to show, the persuasiveness of this book is related to naïve techno-optimism.

4.1. Industry 4.0 is like an exciting car race

The numbering Enthusiasm: “Technological change is much more than the implementation of a specific solution in the company. It is, in fact, a journey that aims to redefine or even reinvent the organization - with the use of modern technology - in order to realize lasting value in wider dimensions than often before ” (Poniewierski, 2020, p. 11). Poniewierski uses positive terms to describe the upcoming technological revolution. He talks about streamlining, optimization, acceleration. The entire book on the fourth technological revolution is based on the metaphors of race, acceleration, speed and travel. In the introduction we can read: "I will help you join the fastest race in the world." And further: “I am taking you on a journey to the world of technology and business. To a world where everything happens very quickly. So fast that as a rule you won't even notice inventions appear and you will use them the next day as if nothing had happened" (Poniewierski, 2020, p. 19).

Until now, creating technology took time and work, now "you will not even notice how inventions will appear (...)". Choking on the pace of change, a book that resembles Marinetti's futuristic manifesto with its rhetoric. Reading this book, one has the impression that Poniewierskie, like Marinetti at the beginning of the 20th century, wants to praise the aggressive movement. Although many authors point out that our collective imagination does not keep up with the pace of technology development (hence the lagging behind the entire sphere of culture, which fails in terms of technology control), Poniewierski excitedly writes: "It will be faster than you can imagine, and it will become it's sooner than you think". No doubt there is a fetish for speed and rapid change in this passage. Within a civilization, however, too much rapid change can lead to disaster, especially if it negatively affects systemic risk. If we consider the enormous scope of change that Industry 4.0 is introducing, its profound impact on culture, we should rather postulate some kind of slowdown. At least enough so that we are able to develop some kind of social innovation that, in the spheres of education and economics, could offset the adverse effects of Industry 4.0 (Osika, 2019).

On the other hand, he writes about technology: "it is an amazing source of creative energy and business opportunities." This sentence reveals that the main addressees of Poniewierski's book are people who are looking for ways to monetize this technological breakthrough. And although this position is quite common in analyses of the adaptation of innovations in organizations (Ober, 2022, p. 8), it is worth noting that the potential victims of the new technological revolution may be people from lower social classes, less educated, with lower cultural capital. In this context, the optimism expressed in the task under analysis seems unjustified.

4.2. Industry 4.0 and insatiability

The narrative formulated by Poniewierski resembles the way of thinking of a drug addict. In chapter two, "My world of SPEED", the opening paragraph combines the rhetoric of a car race and the insatiability characteristic of a person addicted to drugs. The following is an excerpt from the introduction that sets the tone for the entire book: “You pressed the Start button and started the engine. A bold decision, but I promise you will not regret it. I took it myself once and I don't regret it. I will say more: I still can't get enough!”. It is difficult to reconcile such an attitude with the tradition of the golden mean, moderation, self-control, "keeping the appetites on a leash", which is valuable from the perspective of social stability. We are rather an example of a greedy way of being, insatiable, which is associated with hyper consumption, extractivism, and therefore strongly criticized phenomena from various perspectives (e.g. from an ecological perspective, but also from a conservative perspective).

4.3. Industry 4.0 ceases limitations

Additionally, it should be remembered that the 21st century is the age of limitations awareness - it is the age of planetary boundaries, the concept of postgrowth, awareness of limited resources. Poniewierski, on the other hand, writes: “I respect rights and obligations, but not limitations. People who keep saying that something can't be done hinder progress." (Poniewierski, 2020, p. 23.) On the other hand, the first chapter begins with the motto: “The only limitations are your mind. (…) Everything is possible".

Moving beyond thinking in terms of a world for which boundaries are constitutive is also the assertion that 'the fourth revolution has a beginning but will not have an end'. The author suggests that unlike earlier industrial revolutions, whose beginning and end can be determined in time, the fourth industrial revolution will not give way to another revolution, but will only progress ever further. It is worth noting that the assertion that we are living in an age that will have no end (thanks to Industry 4.0) activates metaphysical and eschatological scripts - associations with existence at the end of time or the concept of an eternal present come to mind.

4.4. Industry 4.0 and fetish of speed

Poniewierski recognizes the speed fetish - everything fast is good: fast changes, fast algorithms, fast processors. However, from the perspective of the adaptations that culture - education, symbolic order, etc. - must make - slow changes are positively valued. It is worth noting that for some social science scholars authors and philosophers speed can be seen as the engine of destruction. Good example is Paul Virilio's book "Speed and Politics" in which speed is not only primary force shaping civilization but also permanent assault on the world and on human nature.

4.5. Industry 4.0 and fetish of technology

Poniewierski also recognizes the fetish of technology. Technology always appears to him as a positive force. He sees even the horrors of the two world wars, which - as he rightly notes - exploited the achievements of the second industrial revolution, in the context of further technological advances, "many of which were used in a positive way, if only to save lives". With such remarks, Poniewierski admits that technological progress is a value in itself, that the effects of science and technology are problem-free goods. It is worth noting that in the context of science and technology studies, the thesis that the effects of science and technology are unproblematic goods is widely questioned.

5. Summary

As shown by Science and Technology Studies (STS) deterministic model of technology development has illusory nature. Technology development is not autonomous from the influence of culture. Not only different social groups are influencing technological development, but also narratives are important factors in shaping technological development. By analyzing metaphors and similes present in the discourse about Industry 4.0 we point out the main aspects of the techno-optimistic vision present in the way in which the automation of production is talked about. At the same time, we note that this way of talking about the automatisation of production leads to social passivity and makes future technological developments not seen as a challenge, but as a solution. This, in turn, makes us neither prepare our social institutions for the technological challenges of the future, nor consider the possibility of including different social groups in the process of shaping technology. By uncovering the metaphors used in the discourse on Industry 4.0, their naïve techno-optimism, their non-critical approach to the practical successes of technology, their belief in the redemptive power of technology, we aim to open up the search for more nuanced narratives.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

THE ROLE OF THE HEALTH AND SAFETY SERVICE IN SHAPING THE CULTURE OF OCCUPATIONAL HEALTH AND SAFETY IN THE ENTERPRISE

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Purpose: The current legal requirements in the field of occupational health and safety require the company to adapt the plant to the applicable regulations and the needs of the employee. Every employer is obliged to show care for the working environment. However, it is also necessary to care for the broadly understood health and safety culture and work efficiency.
The article was written to present the role of the OHS service in shaping the culture of occupational health and safety in an enterprise and the correlation between increasing the level of occupational health and safety in an enterprise and shaping the culture of occupational health and safety.
Design/methodology/approach: In order to define the role of the OHS service in shaping occupational health and safety, the article introduces the rights and obligations resulting from the Ordinance of the Council of Ministers and secondary laws. The concept of culture as a whole material and spiritual heritage and the way of shaping it in the enterprise were also defined. The theoretical basis used in the article is to define the advisory and control function of the OHS service in the enterprise.
Findings: The role of the Occupational Health and Safety Service, which acts as an advisory and opinion-forming body and often also performs a supervisory function on behalf of the employer, is to skillfully perceive possible threats and, consequently, to prevent and minimize damage. When perfecting activities aimed at improving occupational health and safety, the OHS service must take into account not only visible signs of non-compliance with the rules, but also include those elements of culture that may remain invisible without careful analysis.
Research limitations/implications: The highlights of the article is the need for the employee to participate in the process of building a culture of occupational health and safety in the enterprise, and the necessary increase in trust in communication between the employer and employee.

Keywords: OHS, health and safety, health and safety service, safety culture.

Category of the paper: Point of View.

1. Introduction

Each employer who employs employees must meet all the guidelines that have been included in specific legal acts and standards. The main legal act that defines the responsibility of the employer and the employee in the field of health and safety regulations as well as the shaping of the health and safety culture is the Labor Code. Article 207 of the Labor Code defines the basic obligations of the employer in the field of health and safety (Kodeks Pracy, 2022), from which it is clear that the employer is fully responsible for the health and safety in the enterprise. The Labor Code imposes a number of obligations on the employer and, consequently, on the health and safety service as a unit aimed at advisory and supervisory activities.

The main obligations of the employer are (Kodeks Pracy, 2022):

1. organizing work in a manner ensuring safe and hygienic working conditions,
2. ensuring compliance with the provisions and rules of occupational health and safety at the workplace, issuing an order to remedy deficiencies in this respect and controlling the implementation of these orders,
3. responding to the needs in terms of ensuring occupational health and safety and adjusting measures taken to improve the existing level of protection of the health and life of employees, taking into account the changing conditions of work performance,
4. ensuring the development of a coherent policy to prevent accidents at work and occupational diseases, taking into account technical issues, work organization, working conditions, social relations and the influence of working environment factors,
5. taking into account the protection of the health of adolescents, pregnant or breastfeeding workers and disabled workers as part of the preventive measures taken,
6. ensuring the execution of orders, statements, decisions and orders issued by the supervisory authorities over working conditions,
7. ensuring the implementation of the recommendations of the social labor inspector.

The total cost of failure by employers to provide proper working conditions in the European Union oscillates around 2.8% of GDP (Pęciłło, 2005, pp. 18-21). The contemporary volatility of the economic reality becomes a premise for taking actions aimed at verifying working conditions, the personnel function, or the workplace itself. Working conditions that are adequate to the needs and capabilities of employees, as well as to the proper operation of the enterprise, favor the increase in job satisfaction and, consequently, the increase in employee productivity (Pocztowski, 1998, p. 261; Kuzior et al., 2022). Accordingly, it is possible to work in unfavorable conditions while maintaining productivity, caring for health only in an environment that meets the mental, physical and social needs and capabilities of the employee (Cierniak-Emerych, 2006, p. 117). A health and safety culture is a component of the company's safety culture. In this context, it is considered in the concept of sustainable

development (Kuzior, 2014) and present in Agenda 21, (1992). The terminology of "safety culture" was also used by the Atomic Energy Agency in the Chernobyl disaster report (Safety Series 75-INSAG-4, 1999) and is part of the organizational and social culture, as well as a collection of practices designed to protect workers and his working environment. So what is the task of the OHS service in promoting a work culture? The basic task is to create specific patterns of behavior (Shaw, Blewitt, 1996, pp. 185-191), which will be based on intra-organizational values and beliefs. It is worth noting that the OHS service should base its activities on trust and respect for preventive activities. In order to ensure safe working conditions, appropriate scientific and technical achievements should also be used, which affects the variability of occupational health and safety management. New technical or organizational solutions should be consulted with the OHS service in order to ensure compliance with applicable legal requirements.

2. Statutory rights and obligations of the OHS service

The OHS service in the enterprise performs an advisory and control function in the field of compliance with the provisions and rules concerning health and safety at work. Many studies aimed at defining the tasks of the OHS service are based on the provisions of the Act, pursuant to which, pursuant to Art. 237 [11] § 5 of the Labor Code specifies the scope of activities of the OHS service to which it belongs (Rozporządzenie Rady Ministrów, 1997):

1. conducting inspections of working conditions and compliance with the provisions and rules of health and safety at work, with particular emphasis on workplaces where pregnant or breastfeeding women, adolescents, the disabled, workers performing shift work, including night workers, and natural persons are employed performing work on a basis other than the employment relationship at the workplace or in a place designated by the employer,
2. informing the employer on an ongoing basis about identified occupational hazards, along with applications aimed at removing these hazards,
3. preparing and presenting to the employer, at least once a year, periodic analyzes of the health and safety at work containing proposals for technical and organizational measures aimed at preventing threats to the life and health of employees and improving working conditions,
4. participation in the preparation of plans for the modernization and development of the workplace and presenting proposals for including in these plans technical and organizational solutions ensuring improvement of the health and safety at work,

5. participation in the assessment of assumptions and documentation regarding the modernization of the workplace or its part, as well as new investments, and submitting applications regarding the inclusion of occupational health and safety requirements in these assumptions and documentation,
6. participation in handing over for use of newly built or reconstructed buildings or parts thereof, in which work rooms, production devices and other devices affecting the working conditions and safety of employees are planned,
7. submitting applications regarding occupational health and safety requirements in the applied and newly introduced production processes,
8. presenting the employer with conclusions regarding the observance of ergonomic requirements at workplaces,
9. participation in the development of corporate collective labor agreements, internal regulations, regulations and general instructions on health and safety at work and in determining the tasks of people managing employees in the field of occupational health and safety,
10. giving opinions on detailed instructions on occupational health and safety at individual work stations,
11. participation in determining the circumstances and causes of accidents at work and in the development of conclusions resulting from the examination of the causes and circumstances of these accidents and occupational diseases, as well as control of the implementation of these conclusions,
12. keeping records, completing and storing documents concerning accidents at work, diagnosed occupational diseases and suspicions of such diseases, as well as storing the results of tests and measurements of factors harmful to health in the work environment,
13. advice on the application of the provisions and principles of occupational health and safety,
14. participation in the assessment of occupational risk related to the work performed,
15. advising on the organization and methods of work at workplaces where there are dangerous, harmful or burdensome conditions, and on the selection of the most appropriate collective and individual protection measures,
16. cooperation with relevant organizational units or persons, in particular in the field of organizing and ensuring an appropriate level of training in the field of occupational health and safety and ensuring proper professional adaptation of new employees,
17. cooperation with laboratories authorized, in accordance with separate regulations, to carry out tests and measurements of factors harmful to health or nuisance conditions occurring in the work environment, in the scope of organizing these tests and measurements and methods of protecting employees against these factors or conditions,

18. cooperation with laboratories and other units dealing with the measurement of the state of the natural environment, operating in the state environmental monitoring system, specified in separate regulations,
19. cooperation with the doctor who provides preventive health care for employees, in particular when organizing periodic medical examinations of employees,
20. cooperation with the social labor inspection and with trade unions in: a) undertaking activities aimed at compliance with the provisions and principles of occupational health and safety, in the manner and to the extent specified in separate regulations, b) undertakings undertaken by the employer to improve the conditions work,
21. participating in consultations in the field of occupational health and safety, as well as in the work of occupational safety and health committees and other in-house committees dealing with occupational health and safety issues, including the prevention of occupational diseases and accidents at work,
22. initiating and developing various forms of popularizing the issues of occupational health and safety and ergonomics at the workplace.

According to the Labor Code, the occupational health and safety service may not be burdened with tasks other than those mentioned in the above points. Such action is aimed at ensuring full implementation of the tasks resulting from the act.

In order to implement the above-mentioned tasks, the employer provides the OHS service with information that may have an impact on occupational safety and health protection of employees, in particular regarding:

1. the condition of the work environment, including the results of tests and measurements of factors harmful to health in the work environment,
2. measures applied so far, including technical and organizational ones, preventing threats to health or life of employees in relation to the workplace and individual workplaces,
3. measures provided for in case of need for first aid, fire-fighting and evacuation of workers.

In accordance with par. 3 of the Act, the OHS service is entitled to:

1. conducting health and safety inspections, as well as compliance with the provisions and rules in this regard at the workplace and at any other place of work,
2. appearing to people managing employees with recommendations to remove the identified accident hazards and occupational harmfulness as well as deficiencies in the field of occupational health and safety,
3. applying to the employer for rewarding employees who excel in activities aimed at improving the conditions of health and safety at work,
4. applying to the employer for the application of sanctions to employees responsible for neglecting duties in the field of health and safety at work,
5. immediately stop the operation of the machine or other technical device in the event of a direct threat to the life or health of the employee or other people,

6. immediate removal from work of an employee employed in prohibited work,
7. immediately remove from work an employee who, through his behavior or the way of performing work, poses a direct threat to his own or other people's life or health,
8. apply to the employer for immediate suspension of work in the workplace, in its part or in another place designated by the employer to perform work, in the event of a direct threat to the life or health of employees or other people.

However, to become an employee of the OHS service, it is necessary to meet the following qualification requirements:

1. a health and safety inspector may be a person having the profession of a health and safety technician,
2. a senior health and safety inspector may be a person who has: a) the profession of a health and safety technician and at least 3 years of work experience in the health and safety service or b) higher education in the field of occupational health and safety or postgraduate studies in occupational health and safety,
3. a health and safety specialist may be a person with a university degree in the field of occupational safety and health or postgraduate studies in occupational health and safety and at least 1 year of work experience in the OHS service,
4. a senior occupational health and safety specialist may be a person with higher education in the field of occupational health and safety or postgraduate studies in occupational health and safety and at least 3 years of work experience in the health and safety service,
5. the main occupational health and safety specialist may be a person with higher education in the field of occupational safety and health or postgraduate studies in occupational health and safety and at least 5 years of work experience in the OHS service,
6. an employee managing a multi-person organizational unit should meet at least the qualification requirements set out in point 3. An employee employed in a one-person unit should meet at least the qualification requirements set out in point 2.

Holding the position of the chief occupational health and safety specialist is the highest possible degree that can be achieved in accordance with the act, as well as the culmination of a professional career. According to the law, it is the employer who is the direct superior of the OHS service employee, which puts him on an equal footing with the highest management level in the company and generates the need to have high professional and social competences. Professional management of occupational health and safety generates the need for continuous improvement and raising qualifications, which is dictated not only by the desire to develop on a personal and professional level, but also by the need to know changing regulations and directives.

3. Culture and its shaping in the enterprise

Culture as the entire material and spiritual heritage of humanity includes the principles of social coexistence, adopted and binding patterns of behavior that have been passed down from generation to generation (Encyklopedia PWN, 2000, p. 521). In the general understanding of the concept of culture, it can be assumed that it is a condition of the mind that distinguishes social groups.

Everyone has many levels of culture conditioned by:

1. nationality (or in the case of migration - multinational),
2. belonging to an ethnic group,
3. belonging to a religious group,
4. belonging to a language group,
5. subcultural affiliation,
6. belonging to a given gender,
7. generational differences (e.g. between parents and children),
8. social class level,
9. education,
10. the work performed, i.e. the position held and the role it plays in the company (Hofstede, 2007, pp. 23-24),
11. organization of work by the employer.

In connection with the above, the culture in the enterprise may be conditioned on many levels, which do not necessarily correspond to each other. An example of a conflict between the levels of culture can be education, which does not always have to correspond to the position held or the role played by the employee in the company. The safety culture shaped in the enterprise will be fundamentally different from the very concept of security understood by man, if only due to the fact that security as such accompanies us from early childhood, where primary socialization takes place. Organizational culture based on the activities of the OHS service is aimed at defining and adhering to the views, system of values, norms and expectations that have a direct impact on the safety of the employee.

When defining the value system in the enterprise, the employer defines the features desired in the employee through his attitude towards (Gableta, Karamalla, 1998, pp. 48-49):

1. work performed (timeliness, quality and commitment to the performance of entrusted tasks),
2. cooperation (approach to teamwork, readiness to train another employee, share knowledge),
3. authority figures (ability to express opinions, build trust and loyalty),
4. decision-making (taking responsibility for the actions of oneself and those of its subordinates).

Performing tasks in accordance with the value system specified by the employer depends mainly on the quality of management as well as the personality traits of the management staff. The selection of the appropriate management or supervisory staff, such as OHS services, has a direct impact not only on the efficiency or quality of work, but above all on the work culture, which is correlated with the OHS culture. Internal regulations in the form of ordinances, norms or adopted procedures are aimed at building a sense of security in employees, which will translate into loyalty and creating a bond with the employer.

Adequate supervision over occupational health and safety performed by the employer or its representatives in the form of the OHS service, as well as ensuring adequate resources to perform employee duties has a much greater impact on the efficiency and quality of work than in the case of their absence.

The employee works more efficiently and safely when:

1. has been admitted to work in a given position by an occupational medicine physician (no health contraindications for performing work in a given position),
2. has undergone initial and on-the-job training (they affect the sense of general security, but also at the workplace, the employee is aware of his rights and obligations, as well as the risks arising from the work process),
3. periodic inspections of machines and devices are carried out (this proves the proper technical condition of the machines operated by the employee and, consequently, the lack of a sense of threat of their improper operation),
4. the working time is maintained in accordance with the Labor Code (additional tasks extending the working time may have a significant impact on the rush in the performance of the commissioned work and, consequently, on the accident rate),
5. the right to an uninterrupted holiday leave of no less than 14 consecutive calendar days is maintained (a well-rested employee starts work with greater commitment and pays more attention to the quality of the tasks performed).

The awareness of the employer and employees in the field of occupational health and safety has a direct impact on the quality of the work culture. The most important factor shaping the work culture is the employee, who determines the way in which he uses the acquired knowledge and resources to ensure the safety of himself and his colleagues (Woźny, Pacana, Dobosz, Saja, 2015, pp. 189-199). Recent years have also brought a new dimension to occupational health and safety through the use of modern intelligent robots (Kuzior, 2017).

4. The role of the OHS service

The OHS service is to provide significant support to the employer in ensuring safe and hygienic working conditions through advice, supervision and control.

When perfecting activities aimed at improving occupational health and safety, the OHS service must take into account not only visible signs of non-compliance with the rules, but also include those elements of culture that may remain invisible without careful analysis. The most common definitions that define a high level of safety culture are (Lis, Nowacki, 2005, p. 16):

1. employee training and education,
2. involvement of senior management in the issues of occupational health and safety,
3. establishing internal standards, regulations and internal policies in the field of health and safety,
4. communication based on mutual trust,
5. immediate reaction to emerging safety problems,
6. implementation of the belief that occupational health and safety is a value that matches the goals adopted in the company's policy,
7. engaging employees in active participation in creating internal policies in the field of health and safety,
8. educating employees to care for the safety of their co-workers and their own,

It should be assumed that the main way to develop an occupational health and safety culture is to disseminate health and safety issues through employee orientation. It is realized by strengthening the message on safe work, by shaping a pro-ecological attitude, developing the ability to respond to fire, natural disaster, or other local threat (Rozporządzenie…, 1991). Pursuant to the applicable regulation, the employer is obliged to provide the employee with initial training and on-the-job training, however, the regulation only outlines general guidelines for the training program, and it is the role of the employer, in agreement with the OHS service, to adapt the program to the specificity of the enterprise. The obligation to conduct health and safety training is the basis for shaping the culture of occupational health and safety in the enterprise. Attention should also be paid to developing the employer's belief that there is a correlation between working conditions and the quality of a product or service. Improving working conditions will have a significant impact on the economy of the enterprise.

However, these activities cannot be done without providing the necessary knowledge to employees, for example with the use of new technologies. As an information medium, the Internet grows to the role of the basic tool shaping social awareness (Kuzior, 2007, p. 97). Currently, training in the field of occupational health and safety organized by teleconference or guided self-education conducted via websites is becoming more and more popular. The result of the development of information technology are social networking sites that enable communication with other people, as well as posting various content and sharing it with other users. Gaining knowledge about ergonomics and occupational health and safety by employees in social media or on websites carries the consequences of acquiring false or outdated information, which may cause unnecessary conflicts between the employer - employee and employee - OHS services. Therefore, such an important role is played by the occupational

health and safety services in the enterprise in the field of providing reliable information and knowledge in the field of ergonomics and occupational health and safety regulations.

In order to ensure safe work, the Occupational Health and Safety Service conducts regular occupational risk assessment, which is aimed at, inter alia, identification of hazards at the workplace. In order to conduct a reliable occupational risk assessment, it is necessary to involve not only the management of the given positions, but mainly the employees performing their duties (Kowal, Sadłowska-Wrzesińska, 2014). The assessment carried out in cooperation with employees has a real impact on a sense of security, but also a sense of not being overlooked by employees.

It is also necessary to verify other types of occupational threats, which are factors such as mobbing , discrimination, stress or the resulting burnout (Wang, 2008, pp. 42-47). In European Union documents, these factors are called psychosocial risks and they are currently one of the greatest challenges for the employer and the OHS service (EU-OSHA, 2007), and they pose a significant threat that may cause material , social and, above all, mental harm to the employer. at the employee (Cox, Griffiths, Rial-Gonzales, 2000). That is why it is so important that OHS services, in preparing detailed analyzes of occupational health and safety, not narrow down only to the employee's physical environment, but also take into account the psychosocial risk and its impact on the work process. The problem of psychosocial risks is often negatively perceived by both the employer and the employee. The role of the OHS service in the perception of these threats is to shape awareness by debunking myths associated with them and by eliminating mental barriers.

Conclusions

The health and safety culture is a fundamental element essential for the proper operation of the company. Based on the regulation on health and safety at work, it can be noted that the main role of the health and safety service is periodic analysis of the health and safety at work and the control of the realities of work. Nevertheless, it is important to immediately report to the employer about the identified threats occurring in the enterprise together with the concept of removing these threats. In order to be able to make appropriate decisions on the improvement of occupational health and safety conditions, the employer must obtain appropriate knowledge without which he will not be aware of the risk taking place in the enterprise and, consequently, will not be able to prescribe appropriate measures. Demonstrating care in ensuring safe work brings tangible benefits not only to the employee but also the employer in the form of increased employee involvement in the work process. Currently, OHS services have a variety of tools and methods to raise awareness of ergonomics and OHS. Most of the educational methods

contributing to the increase of employees' awareness and the safety itself do not require any particular financial outlays.

Each employer should define a vision of employee safety in the form of internal regulations regulating possible hazards in the workplace, but also be more focused on the expectations and needs of the employee than on the performance of tasks. All forms of education, aimed at influencing not only attitudes but also behavior, play a huge role in building the awareness of the employer and employee. Anticipating and monitoring the work environment in terms of pathological phenomena, makes it possible to take preventive and corrective measures and, consequently, to build a high culture of occupational health and safety. Taking care of occupational health and safety is also part of the area of corporate social responsibility (Kuzior, 2016; Kuzior, Staszek, 2021), in particular when it comes to obligations towards internal stakeholders.

The OHS service is designed not only to educate employees in the field of occupational health and safety, but also to predict the effects of pathological behavior in the workplace. Work culture reflects one system of meanings, which affects the level of communication and mutual understanding (Armstrong, 2005, pp. 248-250). The active participation of employees in improving working conditions directly influences the employee's confidence in the employer and creates awareness that employee expectations are not perceived as claims, but only as involvement in the company's policy. In this approach, it can be said that there is a direct link between the features of the health and safety culture and the actual state of occupational health and safety in the enterprise.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

IMPLEMENTATION OF SMART CITY PROJECTS ON THE EXAMPLE OF ACTIVITIES PREPARED BY THE LOCAL GOVERNMENT AND SUBORDINATE UNITS

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Purpose: In order to determine the level of implementation of smart city projects, an inventory of such activities carried out in Zabrze was carried out. Taking the example of Zabrze it can also be seen that the smart city concept should be based on a sustainable development policy, assuming the rational management of city resources and taking into account the requirements of environmental protection while taking actions, with care for the next generations.
Design/methodology/approach: Development projects included in the city's development strategy from the Smart City sphere were subject to approval. The material scope of the project, implementation time, division into stages and sources of financing were analyzed.
Findings: It is worth paying attention to the fact that the local government acquires funds from external sources to finance activities in the smart city sphere. On the basis of the cited data it can be said that some of such projects were financed entirely from funds that did not burden the city budget, and most to a large extent. Maintaining a high level of co-financing means the need for the commune to find funds for its own contribution, but at the same time it provides access to extra-budgetary funds that allow the implementation of modern solutions in the area of smart city.
Originality/value: The analysis of projects from the Smart City sphere has a significant application significance. They go well beyond the provision of public services reserved to the administration. They enable optimization of the city's functioning in its many dimensions, from improving the quality of education, through improving economic and social life, to increasing the level of social participation in exercising local authority.

Keywords: Smart City, sustainable development, cyberspace potential, local government.

1. Smart city in technological, management and social aspects

The challenge for modern cities is to undertake innovative development activities. In disseminating the smart city concept it is crucial to use the potential of cyberspace. The virtual world with the marketing of things is an area that still needs to be developed for the

creation of smart cities. On a global scale it is sufficient to say that in 2020 nearly 30 billion devices were connected to the Internet network in the world, which gives about 4 devices per capita, which make it possible to stay in constant contact and send information to other users in a fraction of a second (Bitkowska, Łabędzki, 2021, p. 9). Of course, the technological aspect is important, but only one of the components of the entire chain of economic, social and political ties that allow the implementation of the smart city concept. What matters is the use of various information solutions or innovative ideas to connect and integrate city systems and services, improve resource efficiency, optimize city management and improve the quality of life of citizens (Choińska, Szpilko, 2021, p. 130). In the context of city management and its development it is also necessary to point out the great importance of the involvement of local communities (Winkowska, 2021, p. 103). Much depends on the degree of activation and integration of residents around the city and the level of their participation in management.

After the vision of a smart city inspired by ICT tools (intelligent information-and-communication techniques), the emphasis in the analysis was placed on the role of public administration managing the infrastructure to then create a 3.0 solution based on the creative involvement of residents, where members of the local community play the main role as not only the recipients of the introduced changes and modern technology, but also as the creators of urban space (Szarek-Iwaniek, Senetra, 2020, p. 1). Thus, a smart city requires an interdisciplinary approach and involvement of all stakeholders to cooperate in creating the city (Hajduk, 2020, p. 124; Kuzior, A., Kuzior, P., 2020; Kuzior, 2020). So far the solutions implemented in practice in Poland are not of a comprehensive nature. They are rather single improvements that do not significantly affect the quality of life of residents, the natural environment and the reduction of public spending. Therefore, it seems that the more local management should be focused on systemic solutions in the field of communication, energy, waste management or social services (Czupich, Kola-Bezka, Ignasiak-Szulc, 2016, p. 233). The basic principle of a smart city is to use urban resources more and more effectively, i.e. in a creative and intelligent way (Kuzior, Sobotka, 2019, p. 41). This paper reviews the smart city activities planned and implemented in Zabrze – a Polish post-industrial city that has undergone a process of restructuring, and in fact liquidation of heavy industry.

2. Characteristics of the research field – a post-industrial city after industrial restructuring

The case study method was used in the presented studies. When characterizing the research field, it should be noted that Zabrze, which covers an area of 80.4 km^2, is located in southern Poland, in the vicinity of two main highways (A4 and A1 roads), and within a radius of approximately 90 km it is adjacent to three international airports (Balice, Ostrava, Pyrzowice).

Having the status of a city with district status, i.e. one of the 66 largest in the country, Zabrze has approximately 170 thousand inhabitants (Central Statistical Office, 2019), which gives a population density of approximately 2144 people per km^2. Together with 41 municipalities it is part of the first metropolitan area in Poland Metropolis GZM, established on July 1, 2017 by the Act of March 9, 2017 *on the metropolitan union in the Silesian voivodeship*, and operating from January 1, 2018 (a total of over 2.2 million inhabitants). In 2021 the unemployment in the city was at the level of 6.6% (Central Statistical Office, 2021). The budget of the city government exceeds 1 billion PLN (at the end of 2021 it was 154.9 million PLN on the revenue side, and 1 125.9 PLN million PLN on the expenditure side).

The restructuring of the industry at the end of the 20th century brought extremely difficult consequences for cities described as coal and steel monocultures. Zabrze was one of them, where mining determined the development of the town from the turn of the 18th and 19th centuries. The documented beginnings of mining date back to November 24, 1790, when Solomon Isaac found a 1 meter thick coal seam near Pawłów, which, as the experiments carried out showed, was perfectly suitable for the production of coke (Frużyński, 2012, p. 39). In the following decades several more mines were started in Zabrze to finally symbolically end the production of coal on December 30, 2016 with the closure of the last large mining plant owned by the State Treasury, i.e. "Makoszowy" Colliery (Polish Press Agency, 2016). After this period only the private SILTECH Mining Plant Ltd., established in 2002, operated in the city.

In this way, mining Zabrze was practically deprived of the coal industry, which was reflected in numerous social (e.g. structural unemployment), economic (e.g. the need to create a new profile of the city), demographic (e.g. depopulation) or ecological (e.g. the need for reclamation of contaminated land) problems.

The problems of restructuring of post-industrial cities are focused on the example of Zabrze. Thanks to the development and consistent implementation of the new development strategy it was possible to create a city based on science (e.g. supporting the universities), modern economy (e.g. acquiring of investors), medicine (e.g. cooperation with specialist hospitals) or post-industrial heritage tourism (e.g. revitalization of post-industrial facilities and making them available to visitors) (Kuzior et al., 2021, 2022). As a result, after several years, it turned out that the post-industrial city can be resident-friendly, attractive in terms of investments and open to strengthening its potential. Nevertheless, the popular idea of building smart cities requires consistency and responsibility from the local government (Krawczyk, 2020, p. 335). The role of municipal authorities is even greater as they manage a number of local matters, from education and health protection, through thermal energy, water supply and sewage collection, waste management, ecology to the construction of road infrastructure, housing and social care. To effectively manage such a complex system, it is necessary to apply (implement or develop) smart-city solutions and at the same time adapt management tools in local administration unit (Kinelski, 2022, p. 128). Modern management requires not only new tools,

but also a different approach to the sphere of planning, organizing, implementing and evaluating the activities of local authorities aimed at making the smart city idea come true.

The level of advancement of the implementation of smart city solutions analysed in Zabrze concerned the current state as of July 1, 2022, which was also the date of completion of the research studies.

3. Placement of the smart city concept in planning documents

The "City Development Strategy – Zabrze 2030", in force at the time of the research studies, was adopted by the City Council on August 27, 2018. The document updating the Strategy for the Development of the City of Zabrze for 2008-2020 was prepared by scientists from the University of Economics in Katowice. The authors of the document adopted four development priorities: "P1. Active urban society" – along with the challenge "To actively participate in social development", "P2. Development and innovation of the economy" with the challenge "To strengthen the economic competitiveness of the city", "P3. The friendliness of the city space" with the challenge "Domestication of space in the city" and "P4. A significant metropolitan position" with the challenge "To stand out in the Metropolis GZM".

The "City Development Strategy – Zabrze 2030" at the same time set out – still mainly based on local government investments – a new specialization of the city defined as: introducing technological innovations into the reality of public management. The horizontal objective was to shape the conditions for the development of smart city (CH 2.), and the direction of development in this regard was smart city solutions in the spheres of the city's municipal economy (KH 2.).

Moreover, the strategy specified specific undertakings that fit into the designated direction. These include ten activities ranging from planning activities to the implementation of specific tasks. The list is opened by: updating and implementing the actions resulting from the "e-Zabrze. The strategy for building an information society for the city of Zabrze until 2020+" (PRH 2.1.). It also includes the development and implementation of the *Sustainable urban mobility program* (PRH 2.2.), the development and implementation of an *Energy plan with smart components* (PRH 2.3.) or the development and implementation of the *Security plan using smart solutions, including the security of residents on the Internet* (educational-and-promotional activities targeted at various age groups (PRH 2.4.). Other challenges described in the "City Development Strategy – Zabrze 2030" are the development and implementation of the *Waste management concept using smart solutions* (PRH 2.5.), updating and developing the *Municipal Spatial Information System* – the city's geodetic database and real estate information (PRH 2.6.) and development and implementation of the *Urban model of investment implementation with the smart component* (PRH 2.7.). The list of projects described in the

document is completed by the development and implementation of the *Open data sharing model* (PRH 2.8.), development and implementation of solutions for the integration of resident settlement systems with municipal entities (PRH 2.9.), as well as the implementation of projects for the development of ICT infrastructure (PRH 2.10.). The goal specified in the "City Development Strategy - Zabrze 2030" as shaping the conditions for the development of smart city is consistent with the task areas described in planning documents with a national and regional range.

In the area of smart city in Zabrze there is also the "e-Zabrze. Strategy for building an Information Society for the city of Zabrze until 2020+" adopted by the resolution of the City Council of January 18, 2016. It contains a continuation of the provisions introduced by the document "e-Zabrze Program for Building an Information Society of the City of Zabrze" of December 14, 2009. During the preparation of this paper, work was still underway on the creation of the strategic document "Smart Zabrze Strategy 2030", which is to cover the scope described in the previous documents, along with the updating of action projects resulting from new technological opportunities, and at the same time being a response to organizational challenges and social expectations.

4. Research on prepared, implemented and functioning solutions in the field of smart city

For the purposes of this paper an inventory of solutions related to the smart city concept implemented in 2022 or prepared for implementation in the city hall, cultural, sports and recreation units, as well as municipal companies was carried out. As a result of the query conducted as of July 1, 2022, a total of 78 such services, solutions, applications or devices were identified. The vast majority, because 75% of the analysed projects has been implemented. 9% was at the implementation stage, and another 9% was in the planning phase. It is worth noting that another 4% of tasks covered both the implementation phase as well as plans for further expansion or update, and the last 3% covered the phase of partial functioning and implementation of subsequent stages.

Table 1.
Number, scope and entities responsible for planning, implementation and operation of smart city projects in Zabrze. As of July 1, 2022.

Number of smart projects	**Material scope of the projects**	**Operator (municipal institution or department of the city hall)**
17	ecology, revitalization of post-industrial facilities, city services, digitization of tourism and recreation services	Coal Mining Museum
11	city services, economy, society	Zabrze Centre for the Development of Entrepreneurship
8	improving the functioning of schools	Education Department
7	ecology, transport, digitization	Zabrze Water and Sewerage Company
4	digitization, e-government	City Hall Development Department
3	city services, spatial order	Management of Residential Buildings - Society of Social Building
3	digitization, city services	Municipal Public Library in Zabrze and Silesian Library in Katowice
2	industrial automation and ecology	Zabrze Thermal Energy Company
2	digitization, infrastructure	Zabrze Investment Implementation Agency
2	improving access to public information	Property Management Department and Real Estate Management Unit
2	computerization of waste management (eco-schedule and e-declaration)	Waste Management Department
2	the “SprintMap” application for the preparation of extracts and charts from local spatial development plans and a study of the conditions and directions of spatial development and participation in the e-Budownictwo platform	Building Department
1	system for electronic viewer service	Nowy Theatre in Zabrze
1	expansion of city television	Cultural Information Centre
1	digital service of the Creative Zabrze photo competition via e-forms	Municipal Cultural Centre
1	expansion of the city monitoring system	Crisis Management and Civil Protection Department
1	digitization of civic budget procedures	Budget and Financial Analysis Department
1	system of e-services in the field of public (geodetic) registers	Geodesy Department
1	social networks and the website of the City Museum	Department of Culture and Heritage
1	central budget management system	Accounting and City Budget Department
1	city acoustic map	Ecology Department
1	mobile application “Zabrze in the heart of Silesia”	Department of Promotion, Tourism and Sport
1	computerization of city services (GZM Data Store Project – GZM Open Data portal)	Department of Computer Science and Information Society Development
1	smart control of street lighting	Department of Municipal Infrastructure
1	digital management of spatial order	Department of Computer Science and Information Society Development and Spatial Planning Office
1	implementation of the Digital City Services for Entrepreneurs project	Department of Taxes and Department of Computer Science and Information Society Development
1	digitization of city services (Area Information System)	Department of Computer Science and Information Society Development as well as Department of Geodesy and Spatial Planning Office

4.1. Description of examples of activities in the sphere of smart city

The status of resident-friendly city management is determined, among others, by introducing solutions that allow efficient use of public services provided by local government administration, focusing on ensuring access to proven and reliable news or extending the range of educational, medical, cultural, sports, recreational, etc., offer. The concept of a smart city is already taking on a specific dimension also in such areas as, for example, efficient communication, effective operation of municipal services, care for the natural environment and safety of residents, involving non-governmental organizations in improving the quality of residents' life.

4.2. Projects prepared or being implemented, taking into account the sources of financing

Among the completed – as of July 1, 2022 – projects under the "e-Zabrze. The Strategy for Building the Information Society of the City of Zabrze until 2020+", it should be indicated, among others, the expansion of the IT infrastructure in order to ensure the use of broadband Internet access by educational units and other municipal units. As a result of the implementation of the project entitled: "Zabrze Broadband Fibre Optic and Wireless Network", a 100 km of fibre-optic network was created, to which 216 institutions, schools and other facilities were connected, including city monitoring cameras, as well as a police station. According to the documentation analysed for the purposes of this paper, the cost of the task was 29 397 084.62 PLN, and the value of the co-financing obtained by Zabrze officials from external sources – 20 301 162.25 PLN, i.e. 69.06% of investment costs.

Another project implemented in the field of providing public services by local administration was the "Comprehensive Document Circulation System". It consisted in providing customers with electronic forms through the nationwide ePUAP platform (electronic platform for public administration services) and the regional SEKAP platform (electronic communication system of public administration in the Silesian voivodeship launched in 2008 and expired at the end of 2021). In this way 24/7 access to some public services and matters handled by the office, as well as municipal organizational units, was obtained for residents. At the same time the circulation of paper letters and documents in the city hall was limited. The cost of the project is 4 063 396.65 PLN, and the co-financing value: 3 260 301.98 PLN, which means that funds will be obtained at the level of 80.24% of eligible costs.

An interesting project, the first stage of which was carried out at the time of the study, is the Zabrze "Acoustic Map", which gives the possibility of a comprehensive assessment of the noise hazard level in the city. Among its functionalities, it provides an estimate of the number of people exposed to noise or the identification of areas exposed to noise hazard. It allows to plan the location of future residential and investment areas in such a way as to minimize noise nuisance. The first stage of creating an acoustic map cost 694 212.64 PLN.

The local government obtained co-financing in the amount of 510 582.25 PLN, i.e. in the amount of 73.55%. While the paper is being prepared, work is underway on the second stage of the project, including updating the map and extending the functionality.

Post-industrial heritage tourism has become one of the areas to generate economic development in Zabrze. Thanks to the preservation, adaptation and making available for visiting historic post-industrial buildings, it was possible to annually bring about 200 thousand tourists to the city in a dozen or so years – according to the data of the Coal Mining Museum for 2019, preceding the Covid-19 pandemic. The historic "Guido" Coal Mine with three levels of educational and recreational routes, as well as an underground restaurant or banquet halls are visited by tourists from all over the world, and the Queen Louise Adit with underground water routes allowing tourists to travel by boats under the city – was among the winners of the "Europa Nostra 2019" European Heritage Awards.

Therefore, it was natural to have an idea to implement intelligent solutions in the field of tourism organization, the realization of which was the implementation of the "Integrated support system for the management of post-industrial facilities". The aim was to shorten the duration of internal procedures by implementing a comprehensive document circulation system, reduce the administrative costs of the institution, effective control of the implementation of tasks, as well as shortening the time of customer service by providing on-line service. At the cost of 2 241 814.04 PLN the work of the institution that manages facilities located in 6 different parts of the city was improved. The co-financing value was 1 903 926.93 PLN, i.e. 84.92% of project costs.

Access to information on open competitions for offers for non-governmental organizations and on public tasks carried out is provided by the "e-Cooperation – Platform for Contracting Social Services". The platform also gives the opportunity to consult draft acts of local law. The cost of the implementation was 767 715 PLN, and the subsidy was 100% of project value.

The co-financing also covered the entire costs of another project, the aim of which was to improve the service of clients of the District Labour Office, especially the clients of the Customer Service Department.

Providing information on the spatial development of the city, roads, bicycle routes, infrastructure, monuments or geodetic data through cyberspace resources is the purpose of launching the "Land Information System". In addition to the interactive city plan providing tourists with interesting and useful news, the system presents data contained in GIS systems through several separate web portals on revitalization, security, investments, and ecology. At the time of the study, the project was carried out in the scope of the first stage (creation of the first portals), and work was still being done on the second stage, i.e. updating and extending the functionality of the system and creating additional portals. The cost of the completed first stage was: 1 559 221 PLN, and the amount of co-financing was 1 262 026.41 PLN, i.e. 80.94% of the value of the carried out actions.

In addition to the described examples of projects, which constitute separate ventures from the field of smart city, actions were also taken, the individual components of which fit into this area. Striving to effectively inform residents, entrepreneurs and tourists about projects and events organized by the City Hall and its subordinate units, as well as to improve customer service by modernizing the municipality's website and adapting it to the needs of people with disabilities can, among others, be indicated. On the other hand, the authors of the project entitled "Electronic Customer Service Office" were responsible for creating conditions for standardizing data collection, increasing the efficiency of public administration work with the use of electronic tools and state-of-the-art technologies, and improving the quality of customer service, especially entrepreneurs. "SMS server" is the name of the text message notification system that enables the residents of Zabrze to receive information about current events, difficulties and breakdowns, as well as cultural and sports events, activities undertaken for entrepreneurs or emergency situations (e.g. the coronavirus pandemic). The mobile application "Zabrze in the heart of Silesia" is a free guide intended for both tourists and residents of all ages looking for information about Zabrze, in particular about its tourist, cultural, sports offer, interesting places and interesting events.

The "Make an appointment" application allows to book a visit to the city hall on a selected date and time using a dedicated website, launched on the phone, tablet and computer. After registration the system automatically sends notifications by e-mail confirming the visit and generates an access code (virtual ticket). At the time of the study the application made it possible to book a visit to the Communication Department (e.g. car registration), the Registry Office (e.g. giving birth to a child) and the Civil Affairs Department (e.g. issuing an ID card).

4.3. Projects implemented and prepared for implementation

When characterizing activities aiming at the implementation of intelligent solutions in the practice of public management it is also worth presenting some projects that were just introduced at the time of the study.

The "e-Journal" will serve to improve the level of computerization of schools and improve the relationship between educational institutions and students' parents, and it will also improve the direct transfer of information about grades, attendance and behaviour of children and planned tests.

On the other hand, comprehensive documentation of the course of settling and resolving cases is to be ensured by the documentation electronic management "EZD – PUW". One of its functions is the use of artificial intelligence to manage the correspondence distribution mechanism in a local government unit.

In turn, increasing the level of safety of residents through the use of IT techniques by expanding the crisis management system and extending the range and functionality of 24-hour city monitoring are the goals of the projects entitled "Crisis Management Centre" and "Availability of resources for crisis management". They include, among others, supervision

over the functioning of the system for detection and alerting as well as early warning of the population about threats.

On the other hand, the "Municipal Waste Management System" is aimed at comprehensive and at the same time integrated management of municipal wastes. The implemented solutions are to improve the cooperation between the city hall and the company responsible for collecting municipal wastes. Moreover, it was assumed that the system will collect as much data as possible on waste management in the commune and optimize the management of this data.

In the analysed period the project "Digital Shared Services for Residents", assuming increasing the efficiency of public administration with the use of modern technologies, in particular the integration of systems and improvement of data exchange by individual organizational units and the creation of a public e-services system aimed at improving services for residents and entrepreneurs, was also in progress. The project was submitted for co-financing from the Regional Operational Programme of the Silesian Voivodeship.

The aim of the next program is to increase the attractiveness and quality of teaching in individual educational institutions in the city. The "Computerization Program for Kindergartens and Schools" is to modernize the didactic base of educational institutions.

"Support for Management Processes" is the name of a project that was in the implementation phase in the analysed period, which was to allow for more effective acquisition of external funds for the development of the city, optimize the quality of implementation of these projects by the city hall and municipal organizational units, as well as support the management of the city hall in the field of project management in the city. The system will also improve the effectiveness of monitoring and assessment of projects implemented in the city, especially with the use of external funds.

The creation of a central book resource along with making it available on the Internet is the aim of the planned "Catalogue of Zabrze Book Resources", which will allow to increase the effectiveness of services provided by the City Public Library, disseminate information on the book collections in Zabrze, and, consequently, contribute to shaping IT awareness and culture of residents and the ability to use modern technologies in practice.

"Intelligent Street Lighting Control" will enable, among others, visualization of points of light in map services, reducing electricity consumption by street lighting, and also reducing carbon dioxide emissions thanks to improving traffic flow. A street lighting failure notification system will be a component of the project.

The "Road, Network and IT Infrastructure Management System" aims to create a common hardware and software platform for managing the infrastructure of Zabrze: road, network and IT by building intelligent control systems.

The planned project was also the "Virtual City" assuming that a common hardware, internet and transaction platform will be created, which will allow all systems and e-services to be made available in one place to residents and other stakeholders or interested persons (e.g. tourists, students, seniors, etc.).

5. Possibilities of developing activities in the field of smart city

The potential for the development of activities related to smart city is illustrated by the fact that in 2021 90.4% of households in Poland had access to the Internet (Central Statistical Office, 2021). Programs for the dissemination of intelligent solutions must, however, take into account such parameters as, for example, the level of digital exclusion, inhabitants' habits, reluctance to take innovative initiatives, etc. Not only educational programs, but also extraordinary situations can be a catalyst for qualitative changes (Kuzior et al., 2022). However, they may cause a radical change in the habits related to direct service in the city hall, which is documented by an increase of up to 228% the number of cases handled remotely, revealed during the study on the use of the ePUAP platform during a pandemic. Interesting – not only in theoretical terms – is also the residents' desire to use tools facilitating access to public services (Mańka-Szulik, Krawczyk, 2022, p. 198).

The fact that it is easiest to implement innovations in large and rich cities with a larger population is evidenced by the results of a survey of employees of the Silesian University of Technology conducted in 2021 in 41 municipalities making up the Metropolis GZM, i.e. the first metropolitan area in Poland formalized by the Act of March 9, 2017 *on the metropolitan union in the Silesian voivodeship*. The subject of the analysis was the number of public services provided using the ePUAP digital platform in 2020 compared to the level before the pandemic in 2019. It turned out that the average increase was of approximately 170%. At the same time, larger urban areas recorded a higher scale of growth, as 228%, while in smaller municipalities an increase of only 141% was recorded. The increase in the number of e-services was also directly proportional to the income generated by municipalities per number of inhabitants. In the group of communes with the lowest income it oscillated around 150%, and in the richest it reached up to 200% (Kuzior, Mańka-Szulik, Krawczyk, 2021, p. 261). This indicates that the popularization of smart city solutions may not be evenly distributed throughout the country. Metropolitan areas (where the city covered by the study is located) have a chance to play an important role in this process, contributing to the implementation of modern solutions not only improving the provision of public services or access to the city offer, but also comprehensively facilitating social and economic life.

6. Summary

It is worth paying attention to the fact that the local government acquires funds from external sources to finance activities in the smart city sphere. On the basis of the cited data it can be said that some of such projects were financed entirely from funds that did not burden the city budget,

and most to a large extent. Maintaining a high level of co-financing means the need for the commune to find funds for its own contribution, but at the same time it provides access to extra-budgetary funds that allow the implementation of modern solutions in the area of smart city.

Taking the example of Zabrze it can also be seen that the smart city concept should be based on a sustainable development policy, assuming the rational management of city resources and taking into account the requirements of environmental protection while taking actions, with care for the next generations. The sphere of ecology is a unique challenge for local authorities in Polish cities in areas degraded by decades of exploitation of natural resource deposits and the functioning of heavy industry. Nature protection was not a strong point of the economy of the Polish People's Republic. The period of the political transformation after 1989 set new goals in the field of ecology, changing the economic foundations of economic activity at the same time. The initiation of the process of pro-ecological activities (including the use of legal and technological systems of air, water and soil protection) was accompanied by a reduction in the number of workplaces in particularly ecologically burdensome industries, such as coal mining, coke production, production of metallurgical products, etc. This meant the emergence of numerous social problems (e.g. structural unemployment) and challenges in the field of revitalization of areas contaminated by heavy industry (e.g. implementation of programs such as "Reclamation of land in the vicinity of Bytomka River", where the nature values were restored to 183 ha that were degraded and devastated by industrial activity, and at the same time – as reported at the City Council session on November 18, 2019 – among other: 8000 tons of wastes were removed, including 500 tons of tar and pitch, 100 000 m³ of land contaminated mainly with aromatic and aliphatic hydrocarbons were remediated, and 1800 trees and 29 000 bushes were planted). Activation, educational and investment programs (such as e.g. the development of Zabrze part of Katowice Special Economic Zone at the cost of 65 million PLN with 85% co-financing from the EU funds, which resulted in the purchase of real estate by 33 economic entities that invested over 1 billion PLN creating 1.5 thousand new workplaces). Currently, however, among the many activities defined in the "City Development Strategy - Zabrze 2030", smart city projects play an important role. They go far beyond the provision of public services reserved for administration. They make it possible to optimize the functioning of the city in its many dimensions, from increasing the quality of education, through improving economic and social life, to increasing the level of social participation in exercising local authority.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

THE IMPORTANCE OF FACEBOOK PROFILE MANAGEMENT IN COMMUNICATION ACTIVITIES OF LOCAL GOVERNMENT. CASE STUDY IN POLAND

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Purpose: The aim of the study was to determine the social coverage of local government profiles in social media.
Design/methodology/approach: To verify the hypotheses, from September 1 to September 3, 2021, a study of all local government profiles in communes with the status of a city with district rights in the Silesian voivodeship was carried out. The number of people following the profiles of the mayors of 19 cities surveyed was added up in a similar way.
Findings: A study conducted in 2021 in cities with district rights in the Silesia n voivodeship showed that the average social reach of the local government's Facebook profile was of approx. 19%, and that of an individual mayor of approx. 8%.
Originality/value: To obtain the results, the number of users watching a given profile was compared. This reflects a significant development potential, as in provincial capitals these results in 2019 were respectively at the level of approx. 40% and 11%. Managing the dissemination of information in social media can be an important part of the local government's communication strategy. The results of the research serve to deepen scientific reflection on the importance of social media in public life.

Keywords: local government, social media, promotion, media relations, information policy.

Category of the paper: Research paper.

1. Introduction

According to the law, local government units deal with all public issues of local importance that are not within the competences of other entities. The Act of March 8, 1990 on local government provides that communes – on their own behalf and on their own responsibility – perform public tasks aimed at satisfying the collective needs of a self-government community. For this purpose they also conduct communication activities. Some of them are obligatory as they ensure access to public information. The remaining ones can be performed optionally,

as part of the distribution of messages to, among others: stakeholders of the commune (district), selected groups of recipients, or as an activity in the field of promotion, which is the commune's (district) own task, etc.

According to the data of the Central Statistical Office, the administrative division of Poland included - as of January 1, 2021 - 16 voivodeships, 314 districts, 2477 communes (including 302 urban communes, 652 urban-rural communes and 1523 rural communes), as well as 66 cities with district rights. A city with district rights is a commune performing district tasks on the terms specified in the Act of June 5, 1998 on district self-government. Cities with this status are distinguished by the largest number of inhabitants and the highest development potential. As many as 19 Polish cities with district rights are located in the Silesian voivodeship, which is the research field for the following analysis of the use of social media by local government units.

The topic of the use of social platforms by public administration is often taken up both in terms of information policy, as well as advertising and territorial marketing. Social media opens up new opportunities to initiate and maintain relationships. In this context, referring to the terms used, "the following terms deserve special attention: social network sites and social networking sites. The first one indicates that these web-sites serve the already functioning communities (maintaining contacts), while the second emphasizes the active participation of websites in creating the community (making contacts)" (Cyrek, 2020, p. 121). Recalling specific functional geotargeting, taking into account local government units, it can be said that social networking services are used both to conduct communication interactions within the local community and to initiate activities aimed at the creation of new integration areas within and outside this community. Social networking services, available on a global scale, thus contribute to regional, local or sub-local activation. This also applies to profiles and websites of an institutional nature (e.g. profiles and websites of local authorities, institutions, companies and entities dependent on local government) and administered by specific persons (e.g. politicians, officials, activists), as well as profiles of monocratic executive bodies. Managers of city profiles and people who are commune heads, mayors or presidents can present on their own selected topics virtually in any way and shape the tone of narration.

Local government officials having personal Facebook profiles usually "refer to positive emotions. They inform about the ways in which the local government functions and about the decisions taken. The message created by local politicians has a more positive tone than the message shaped by journalists in traditional media" (Szmigiel-Rawska, Tavares, 2019, p. 36) and personalization of message's author favours the provision of information about details regarding the decisions made or projects implemented. At the same time "social media – and especially Facebook – are one of the best, if not the best available, substitute for time-consuming form of communication, which is "door to door" or "face to face" contact with the voter" (Dudek, 2019, p. 277) which is of great importance not only during formally announced election campaigns. Facebook as the leading service in this segment "with a result of

21.5 million users and 73.9% reach among Internet users" (Raport… , 2021, p. 17) is actually one of the communication tools willingly used by politicians and local government units in Poland.

On the other hand, taking into account the data of the Central Statistical Office, over 90% (90.4%) of households in Poland have access to the Internet. Such data are included in the report "The use of information-and-communication technologies in public administration units, enterprises and households in 2020" published on May 25, 2021. Answering the question about the purpose of using the computer network, Polish Internet users most often mentioned: "communication" (76.8%). Among this category of inhabitants, the third most popular answer was the use of social networking services - 54.8% (as it was possible to choose more than one answer). Therefore, conducting the research study on the use of Facebook in the context of communication activities of local government units and monocratic executive bodies of municipalities seems advisable.

2. Materials and Methods

When justifying the choice of the Silesian voivodeship as a research field for the analysis of Facebook profiles operating in cities with district rights, it is worth noting that this voivodeship has one of the lowest levels of digital exclusion in Poland. Ac-cording to the results published by the Central Statistical Office in 2021, 10.3% of the respondents aged 16 to 74 in the region never used the Internet – with the national average of 13.2% (Central Statistical Office, 2021, p. 5). Taking into account the subject of the paper, it should be noted that in the group of inhabitants of the Silesian voivode-ship, declaring the use of cyberspace resources for communication purposes, 54% of the respondents were defined as users of social media (Wykorzystanie technologii…, 2021). Taking into account the statistical conditions and the dynamic development of communication tools available in cyberspace, a hypothesis (H1) that both local government units and persons playing the function of monocratic commune authorities use social media in informational and persuasive activities was made. On the other hand, due to the disproportion between the inputs (e.g. economic and logistic) that an organization that is a local government unit can involve and a natural person – even a person managing this organization – a hypothesis (H2) that city profiles would have a greater social reach than the profiles of presidents was assumed, although due to the nature of the study, only the quantitative and not qualitative aspect was subject to evaluation.

To verify the hypotheses, from September 1 to September 3, 2021, a study of all local government profiles in communes with the status of a city with district rights in the Silesian voivodeship was carried out. It turned out that the total number of people following the city profiles is: 479 643 users. Meanwhile, the population of 19 cities forming the research field,

according to the Central Statistical Office, amounted to 2 498 095 inhabitants. After compiling these data, the average social reach of the surveyed profiles of local government units was of approx. 19% (19.27%) (see table 1).

Table 1.
Social coverage of FB profiles administrated by the cities with district rights in the Silesian voivodeship – as of September 1, 2021

City with district rights	FB profile – number of followers	Number of residents	Social coverage (%)
Bielsko-Biała	32 007	169 756	18.8
Bytom	31 083	163 255	19
Chorzów	21 533	106 846	20.1
Częstochowa	18 831	217 530	8.6
Dąbrowa Górnicza	25 683	118 285	21.7
Gliwice	38 098	177 049	21.5
Jastrzębie-Zdrój	14 853	88 038	16.8
Jaworzno	11 536	90 368	12.7
Katowice	118 662	290 553	40.8
Mysłowice	12 555	74 559	16.8
Piekary Śląskie	15 779	54 702	28.8
Ruda Śląska	19 845	136 423	14.5
Rybnik	24 758	137 128	18
Siemianowice Śląskie	12 096	66 270	18.2
Sosnowiec	30 860	197 586	15.6
Świętochłowice	7047	49 108	14.3
Tychy	20 339	126 871	16
Zabrze	17 815	170 924	10.4
Żory	21 116	62 844	33.6

on average: 19,27%.

Source: own study.

The number of people following the profiles of the mayors of 19 cities surveyed was added up in a similar way. There were 198 899 of them in total. Taking into ac-count the number of inhabitants, the average social coverage of the profiles of mayors of cities with district status amounted to approx. 8% (7.53%) (see table 2).

Table 2.
Social coverage of FB profiles managed by the mayors of the cities with district rights in the Silesian voivodeship – as of September 1, 2021

City with district rights	Mayor's profile – number of followers	Number of residents	Social coverage (%)
Bielsko-Biała	12 801	169756	7.5
Bytom	11 262	163255	6.8
Chorzów	2331	106846	2.1
Częstochowa	23 794	217530	10.9
Dąbrowa Górnicza	18 135	118285	15.3
Gliwice	2913	177049	1.6
Jastrzębie-Zdrój	9372	88038	10.6
Jaworzno	4600	90368	5
Katowice	14 809	290553	5
Mysłowice	4331	74559	5.8

Cont. table 2.

Piekary Śląskie	2383	54702	4.3
Ruda Śląska	8647	136423	6.3
Rybnik	5854	137128	4.2
Siemianowice Śląskie	5048	66270	7.6
Sosnowiec	42 535	197586	21.5
Świętochłowice	4893	49108	9.9
Tychy	14 418	126871	11.3
Zabrze	9489	170924	5.5
Żory	1284	62844	2

on average: 7,53%.

Source: Own study.

Of course, in the methodological reservations it should be assumed that some of the followers are Internet users interested in a given city, but not its inhabitants. Similarly, in the case of Facebook profiles of mayors – they may be supporters or opponents coming from other places, members of political party from which the person managing the city comes from, who live in other parts of the country, or administrators of pro-files of organizations, associations, clubs, companies, etc. The analysis also revealed the total number of observers in the entire research field, but did not reveal the sources of differences in the communication effectiveness of individual cities and mayors. The reason for the discrepancy in the results obtained is probably different level of use of paid promotions offered by Facebook, the use of other forms of promoting the profile (or abandoning such activities), as well as the implementation of a consistent communication strategy in terms of frequency of publication of messages, their quality, the use of multimedia elements and maintaining feedback with users.

However, the study showed the scale of the impact of social media in contacts between local government units and their monocratic bodies, and the local community to which – to a large extent – the messages are addressed. After the study, the hypothesis (H1) was confirmed that both the local administration and its leaders should use social media to maintain interaction with residents. The hypothesis (H2) was also con-firmed that the profiles of local government achieve a greater social reach than individual mayors' profiles.

3. Results

Tables, figures and formulas - continuous numbering in the text. The obtained results were compared with the results of nationwide research published in 2020, which referred to Facebook profiles of voivodeship capital cities (Krawczyk, 2020). Although the analysis was carried out in the autumn of 2019, in the case of the capitals of individual voivodeships “the social reach of local government profiles covered as much as nearly 40% (39.2%) of the total population of the cities studied. On the other hand, the number of recipients of messages distributed through individual mayors' accounts was close to approx. 11% (10.6%). Of course, these values should

not be added together to achieve an impressive level of reaching over half of the population, because among Internet users who use the personal profiles of the mayors there are probably people who also visit city profiles in social media" (Krawczyk, 2020, p. 426). This may mean that the re-sources (including financial and organizational ones) of the largest communes with district rights, such as voivodeship capital cities, that can be involved in information policy and promotion, most likely exceed the potential of smaller towns, and at the same time affect the efficiency of the communication process.

It also seems that the use of digital tools by local administration is a necessity deter-mined by applicable law and logistic requirements, but the use of Facebook in communication activities – while still remaining discretionary – is a "necessary choice" (Popiołek, 2018). Therefore, a further increase in the use of social media in the relations of local administration with residents and other groups within the reach of its communication strategy should be forecasted. The recipients of the content disseminated by local government units via social media platforms may include, among others: potential investors, tourists, pilgrims, people interested in residential buildings or taking up employment in a given commune, as well as taking advantage of the educational, recreational, sports or medical offer, etc. Thus, the social ranges of the profiles of cities with district status (and also of other communes and districts) identified for September 2021 will probably be systematically increased.

On the other hand, when comparing the ranges of individual accounts of single-person executive bodies of communes, it should be pointed out that in large cities more and more interactions between the mayors and residents are in cyberspace. In smaller towns these relations can often be direct or take place through local mass media focused on the events in a given commune, rather than the entire agglomeration. Certainly, in the case of personal profiles, there is also considerable development potential.

By making a comparative analysis with the results of Agata Olszanecka-Marmola's study published in 2016, carried out on an identical research field, i.e. in cities with district rights in the Silesian voivodeship, an increase in the number of Facebook pro-files of mayors from 73.6% up to 100% is visible. Research studies on the profiles of mayors of cities with district rights in 2016 showed "a tendency to start and intensify communication activities in the Internet during the election campaign, and after its completion a gradual phasing out the activity in virtual reality" (Olszanecka-Marmola, 2016, p. 139). After five years, it is noticeable that information relations with the electorate are maintained, based on a systematic dialogue via social media. Of course, "it is worth noting the fact that a long presence on Facebook does not have to automatically mean a large number of fans" (Romanowski, Szymkowiak, 2018, p. 457) but a form of running a profile that is attractive for users, consistent publication of interesting content in time sequences that do not take the signs of spamming the recipients may result in a significant increase in the number of people observing and reacting to the disseminated messages. This solution supports the traditional local government press or even constitutes an alternative medium for information and promotion.

Increasing the involvement of local governments as institutions and of mayors man-aging the administration in the sphere of social media can also be perceived as an adaptive activity in the face of the transformation of the electorate's communication habits, as well as the acquisition of electoral rights by successive generations. Young people enter the space of interaction of public debate with their own habits in the field of obtaining data on events and phenomena that interest them, as well as on political life in the local dimension. In order to reach this group with a message, techniques corresponding to the expectations of the recipients must be used. The research studies conducted among students published in 2020 show that they perceive cyberspace "as a social community focused around social media, which is their primary source of knowledge about the world, culture and society. They live in a hermetic media environment, convinced that they have control over their actions, opinions and views. For them, compulsive use of social media is not a symptom of addiction, but only a kind of habit" (Konieczna, 2020, p. 261). The statement clearly indicates the need for the use of social media by the local administration, which intends to establish and maintain relationships with young residents who are not and probably will not be recipients of the traditional local government press. Meanwhile, "the role of administrative communication is growing, both in the centre and out in the field. This is due to the direct "perceptibility" of administrative decisions by the citizens. In the administrative system there are press spokespersons at all levels, usually professionally prepared to perform their functions. In addition to informing, their main task is to explain to the local and regional public opinion specific decisions and problems that have an impact on the lives of citizens (Michalczyk, 2020, p. 238). Therefore, social media will be an increasingly important tool for people responsible for planning and implementing communication activities of local governments. Just like it is for heads or rural communes, mayors and presidents.

It is also worth making a comparative analysis of the social reach of Facebook profiles managed by local administration with the traditional local government press. In 2018 the author's own research study was carried out in 41 communes forming a separate statutory research field in the form of the Metropolis GZM. It has turned out that 88% of the communes forming the union conducted publishing activities. In this group 61% of periodicals were edited directly by communal authorities or offices, while other periodicals were prepared by institutions or subsidiaries (e.g. cultural centres or libraries) or communal companies. Most of the local government newspapers were available free of charge to readers, and only 14% were offered in the paid distribution system. Taking into account the periodicity – monthly magazines (66%) prevailed among the local government press, and weeklies and quarterlies were next (approx. 11% each), followed by bimonthly magazines, which received about 8% and biweekly magazines with 3% market share. It is worth noting that in the case of quarterlies and bimonthly magazines, the publishing schedule was adapted to significant – according to the owners of the local government press – events in the commune, and not solely de-pendent on the printing calendar (Krawczyk, 2019). On the other hand, taking into account the

controversial, especially for publishers of commercial press, possibility of disseminating advertisements – slightly more than half of the editorial offices (55%) did not publish such content. An analysis of the amount of copies of local government press printed in individual communes showed that most often up to 3000 copies of newspapers were printed (41%), although 10% of newspapers were printed in "30 thousand up to 50 thousand" and "over 50 thousand" copies (including the capital of the metropolis – Katowice, which printed its monthly in 140 thousand copies). This allowed local governments in the area of the Metropolis GZM to achieve a one-time total circulation of 492 000 copies, which with the total population of the metropolis (including municipalities that did not conduct publishing activities) amounting to 2 266 308 people at that time meant a social reach of nearly 22% (21.7%). On the other hand, when analyzing the social reach only in communes publishing local government press, the result was slightly higher – almost 24% (23.6%).

4. Discussion and Conclusions

When implementing the assumptions of the information and promotion policy of local government units and managing this process, it must be assumed that the pre-pared messages "must be planned, technologically individualized and disseminated as possible, taking into account the requirement to evaluate the effects contributing to optimize the entire process" (Krawczyk, 2020b, p. 115). Communication tools available in cyber-space seem to be the optimal carrier for this type of activity, especially due to the fact that "social media has become one of the key elements on the communication map of a modern city user, especially a young person. It is natural to expect the city to be avail-able through this communication channel, since the private sector has already accustomed its clients to this form of dialogue" (Sędkowski, 2020, p. 122). Therefore, further development of techniques for establishing and maintaining interactions of local government with the social environment via social media, and – importantly – their application in the provision of public services, should be forecasted. For this reason, however, while pointing to the legitimacy of the use of social media by local administration, one should remember about people who are digitally excluded for various reasons. The Polish average at the level of about 13% of people who have never used a computer network may be very unevenly spread due to the size and location of a town or the age and education of its inhabitants. Hence, redirecting all communication activities of the local government to social media (with the simultaneous resignation from other forms of maintaining the relations) seems unjustified at the moment. Information enabling civic participation in exercising power, data on acts of local law or news about events important for the local community should be provided to residents in a manner ensuring access to all interested parties.

The statement that "the authorities, in order to achieve their goals and implement their interests, create a network of communication and dialogue in social structures, using available communication channels – local media. Bidirectional character of communication, i.e. dialogue; attractiveness of the sender, i.e. degree of sympathy that the sender evokes in the recipient, e.g. by media or direct image of authorities' representative; communication channels that are used; features of the message, i.e. the form of the message due to its relevance and emotionality, which are to have a specific social impact on the recipient's decision-making process, are the conditions for effective communication" (Batorowska, 2020, p. 248) also refers to social media. The results are attempts to influence the audience. Recipients may accept the arguments presented, succumb to persuasive techniques or – in extreme cases – be a victim to disinformation activities. It is difficult to assume bad intentions in the case of broadcasters who are public ad-ministration units, but it seems advisable to create a code of good practices for local government units active in cyberspace. This could facilitate the regulation of, among others, advertising policy (especially with regard to native advertising), feedback or relations with political opponents of the current authorities, etc. It should also be assumed that the commune's profile in social media – just like the traditional local government press – is not a carrier able to fulfil control function for the local authority.

When analyzing the use of digital solutions in the information and promotion policy of communes, it should be remembered that "local government units have a number of sensitive data, the use of which by criminals may lead to damages with serious economic and social consequences" (Mroczka, 2020, p. 91). Therefore in practice it must be of great importance to ensure an appropriate level of cyber security. It is connected with undertaking both investment as well as logistic and educational activities.

Summing up, it should be noted that social media are an important tool not only in terms of news distribution, but also activities in the sphere of feedback (Cho et al., 2021; Aleksander et al., 2020) (e.g. providing data on how to conduct official procedures), social consultations (e.g. obtaining opinions and comments on the development of a commune) or reporting interventions (e.g. notifying about breakdowns, illegal landfills or road damages). They can also be used to shape a positive (Mikhnevych et al., 2020; Kuzior, Lobanova, 2020; Kuzior et al., 2019).

However, in the future social media – after developing and implementing appropriate safeguards – may also become a channel for providing public services. Much depends not only on the will to adopt legal amendments enabling the use of such techniques, but above all on the level of interest in using innovative solutions by the government and local government administration, residents and economic entities man-aging the social media. Of course in this case it will be important to introduce procedures that guarantee the confidentiality of data provided by users, also in relation to the companies providing the carriers.

At the same time, it seems developmental to "use mechanisms and algorithms that automatically collect data on users' activity, such as location and its change at a specific time and place. These data – used on a daily basis to generate profits by social media platforms – can be implemented by emergency services and humanitarian organizations during crisis situations in order to ensure the most effective disposition and management of forces and resources on the spot" (Kosowski, Luzar, 2020, pp. 134-135, Kuzior et al., 2022). Thus, the communication solutions available in cyberspace can be used in many ways (Mańka-Szulik, Krawczyk, 2022; Kuzior et al, 2021; Kuzior, Sobotka, 2021). Cognitive technologies also have great potential (Kwilinski et al., 2019).

The enormous potential of social media also implies the need to set new directions and methods for further research studies on the use and impact of social media on the functioning of local communities.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

THOUGHT EXPERIMENT AS A FORM OF INITIATING AND SUPPORTING INNOVATION RESEARCH

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According to Karl Barth, theologians have no choice but to speak about God, but at the same time theologians are human, and therefore unable to say anything about God (Galli, 2019).

Purpose: The article is an attempt to demonstrate the author's unconventional way of presenting a method of generating innovative ideas. Thus, the previous patterns of research procedure were replaced with various literary forms in order to activate the intellectual capital of the people taking part in the study. In addition, the authors presented ways of using a thought experiment as a form of creating innovative solutions in various fields of science.
Methodology/approach: the authors, wishing to go beyond the boundaries set by well-known quantitative and qualitative research methods, propose their own approach to generating innovative ideas.
Limitations: Aware of the fact that divagation and deliberation create abstractions, they took the trouble to structure them through a series of short intellectual narratives, accompanied by a rational commentary.
Implications: The article explicitly identifies roles: that of the scientist, whose opinion appears at the beginning and end of each divagation and deliberation, and the role of the intellectual who articulates these divagations and deliberations.
Value: As will be seen in the examples, a thought experiment is not a compact monolith concerning the essence of the issue, but a rather free-flowing presentation of loosely related issues. It is an attempt to encourage: students, managers or educators to freely articulate: abstract, original and therefore non-standard considerations, which can stimulate generating all kinds of ideas: in private life, in companies, and in the sciences, humanities and social sciences.

Keywords: divagation, deliberation, innovation, emergence, information, thought experiment.

Introduction

The authors of this article presented a novel form of creating innovation which can be applied and used in various fields of science. When using it, one should take into account that the research process *consists of a number of procedures which admittedly do not guarantee solutions but significantly help to achieve them. It can also be said that the choice of heuristic method implies the value of new ideas that can influence the development of a company or the explanation of the processes and phenomena occurring in it* (Czakon, 2014 pp. 134-147). The assumption is that in order to lead to the development of unconventional solutions, it is necessary to reach for ways beyond the known patterns of action. It is often mistakenly assumed that creativity is an innate human trait, yet in many cases it can be developed, provided that one knows how to use intellectual potential – their own and other people's. Thought experiments, as the new form of research is called, can be used where it is difficult to carry out the experiment in physical form (Mach, 1976). Its advantage is that it only proposes hypothetical solutions to problems (Tondera, 2017) and, despite its many flaws, it has proven to be a good research tool used in: sociology, physics, mathematics (Kolak, 1993) and philosophy (Parafit, 1984), and can therefore be applied in other scientific fields. In order to make the content addressed to a wide audience more attractive, this presentation of the procedure algorithm took the form of rather abstract statements that do not take place in the real world, but only in the mind of the researcher (Brown, 2001). It is here that, using the "lever of imagination" (Dennet, 2015), an individual articulates different action scenarios which were difficult to identify in a schematic way of thinking (Norton, 2004). Presenting the essence of a thought experiment, it is illustrated by means of rather loose divagations and deliberations which are presented in the form of short texts designed to inspire participants in various types of focus groups to think abstractly.

They concern the differences in the perception of: phenomena, problems and events from the perspective of intellectuals and scientists, where the former create abstract theories which find their way into the rational thinking of the latter, thus becoming an inspiration to expand knowledge in various fields.

A thought experiment should be seen as a new form of inspiration which focuses mainly on generating innovative ideas, not only where *the mechanical application of methods produces mundane data and routine reports* (Charmaz, 2009, p. 25) but also where *a keen eye, an open mind, a trained ear, and a steady hand can bring a researcher closer to the subject and are more important than developing methodological tools* (Charmaz, 2009, p. 25). The method presented is a tool to see ways of solving problems, not only on the basis of preconceived axioms and assumptions, but primarily on the basis of abstract forms of reasoning, since *researchers, disappointed by the results obtained from quantitative methods, are looking for new ways to observe and analyse social and organisational reality* (Charmaz, 2009, p. 25).

In addition, its application makes it possible to search for an discover, already during the research phase, phenomena that no one had previously realised existed.

A thought experiment is a modification of the "grounded theory" method, whose creators *treat theory building as a process, it is not the verification of pre-constructed hypotheses on the basis of subsequently collected data* (Konecki, 2000, p. 27). As a result, it can be regarded as a *thought process in which vague, inexact notions (concepts) are clarified and strictly defined* (Stobiecka, 2010, p. 42). Precisely these concepts are supposed to contribute to the creation of unconventional ideas related mainly to innovation. A research space prepared in this way gives the researcher a large degree of freedom with regard to choosing the place, time and circumstances of data collection and allows the researcher to take up topics that go beyond that which is *objective and measurable, which makes it possible to address issues related to judgements, values, experiences, i.e. that which is individual* (Plich, Bauman, 2001, p. 277). This unconventional approach is justified when it comes to identifying a *specific cause as an explanation of a phenomenon, which simply means subsuming it under some universal law or set of such laws* (Blaug, 1955, p. 39). Considerations are treated here as derivatives of empirical analyses, and the concepts built upon them are constantly being modified and revised, as a thought experiment *is an attempt to oppose the traditional academic methods (from a desk) of theory building* (Konecki, 2000, p. 26).

Constructing a unified research paradigm that would enable the practical use of the thought experiment method is practically unfeasible, as the process of incubating innovative ideas occurs differently in each individual. Therefore, the authors have chosen to present different ways of generating innovative ideas through a variety of literary forms. These include short: stories, essays and even the abstract considerations of those taking part in the study, and they are meant to inspire others to creative work. Thanks to such measures, the place and time of the thought experiments will not be precisely defined, while the content will be given a storyline to make them understandable. Extensive sections of the thought experiments are highlighted in the text using enlarged paragraphs and reduced spacing in order to differentiate them.

Essence of a thought experiment

The main research tool in the thought experiment will be the intellect of each individual who contributes to the articulation of an innovative idea (Andrzejewski, 2012). It is related to various issues of material and immaterial nature (Grabarczyk, 2009) that do not take place in the real world but in the imagination of the researcher (Brown, 2001). The results are then only certain imagined states of affairs which have never occurred or cannot occur in nature (Norton, 2004). Some scientists inspired by the effects of using thought experiments in the field of

mathematical and natural sciences[1] (Kolak, 1993) began to use them to multiply knowledge, making them an important methodological tool in areas such as physics, philosophy or analytical ontology (Parfit,' 1993). The use of thought experiments is ~~also~~ justified because the scope of performing typical experiments is: time-consuming, severely limited, and involves various costs, while the results obtained may already be out of date even after a short period of time. Thought experiments can be an important determinant of creating innovation in various fields of science and spheres of social life by giving them a dimension of logical reasoning that takes into account the meaning of the considerations carried out (Peirce, 2007).

Furthermore, a thought experiment should be treated as philosophical considerations underpinning the creation of a new perception of the surrounding: phenomena, objects and processes. They are exercises in recognising different types of deficiencies in theoretical studies, which will have to be applied in practice. This is an essential skill for using analogies in the process of identifying the similarities and differences between the studied: objects, events and processes.

Thought experiments are primarily concerned with philosophical considerations that gave rise to all sciences. In this study, their form in many cases refers to biblical texts, as these have for centuries been the source of inspiration for all: discussions, disputes and polemics – thereby contributing to the civilisational development of our planet. Proceeding in a similar manner, the authors thus wish to signal a method of analysing phenomena that do not have a reflection in the real world, but occur only in people's imaginations. The numerous references to Old and New Testament texts are merely an inspiration for further research. In addition, they provide a convenient context for a comprehensive consideration, stemming from the fact that they are familiar to the majority of the public.

Example 1.

We live in flats, but we do not always know who designed and built them, and the same goes for cars, whose makers we do not know. This ignorance of historical facts does not prevent us from unreflectively operating all sorts of objects, and today no sensible person would say that there were no builders and constructors of these things. In general, we can say that we live in a world of objects whose creation we do not question because we are guided by: common sense, the opinion of authorities and our senses. The situation changes dramatically in relation to the existence of God. Earth dwellers, knowing very little about Him, increasingly conclude that their planet and the universe as a whole are not His creation, despite tangible evidence in the form of perceived flora and fauna. It can be assumed that one of the reasons for this is the

[1] Boolean algebra originated in the 15th century and functioned as a curiosity for years until the 20th century when it became the basis for the development of a data storage system for computers.

mythologisation of the essence of God that has been going on for centuries. For He was portrayed as a persona akin to a human being, using the following words *Then God said: Let us make mankind in our image, in our likeness* (Gen. 1:26-27). *So God created mankind in his own image, in the image of God he created them;* (Gen. 1:26-27). This message empowered many people to see Him through the prism of their own: merits, demerits and emotions, which became less and less credible as civilisation developed. The second reason for indifference or even hostility towards God is probably the ideologisation of his person by various bodies which gain benefits such as power, privileges, prestige or money from this fact.

To de-mythologise and de-ideologise God, should be to stop comparing Him to man and giving Him the attributes of: kings, chiefs, judges or victors. On the other hand, recognising the existence of a Higher Form of Intelligence allows us to call Him the Alpha and Omega, which makes it possible to find His phenomenon even in the theory of evolution, where by leaps and bounds:

- from nothingness, matter is formed, consisting of more than 110 elements which, united by intra-atomic forces, form its various forms,
- from the matter arises flora, i.e. organisms rooted in the soil that are able to reproduce their structure within a certain period of time,
- from the flora emerges the fauna, and it will be a world of creatures moving through time and space,
- from the fauna emerges *homo sapiens* endowed with the consciousness of their existence, who, by virtue of the intelligence they possess, realise the importance of the phenomena around them and, in time, by making use of them and valuing them, are consequently able to direct them and, by changing them, adapt them to changing needs.

This example shows how numerous inaccuracies can be seen in the proposed: theories, concepts or reasonings, which will force those taking part in the study to re-examine the content of their ideas in order to avoid numerous misunderstandings.

Example 2. Exponential image of evolution

The exponential image of evolution can be related by analogy to information, which has been perceived differently at each stage of evolution. Thus, it can be seen that information in the world:

- of flora – focuses only on the response of organisms to stimuli such as light, water and temperature,

- of fauna – is attributed to individuals who, using instinct, to varying degrees manage only to: read, create and transmit it,
- of people – is subject to constant: processing; storing transmitting, summarising, condensing, compiling, updating, filtering, selecting, interpreting, substantiating, exchanging, buying, selling and transferring in time and space.

This manipulation and relativisation of information has resulted in it becoming an isolated structure (see: artificial intelligence) whose existence becomes independent of humans. "The power of information lies in the fact that it is an indispensable instrument for the discovery and construction of knowledge" (Materska, 2007, p. 45). In such a context, analysing the successive phenomena described in the Bible, it can be seen that information was most often created by people using the name of God by means of numerous: messages, commands and prohibitions that had to be obeyed in order to gain His (hypothetical) favour. The process of de-mythologising and de-ideologising the essence of God has "lost somewhere along the way" His essence and inspired scientists to continue research in the field of: physics, sociology and psychology, with the aim of expanding the use of information, the final form of which is artificial intelligence.

The changes taking place in the modern world can no longer be explained using only: Old Testament, historical and inadequate examples. Thus, the biblical account, from the point of view of modern knowledge, has become unreliable, while the concept of the spontaneous creation of the world has become suspect over time. Such a situation could happen again today if decision-makers fail to take into account the turbulent changes taking place in their environment.

This stalemate can be attempted to be resolved by adding to the process of the appearance/creation of the world, the well-known concept of creating additional information, and that is "emergence", i.e. an unknown, undiscovered and unexplored driving force. Believers recognise it as a manifestation of God's intervention in the history of the world, while for atheists it is the phenomenon of the spontaneous emergence of new constructs from existing structures (Dworak, Kretek, 2021)[2].

[2] The term "emergence" was introduced into the language in the second half of the 19th century by George Henry Lewes, and the word itself is derived from the Latin term "*emergo, emergere*", meaning "to egress", i.e. the emergence of qualitatively new characteristics, configurations and behaviours interacting with each other in a given set. Analysis of this phenomenon resulted in the observation that the same causes do not always produce the same results. John Stewart Mill, understood emergence as the impossibility of assessing the effects of the combined action of several factors when the effects of each factor separately are known. For this reason, he sought an answer to the question – what is the combined effect of several additive causes acting together, i.e. causes that can be added to each other, and multiplicative causes – comparable to a synergistic effect. In effect, he showed the impossibility of determining consequences when causes are known only on the basis of the principle of assembling given quantities, and he called this condition an emergent phenomenon. See: J. Dworak, H.A. Kretek, *Determinanty przesyłania informacji. (Etno-emergeting),* [in:] „EUNOMIA. Rozwój Zrównoważony – Sustainable Development", (ed) H.A. Kretek, Publisher of the State Higher Vocational School in Racibórz, Racibórz 2021, No. 2(101) 2021, p.123.

This example shows that it is expedient to introduce a third form of reasoning into any consideration using the thought experiment method. In this case, this is emergence which shows that in many cases solutions to problems should be sought not only by applying already known concepts but also by applying other ways of interpreting unfamiliar events.

Example 3. Social exploration

In the past, the scope of research has been defined, delineating the area of political discourse and exchange of views in modern society. It contains every: topic, opinion and assumption that resonates with the public. It is characterised by the fact that: in this discourse, any differences arising from the social status of the interlocutors are suspended for a certain time; it has a uniform character; it is adapted to the requirements of local communities; it excludes private problems and will address the common good; and, finally, it makes a clear distinction between the problems of state and society. It is important to remember that the public sphere is riddled with conflicts that can be resolved through: discussions, debates and compromises.

In the thought experiment, considerations in the public sphere are illustrated by the following text:

This time we sat in the café, somewhat discouraged by the lack of further topics for intellectual discourse, as the autumn weather did not favour vigorous polemics. Slowly, however, we began to look for problems that many have pondered so far, but cannot find enough arguments to give a comprehensive answer to the following question – *Is there any Being in the universe that can be called a Higher Intelligence, Providence or God*. The search for explanations was going rather sluggishly until a friend of mine turned the problem around and proposed a discussion on – *how would the fate of our civilisation have been shaped had someone not "invented" God?* Immediately there was a flurry of responses from the participators, which will be quoted verbatim:

- civilisation would never have come into being, because it was the first abstract concept that later generated the foundations for the emergence of philosophy,
- without this abstract Notion, there would be no society, because it would be impossible to organise a system: governance; organisation and hierarchy, where anointed persons are subject to subjects,
- individual members of society would not be told that something is good and something is bad, i.e. they would not be able to distinguish between positive and negative behaviour,
- people acting in His name since the dawn of time would have had no chance to define the framework of mentality of the tribal groups, states and nations (in the sense proposed by Samuel Huntington (Huntington, 1997)),

- it is the worship of God that has contributed to the creation of a holistic; integrated and unified society with its own identity. It was His presence that manifested itself in the successive centuries,
- societies would have no chance to: create, cultivate and change customs, rituals and traditions,
- there would be no basis for:
  - passing on to the next generation a value system that makes it possible to organise sustainable social structures,
  - communicating through symbols,
  - development of standards, model rules and ways to control compliance with the law.

After a few hours, we concluded the discussion by claiming that civilisations such as Western, Latin American, Orthodox, Byzantine, African, Islamic, Hindu, Buddhist, and Chinese are spaces where society creates abstract beings so that it can evolve.

The foregoing divagations and deliberations relating to the social sphere warrant the conclusion that replacing the question *does something exist or not?* with its inverted form – *what reality would look like if the studied phenomenon had not occurred?* often results in quite different conclusions.

Example 4. Philosophic exploration

Philosophical conversations, debates, deliberations and divagations aim to explain the causes of phenomena occurring in the modern world. Einstein's (?) dialogue with an atheist professor (2015)[3]. Discourse is about what we want to: accept, transform or reject. For example, a medical practitioner who does not think philosophically has little chance of giving an accurate diagnosis to a patient; the same will be true of an educator who will probably never understand pupils and students; and even of a priest who will not encourage the faithful to pray. Scientists are able to discover many regularities in nature, but without the philosophical sphere they would probably not be able to explain the meaning of human behaviour in different situations.

[3] An excerpt from a certain dialogue became the inspiration for the philosophising: "It is possible to have a lot of heat, more heat, little heat or no heat, but we have nothing that we could call cold. You can cool substances down to minus 273.15 degrees Celsius, which is what the absence of heat means. There is no such thing as cold, otherwise we would be able to cool substances below absolute zero. Cold is not the opposite of heat, cold is the absence of heat. Darkness is not something, darkness is the absence of something. You can have little light, normal light, bright light, flashing light, but if that light is missing, then there is nothing and that is what we call darkness. In reality, darkness does not exist. If it existed, people could make it even darker. Evil does not exist, or rather does not exist as a phenomenon in itself. Evil is simply the absence of God. It is like darkness and cold, occurring as a man-made word to describe the absence of God. God did not create evil. Evil occurs when man does not have God in his heart. Evil is like cold, which is the result of a lack of heat, and like darkness, which is the result of a lack of light", https://www.fronda.pl/a/dialog-einsteina-z-niewierzacym-profesorem-przeczytaj-koniecznie,42977.html [accessed on 6 January 2022].

The ideas on which new forms of scientific perceptions of processes in the social environment are built stem from the fact that "the facts we find >in the field< never speak for themselves, but are imbued with our assumptions" (Silverman, 2007). Philosophising aims to inspire interlocutors to generate innovative ways of thinking, the result of which may be a more surprising conclusion than that of previous reflections.

Considerations in the philosophical sphere in the thought experiment method are illustrated by the following text:

As a result of heated debates, we jointly came to the conclusion that the very idea articulating the existence of a Higher Power opened the way for man to originate and develop civilisation, which can also be expressed by the following sentence: *Religion is the basic determinant of the emergence of civilisations and was the prototype for the emergence of many diverse ideas.* On this basis, it is possible to articulate a following thesis – *civilisation grew out of an abstract Being, whose existence has not been proven by anyone for millennia.* Here another question arose: what happens if people stop believing in this Fiction, and will our civilisation then survive? This question would be difficult, if not impossible, to answer.

Moving slightly away from the fundamental topic and based on facts, it can be concluded that everything has a beginning and an end. Also having a beginning, a civilisation which, like all previous civilisations, will probably end one day, no matter what Fiction people come up with. On the other hand, solely on the basis of theological truths, this conclusion must be abandoned, and the thesis adopted *that all things, and man in particular, can last forever – first in a "latent" form, up to the moment of birth, then taking on a real form to re-enter the infinite phase after transformations*.

Continuing the debate on the previously stated theme, it was assumed that everything has a beginning, which consequently led to the conclusion that God must also have had one, and this raises the question that has been posed for centuries – what came before Him? It also posed the question: *are there objects without a beginning, and were there entities with only an end to existence*? It might seem that these are trivial questions devoid of rational possibilities to find evidence and give satisfactory answers, but this is the abstraction that has been going on for millennia, compels intense thinking, and being the result of considerations about: God, eternity and existence, it is the quintessence of human consciousness giving meaning to the search for solutions beyond the realities of reality.

During the innovation work, participants in many studies asked for a clarification of the concept of abstract thinking, which was difficult to illustrate. For this reason, this example was used to illustrate the problem. Exposed to a range of considerations by asking questions and not expecting answers to those questions – as they simply do not exist – the participants are "forced" to think creatively. For often a question becomes the inspiration for: formulating hypotheses, defining the purpose of research or the problem to be solved, and articulating proposals for the application of research methods.

Example 5. Scientific exploration

For many, the search for God in the world of science will prove to be an unfeasible task, as no procedures can be applied here to pursue claims, discoveries or inventions, and to verify and control them in accordance with the accepted methodology of the discipline (Kryszewski, 1997-2022). But scientific research is conducted using proven methods: observation, measurement, experimentation, analysis of historical sources, theoretical considerations, inductive and deductive reasoning, and hypothesis formulation – and all this to develop a theory Research methods are interrelated, creating an ever-evolving social system of knowledge. Basic scientific research is undertaken without a practical purpose, but only to explain phenomena yet to be investigated. Extended or applied research aims to develop innovative ideas, and implementation research involves putting research results into practice. It can therefore be assumed that there is no room for abstractions in scientific research, as those involved in it seek to apply the results in a practical way to the fields they are currently dealing with. This perception of science will change radically once we articulate a definition that identifies the intellectual and the scientist. The first is a person who focuses on basic research, i.e. on developing theoretical ideas about an issue, while the second is a person who implements and puts new ideas into practice.

To illustrate the definition of scientist and intellectual thus proposed, we can use the following text as an example:

It was only at a certain stage of science that intellectuals introduced the zero "0" into mathematics. With the concept ready, scientists were able to carry out typical mathematical operations ~~only~~ on the number zero "0", resulting in the tumultuous development of algebra and, in turn, all fields based on counting (Wszystko o liczbie zero w matematyce!, 2020)[4]. Further efforts of intellectuals are illustrated by the following example: using the equation 5 = 5, which means that 0 = (+5) + (-5). However, this simple notation carries philosophical implications, namely that it shows that zero, which is synonymous with nothingness, can be divided into a material object, that is (+5), and an abstract object, which is (-5). Thus, using the theory of mathematical operations, it is possible to accept that there are real and unreal spaces, and from there it is only a step away from accepting the view that there is a world that people perceive with their senses and an abstract world about which they know little or nothing. A similar analysis can be made by grappling with the notion of infinity "∞", which intellectuals have treated as a boundless space, unlimited speed or a sequence of endless numbers. Bringing this reasoning down to the material world, however, scientists have noted that: the universe is

[4] The ancient Greeks believed that anything less than one was impossible to write, so it did not exist. The Arabs accepted zero as a number treating it as emptiness, as well as infinity. In Europe, '0' appears with mathematics, and the Arabic zero does not appear until the 12th century, causing controversy arising from the possibility of writing something that signifies emptiness, nothingness or infinity. https://www.superprof.pl/blog/zero-matematyka [accessed on 6 January 2022].

limited; the highest velocity that can be encountered is approx. 300,000 km/s; numbers representing great distances can be represented as light years. Expanding on their reflections, intellectuals have also reached here to confirm the hypothetical theological theories that arise from the fact that there may be an "Unknown Force" that moves at infinite speed and is therefore everywhere in the universe at the same time. It may be utopian, but it is well known that many utopian concepts have been confirmed over time, such as Albert Einstein's theory of space-time (Ashtekar, Lewandowski, 2002).

So the difference between an intellectual and a scientist lies in the perception of how to solve a problem. The first, using abstract divagations and deliberations, creates non-standard, abstract and even unrealistic ideas, where even completely random problems, rather than those arising from the substance of the issue, are recognised. They seek to extend the scope of knowledge based on known theory by means of a logical argument. And it can be said of scientists that, while being faithful to their methods and focusing on one issue, they are reluctant to consider other aspects of the application and use of the data, information or knowledge they have, with the consequence that they will be cut off from other ways of interpreting established research results. In practice, this means that in a given period of time, the researcher focuses on one issue and aims only to put it into practice. On the other hand, the intellectual in his considerations will take into account additional aspects that are caused by not taking into account some fact that, when carefully analysed, would dramatically change the way they perceive a given issue. The efforts of intellectuals have resulted in the ability to transform the political system several times in a single generation, changing governments, national borders, the rights of citizens and even the customs of religious communities several times. Therefore, in carrying out all innovation-related activities, it is necessary to divide the participants into intellectuals who are able to invent something new, and scientists who are able to adapt these, sometimes abstract, solutions to practice.

Example 6. Futurological exploration

Looking from a historical perspective at events such as the creation of the wheel, the discovery of how to light a fire; the invention of writing, the steam engine, the development of the Internet, etc., it would be fair to say that these objects or phenomena these objects or phenomena came about by leaps and bounds, i.e. they had no prototype to modify. The same applies to: concrete, bread, plastic or the car, where the individual elements only become structured after being processed and appear as a whole.

Today, the invention of artificial intelligence, a way of organising a set of data through and into a self-learning "machine", can be considered a similar phenomenon. *Artificial Intelligence* results in autonomous: cars, secretaries or robots that perform repetitive work by themselves,

replacing humans. In fact, it could be said that the further development of this technology is focused on relieving people of monotonous tasks. Looking prospectively at artificial intelligence in the context of the use of emergent phenomena, it would be expected that from a collection of homogeneous data, information on how to solve problems far removed from the substance of the issue would emerge (Takeda, Terada, Kawamura, 2002).

Using a thought experiment, the search can be illustrated in the realm of futurology, as the following divigation and deliberation will illustrate:

Nowadays, by analysing the grades of students, it is possible to create a variety of summaries that provide parents with knowledge about their: academic progress, ranking among peers or learning ability. These qualities can be called material qualities because they can be examined and assessed by means of: grades in individual learning subjects, text analysis or tests and quizzes. Unfortunately, little will be learned from these rankings about the student's innate personality, latent dysfunctions and acquired emotions that will determine their behaviour in the future. However, this is a feasible task when grades in various subjects are entered into the artificial intelligence in chronological order and specialists in the fields of pedagogy, sociology or psychology develop an algorithm on this basis to diagnose their personality traits. Similarly, algorithms can be developed for autonomous taxis which, by recognising passers-by and obstacles in the street, will write a guide entitled "A tour of the city's tourist attractions" tailored to the nationality and mentality of the tourist.

This example is not just a fantasy, but a hint or even a clue to help harness the power of artificial intelligence. In the process of generating innovation, there must first be fantastic visions from people called visionaries, which will be treated as literary fiction. But as history has shown, it is only technological developments that, after a few years, will allow these abstractions to be realised.

Example 7. Sphere of loose reflection

Intellectual divigations and deliberations can go well beyond the usual templates of deduction, and the results of such reflections, often inspire the creation of non-standard, original and surprising studies. And so, by reading the Old Testament texts, which reduce God to doing similar things, specific only to man, such as: fighting pagans, creating moral rules, and imagining the afterlife, one can propose one's own vision of the future life by going beyond the barriers limited by a rational perception of reality.

Here is another example of a thought experiment:

After a long break, we decided to organise the expedition of a lifetime, that is, we went on a journey to a place somewhere between Mars and Venus. It was a land somewhat reminiscent of the ocean, and the *quasi*-people living there did not have to bother getting food, as no one

here was ever hungry or thirsty. As we noted, there were no gravitational forces here and no one knew the concept of time. In principle, everyone was happy because prosperity was guaranteed, even though the concept of work was unknown. We didn't notice anyone learning here, after all, exploring any subject was unnecessary because everything had already been discovered and invented. We also did not see people who were sick, old or disabled, while anyone could speak on any issue, but for lack of interest from anyone and any topic, this opportunity was not used. As we traversed further through this rather strange space, a beautiful landscape caught our attention. These were mountains half covered with lush vegetation, while above lay snow untainted by any signs of civilisation. In the distance, we could see lakes full of fish, forests with a variety of friendly animals and foaming waterfalls. At a certain point, it got to us that there was no temperature, which we could not imagine, but we had to accept this discovery as dogma. To our surprise, we did not see anyone using the phone here, nor did anyone make any contacts, as everyone thought and felt the same way. Talks were no longer held either, as everything had been said a very long time ago. After a few days we wanted to leave this beautiful country, but suddenly a rather unexpected episode occurred. The reality around us began to resemble moments spent on Earth and we had the ability to enter it at any time by changing its course. By knowing the past, we could change it at will, by correcting those mistakes which, seen from this earthly perspective, prevented us from achieving the happiness we dreamed of. We took immediate advantage of this opportunity and our clones entered other relationships, avoided persecution, won the lottery, or boarded trains that took them to other countries where they had amazing adventures. As time did not flow here we had the opportunity to ask them on their return about their impressions, to which they replied that they had entered reality at the wrong time and had to repeat the whole operation. We agreed to this, but each time, they came back dissatisfied, so that eventually we all joined the other residents to enjoy the space as they did. In the meantime, we have noticed that we can impersonate any historical figure: a leader, a president, a traveller, a knight or even a serf. This was a lot of fun for us, but this kind of 'fun' ended as soon as we had lived through all possible situations, collecting their experiences. As it later turned out, all residents acting in this way knew everything about each other. One day we were shown a button which, when switched on, allowed us to create reality according to our own ideas. We made immediate use of this and so entered an unknown area for us, creating new dimensions of it. When we returned, we shared our impressions, but to our general surprise, our achievements were unlike any other, as we each created our own time and our own space where we could plan our lives from scratch. One of my friends (a scientist) created matter and then suddenly, under some impulse, brought it to life, only to give it consciousness after a while. Another one, in turn, created the wheel, fire and some strange creatures with long necks. After this experiment, we continued walking along the sunny promenade and had the impression that half an eternity had passed when we noticed that there were clearances under our feet through which quasi-people could also be seen. They were content with their position because, for ideological reasons, they believed that

no changes would be made in their lives. They did not want to give up their beliefs, but persisted with the truths that someone had implemented for them. Consequently, they could not get higher.

After a while, we began to wonder what we were going to do for the next half an eternity, when a gate appeared in our path with the inscription - *here is what no eye has seen, and no ear has heard*. We hesitated for a long time whether to enter there, but curiosity was stronger and after a while we entered an unknown world. Our previous knowledge became useless here, yet we hurriedly searched in our memory for similar experiences and facts, but no one could make any association between what we saw and what they knew from the past. In our haste, we only completed the sentence we had read when entering this mysterious place with the following - *nor are there any words to describe it*. One of us, disregarding the difficulties, attempted to describe what he had noticed - it was more or less as follows: *I see nothingness as darkness and zero as infinity and many other objects that I cannot name. The lack of dimensions meant that I only perceived phenomena intertwined in various places, to which I can only give a completely inadequate name - sparkles. These are spots where something appeared that wasn't there before, and took different forms that I had never seen.* Further on we noticed that our impressions were similar, but we still found it difficult to get used to the fact that space and time did not exist here, but that was just a detail, as my friend said.

In the above text, attention should be drawn to the positive aspects of the divagations and deliberations carried out by intellectuals. They are the answer to the numerous publications concerning parallel worlds and to the conjectures of representatives of certain religions. Such reflections do not lead to any constructive conclusions and scientists cannot verify them in practice. Facts do not exist here; instead, one's own conception of truth, abstraction and fiction plays an outstanding role, which has contributed to the creation of: literature, art and culture. To the question - whether it is worthwhile to discuss and deliberate, the answer is only one - yes, because this is one of the ways that can lead us all to a different perception: of the world; of professional and family situations and problems that seem impossible to solve at the moment. It is also worth mentioning that such and similar deliberations have been given to people by the Bible, which makes it possible to express almost infinite possibilities for interpreting the contents it contains.

Conclusions

It can be assumed with a high degree of probability that one of the first abstract concepts in the history of mankind is a phenomenon - a figure called: God, Providence, Creator. Leaving aside whether it is invented or the result of a revelation, the authors used it to develop the thought experiment method. In outlining the research paradigm using this method,

they introduced numerous examples, hoping that they will serve as an inspiration to implement this method in: companies, institutions, or even private life. Indeed, in the early days of his existence, man had no research instruments apart from his intellect. It was through the emergence of Something in their mind, which required thinking and aroused reflection, that consequently led to the emergence of science. It is this ability expressed as a thought experiment that, even today, can serve as a way of generating innovation without any: tools, instruments or specialised equipment.

The examples presented should also be an inspiration for researchers in scientific fields, because it is they who, knowing the specifics of their own organisation, should adapt (implement) this scheme to their own needs. The authors are also aware that this form of research can be controversial in various ways, but they decided to publish it as has found favour with many people running their own companies.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

CURRENT ASSUMPTIONS OF THE EUROPEAN UNION'S ENERGY AND CLIMATE POLICY IN THE ASPECT OF OPPORTUNITIES AND THREATS

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Purpose: In the light of the threats defined, the article emphasises the importance of new tools that can be helpful for a responsible energy policy. This is why it is so important to internalise some concepts such as taxonomy, the European Green Deal or the Bauhaus as an antidote to irreversible climate change, leading to the self-destruction of humanity, for which man has only themselves to blame.
Methodology/approach: The method of the paper was based on an in-depth analysis of the European Union source documents, published on websites and in documents of the European Commission and the European Parliament. In addition, materials and information published on the websites or in the source documents of individual parliamentarians (Jerzy Buzek, MEP) and EC commissioners (Franz Timmermans) were used. The information gathered was extended through a library search and based on the library resources of several prominent Polish universities, as well as the Oxford Institute for Energy Studies. Moreover, the analysis included academic publications, websites of institutions, companies and organisations monitoring the course and energy and climate policy changes.
Constraints: Adapting to climate change through the prism of activating and using innovative financial mechanisms is another challenge to which the Brussels structures must give new responsible directions based on intergenerational solidarity. The spending of money should also be based on a sustainability mechanism so that financial resources are not spent today that will have to be repaid by future generations. In the same sense, solidarity between states and between regions is necessary.
Implications: Europe and Poland have a challenge, the keyword of which is **reorganisation**, and almost all the deadly coal- and gas-fired heating plants will be subject to it. The hope is the European Union, as it is an organisation with unlimited possibilities, and it has proven many times that it will not hesitate to use these possibilities for the benefit of future generations.
Value: The current assumptions of the energy and climate policy of the European Union in terms of opportunities and threats were cited and analysed. Innovative solutions and tools for financing the development of the European Union were taken into account, including the European Green Deal, Just Transition Fund and EU ETS. Moreover, the necessity to change the way the EU thinks about itself and restructure all resources in the face of the consequences of the war in Ukraine was indicated.
Keywords: sustainable development, climate, energy security, natural gas, hydrogen, European Green Deal, Just Transition Fund, taxonomy, EU ETS.

1. Introduction

The climate and energy challenges of the modern world can be considered from a historical perspective, as the problem was first identified in the 1960s. The identification of the threat to the future life of the human population on Earth caused by climate change emerged and was popularised under the concept of sustainable development. This term was first officially introduced in 1969 by the Secretary-General of the United Nations, U. Thant, in the report entitled "Problems of the Human Environment" (Alberski, Solarz, 1994**).** It was subsequently repeated and highlighted in the 1972 report commissioned by the Club of Rome entitled "The Limits to Growth" (Meadows, 1973). The problem, for this is how we should call the threat to the continuity of human life caused by irreversible changes to Earth's climate, has been generated by the global postmodern capitalist economy, which does not ensure access to existing (energy) resources for future generations and therefore does not pursue a policy based on sustainable development.

The conceptualisation of environmentally responsible energy and climate policy in Poland was initiated as early as 1989 by the Civic Parliamentary Club (OKP). It turned out that the overproduction of electricity at that time was as high as 12TWh, which made it possible for Poland to be an exporter. The main reason for this overproduction, or excess of supply over demand, were the "oversized" power stations and the lack of a rational strategy for the extraction and processing of coal - the key raw material of the Polish economy under Edward Gierek, who headed the country's ruling Polish United Workers' Party in the 1970s. At that time, the definition of sustainable development had already been clearly defined and adopted by the United Nations in 1987, so Poland's energy policy after the collapse of the communist system was to be implemented with the aim of meeting the needs of future generations in terms of access to the Earth's resources, and above all to energy resources.

Nowadays, energy strategies and policies are developed on the basis of many factors. Therefore, international indicators which are globally developed, for example, at the annual Conference of the Parties (*COP*) meetings, are useful in this regard (Rogala, 2022). Such an approach to finding a global solution to the problem gives hope that the world will refrain from economic activities based on inefficient energy sources that are destructive to the climate and the environment. The European Union, which aspires to lead the change from non-renewable to renewable energy sources, with 10% of CO_2 emissions, and China, which produces 37% of emissions, are the world's leading polluters, must be involved and responsible for the change process. Therefore, as an organisation aspiring to become a world leader in responsible energy and climate policy, the EU must face significant challenges. Apart from looking after its own environment, the EU must exert pressure on the world while acting in an exemplary manner to protect the environment. The consequences are difficult to predict,

the solutions may be varied, and even the relocation of the EU companies and workplaces outside Europe should be considered (Popkiewicz, Kardaś, Malinowski, 2019).

In the light of the threats defined, the article emphasises the importance of new tools that can be helpful for a responsible energy policy. This is why it is so important to internalise some concepts such as taxonomy, the European Green Deal or the Bauhaus as an antidote to irreversible climate change, leading to the self-destruction of humanity, for which man has only themselves to blame (Urban, 2022).

2. Analysis of Literature and Policy Documents

The study employed energy and climate policy sources, mainly relying on the resources of the European Commission, the Polish Academy of Sciences, the Oxford Institute for Energy Studies, as well as several Polish universities (Silesian University of Technology, Rzeszów University of Technology, Opole University of Technology or the Publishing House of the State Higher Vocational School in Racibórz). Online resources were also used, relying mainly on the experts at Biznesalert.pl. Furthermore, the official websites of the Government of the Republic of Poland as well as of the European Parliament (EP) were considered with the necessary attention. To achieve maximum objectivity, the paper was also supported by research carried out or commissioned by non-governmental organisations, including the Sobieski Institute.

Policy documents, the validity of which seems indisputable, were downloaded from the official websites of the Ministry of the Environment of the Republic of Poland, the Polish Academy of Sciences, the European Commission (EC) as well as the European Parliament.

In addition, consideration was given to the opinions of politicians actively working for the achievement of climate neutrality by Europe, such as the Vice-President of the European Commission, Franz Timmermans; the former President of the EP, Jerzy Buzek; or His Excellency, the former EC Ambassador to Poland, Marek Prawda; as well as the former Minister of Economy, Janusz Steinhoff.

3. Methodology

The method of the paper was based on an in-depth analysis of the European Union source documents, published on websites and in documents of the European Commission and the European Parliament. In addition, materials and information published on the websites or in the source documents of individual parliamentarians (Jerzy Buzek, MEP) and EC commissioners (Franz Timmermans) were used.

The information gathered was extended through a library search and based on the library resources of several prominent Polish universities, as well as the Oxford Institute for Energy Studies.

Moreover, the analysis included academic publications, websites of institutions, companies and organisations monitoring the course and energy and climate policy changes.

4. Results

Energy and climate policy is no longer a challenge, but an obligation, because, as the paper proves, the situation is critical. The consequences of the turmoil surrounding the natural gas exported by the Russian Federation under its contracts due to the failure to meet deadlines, supply volumes or the disruption of supply chains must be taken into account, and this is related to the potential consequences of the ongoing war in Ukraine.

It seems that all the actions announced by individual European countries and institutions will be aimed at a rapid transition away from Russian gas. Hydrogen - namely the "green" one - may be and is supposed to be an alternative. Therefore, it would even seem necessary to move towards developing methods for the rapid acquisition of hydrogen as a fuel alternative to natural gas, including the prospect of using hydrogen in the armed forces.

However, the mere production or extraction of hydrogen is not enough when there is no adequate distribution network or when there are no tanks or storage facilities capable of storing hydrogen itself and potential surpluses of energy produced from the "new hydrogen technologies". Therefore, it is necessary to produce special fuel cells that convert H_2 into electricity.

The next challenge is to prepare a power balancing strategy, which may pose an even more serious challenge than just producing the fuel of the future (Satoła, Milewska, 2022).

The next solution could be to develop a network of civic activities that could participate directly in **reorganising** traditional residential coal-fired boiler plants and replacing them with modern zero-emission hydrogen ones.

Therefore, Europe and Poland have a challenge, the keyword of which is reorganisation, and almost all the deadly coal- and gas-fired heating plants will be subject to it. The hope is the European Union, as it is an organisation with unlimited possibilities, and it has proven many times that it will not hesitate to use these possibilities for the benefit of future generations.

4.1. Economic Environment Trends and the Climate and Energy Challenges of Today's World

Despite the existence of the European Energy Community, a strategy developed by former EP Presidents Jerzy Buzek and Jacques Delors (Buzek, 2022), individual members of the European Community have the right to pursue their own - national - energy "mix", and this freedom to follow their policies by the Member States is, after all, one of the values of the EU as a community in diversity, and can therefore be seen as an added value.

France bases its mix on nuclear energy, while Germany is still a "powerhouse" in coal combustion, including lignite, emitting twice as much CO_2 as Poland (Dmochowska-Dudek, Wójcik, 2022). Poland's CO_2 emissions are 800kg CO_2 per MWh/pc (per capita), while Germany's are 550kg CO_2 per MWh/pc. In this context, it is necessary to mention the production of CO_2 during the combustion of gas, which accounts for approximately 50% of emissions from solid fuels, with the exception that during combustion, i.e. the processing of natural gas as a raw material into electricity, there is no emission of harmful dust of the PM10 or PM2.5 type, and this is a value for the protection of human health, e.g. against asthma and its effects which cause hundreds of deaths per year in Poland (Raport: Astma ciężka, 2022).

It is a known fact that most energy is produced from oil followed by natural gas and coal, while atomic, wind or hydro-based energy is used less often. Currently, as much as 85% of energy comes from oil, natural gas and coal - the biggest emitters of toxic carbon dioxide and other greenhouse gases. Renewable sources are still marginally used. Solar, wind, geothermal and biofuels (Eftaksja, Passa, Michailidis et al., 2022) account for just over 1% of the energy consumed by humanity. It should be mentioned, however, that the amount of energy extracted from renewable sources increases from year to year, and the upward trend is rather dynamic (Kuzior, Postrzednik-Lotko, Postrzednik, 2022).

The very dynamic development of RES and the increase in its position in the energy mix is recognised and this phenomenon, and perhaps already an ever-growing trend, represents an extremely optimistic value for the health of future generations. In this area, however, Poland made a cardinal mistake by stopping the development of wind power in 2017, where wind energy growth of up to 100MW could already be seen (Enevoldsen, Permień, Bakhtaoui et al., 2019). This ignominious decision resulted in a drop to 18% in the energy mix, additionally still based on photovoltaics (Hołuj, Ilba. Lityński et al., 2019).

Renewable energy needs a rational network, and this poses another challenge because if the performance of offshore turbines gives an efficiency gain based on a potential of 10-20GW of power (and this is what is expected to be obtainable in the Polish Economic Zone based on a contract for difference in the appropriate financial mix), then this effect must be introduced into an adequately prepared network (Zagubień, Wolniewicz, 2022; Aydin, Igliński, Krukowski et al., 2022).

4.2. Taxonomy and Innovative Challenges

A variety of phenomena can be observed, more or less favourable to saving the environment and, above all, people from themselves and the gloomy consequences of their activities. It seems that the so-called **taxonomy** (Jakóbik, 2022). proposed by Brussels officials, which is an EU proposal (Rozporządzenie PE i Rady (UE) 2020/852 z 18.06.2020r.) for a transitional period or even for an exit from the processing of non-renewable (fossil) sources and the inclusion of these in acceptable energy fuels based on nuclear and gas, which are stable and even indispensable raw materials used to produce energy, which will be increasingly needed in a constantly growing global economy, may be an antidote of sorts. Furthermore, the taxonomy does not prohibit but "prioritises pro-environmental investments". And one of its most important objectives is to counter greenwashing, that is, the unjustified claim by companies that their activities are environmentally friendly (Hejj, 2022).

Europeans who are aware of the situation and of the mission that we want and need to carry out should also make changes to agricultural policy or communications policy in order to achieve the objective of "climate neutrality" by 2050 without losing competitiveness with the global economy, which, after all, does not impose extremely costly measures for reducing the emissions or energy intensity of production.

4.3. The EU Emissions Trading Scheme (EU ETS)

A further European political innovation, the highly rational and effective **ETS** (Unijny system EU ETS, 2022), is an important, perhaps even crucial, tool on the path towards climate neutrality. Still, it also needs to be corrected, perhaps even in the direction of a more effective correlation between the rate of increase of emission costs and the reduction of emissions, which should rather be a function of production and costs. Other sectors of the economy, such as transport and construction, should also be included in the ETS, as only synchronised action can lead to the success of a timeless programme such as the European Green Deal, with a climate-neutral effect set for 2050.

At the ETS sales auctions held in Berlin, Poland had PLN 60 billion available for 2021 in general, of which at least PLN 25 billion should be used to sanitise the energy sector, which would significantly increase efficiency and at least some specific stabilisation of energy systems. These actions confirm the thesis that the European Union is committed to a fuel-efficient economy and is moving towards a sustainable energy and climate change mitigation strategy through a combination of direct regulation and support of market entities (Kuzior, Kwiliński, Hroznyi, 2022).

Another challenge to reducing energy demand is to increase the rate of thermo-modernisation, as it is estimated that there are still around 80% of buildings in Poland that need to undergo comprehensive thermo-modernisation - an action that has already had procedures

developed and funding paths available for many years (Życzyńska, Suchorab, Majerek, 2020; Życzyńska, Suchorab ,Majerek et al., 2022).

4.4. Substitution of Solid Fuels by Gaseous Fuels

Europe consumes approximately 394 billion m^3 of gas annually, of which it imports 324 billion m^3 at the cost of approximately €1,100 billion. Poland, on the other hand, extracts 4 billion m^3 of gas annually from its own resources; we import around 16 billion m^3, of which 9 billion m^3 from Russia, largely based on the Yamal Contract, through which we transferred approximately 30 billion m^3 of gas annually (Steinhoff, 2022; Zawisza, 2022). At present, the Świnoujście gas port receives approximately 5 billion m^3, with a target of up to 10 billion m^3 [excluding the planned floating gas port in the Gulf of Gdańsk]. The planned launch of the Baltic Pipe in autumn 2022 will enable Poland to procure 10 billion m^3 of gas annually, which will to a large extent, meet the demand for this type of fuel and create the possibility of becoming independent from gas supplies from other directions (Biały, Janusz, Ruszel et al., 2018) (USA, Qatar) or create the possibility of negotiating a better - lower purchase price, which, according to various sources, generally has varied (Kretek, 2018).

At the end of 2021, there were approximately 3 billion m^3 of gas in Polish storage. Due to a number of geopolitical factors resulting, among others, from the turmoil surrounding NS2 declared bankruptcy on 1 March 2022 (Spółka Nord Stream 2…, 2022) or caused the open war conflict between Russia and Ukraine, the price of gas increased at the turn of 2021/2022 to $2,000 per 1,000 m^3, which caused panic on global markets and a kind of so far unknown energy crisis that triggered inflation in many countries, especially in Central and Eastern Europe exceeding even 10%. Furthermore, the war in Ukraine caused the price of natural gas in Europe to increase to a record level of €197.91 per megawatt-hour (Cena gazu…, 2022).

Individual members of the European Union are assuming their own long-term process of withdrawal from nuclear power by switching to natural gas. However, they are aware of the entirely unpredictable - even based on medium-term trade contracts with the Russian Federation pursuing an imperial policy through Gazprom. Chancellor Angela Merkel announced that Germany was abandoning nuclear energy, assuming that its current demand for natural gas would increase from 80 billion m^3 to a target of 100 billion m^3.

It seems that the plans of Germany, as well as most members of the EU and even of the world, will be radically revised.

4.5. Moving Away from Coal as a Necessity and an Opportunity

To achieve the objectives of the European Green Deal, Poland will gradually shut down the most environmentally damaging mines and power plants, including the most environmentally damaging energy producer, i.e. the 5,000MW Bełchatów power plant, which is ignominiously ranked 1st among the most environmentally damaging energy producers in Poland.

Attempts were made with carbon capture and storage (*CCS*) (Dyrektywa w sprawie geologicznego składowania CO_2, 2022). Still, this operation proved to be both irrational and economically unjustified with the current technological possibilities while works (Plac, Ribeiro, 2022; Yaci, Enczew, Longo, 2022), e.g. at Zakłady Azotowe Kędzierzyn-Koźle were advanced.

In addition, it is important to point out the incalculable cost of human life, which was taken care of by Margaret Thatcher by allowing 15 thousand miners to leave the mining industry each year, and the mission to save and prolong life in Poland was carried out by the government of Jerzy Buzek with Deputy Prime Minister Janusz Steinhoff in charge of the economy, providing an opportunity for up to 100 thousand Polish miners to live longer.

4.6. Energy Storage as a Challenge

A number of investments are envisaged and planned in the direction of adequate energy storage, which has to be produced in excess of demand due to the increasingly unpredictable actions of owners of their resources and energy producers.

Among the envisaged solutions, the following are particularly worthy of attention by scientists as well as individual countries planning a strategy based on the storage of surplus energy production:

- pumped storage plants,
- batteries (including those being decommissioned, which are still too costly and energy-intensive to dispose of),
- technologically enhanced batteries (e.g. lithium-ion),
- green H_2 production (e.g. by electrolysis),
- ... and those still in the research phase at research universities or scientific institutes, for which humanity is hopefully waiting.

The EU, therefore, must face further challenges, and it seems that this structure of 27 countries will not only meet the public's expectations by implementing ambitious plans but will probably not stop at the realisation of feasible tasks, constantly modifying the fulfilment of needs with further tasks that are currently beyond human capabilities or perception.

4.7. European Green Deal as an EU Vector for the New Times

European Parliament elections, which take place every five years, resulting in a change of political power in the European Union. Among other things, the composition of the European Commission - which acts as the EU's government, with Commissioners becoming representatives of individual EU Member States recommended by national authorities - is changing. After the 2019 elections, Franz Timmermans (Franz Timmermans, 2022) remained in the European Commission, taking up the position of Executive Vice-President of the European Commission for the European Green Deal, after a term when he was Commissioner from 2014-19, and Poland remembered him for his work to uphold the rule of law in the EU.

F. Timmermans to the EC's action strategy for the next term of office prepared his author's programme and prepared the EU's strategy and even mission to save the environment and climate, for the implementation of which he was entrusted with the position of Vice-President of the European Commission and leading the Commission's work on the European Green Deal with its first European climate law, aiming to include the goal of climate neutrality by 2050 in EU law (Obowiązki F. Tmmermansa…, 2022). The preparation period of this ambitious strategy for the next term of office coincided with the preparation of the next 7-year budget, and there the resources for the implementation of this author's idea were planned. And since the budget for 2021-27 was to be a transformational budget using the strategy of equalising opportunities between richer and weaker regions, so the ambitious plan fits in as much as possible with the pro-development strategy of EU actions and development. Moreover, the stated objectives of the European Green Deal were to present Europeans and the world with a concrete strategy and not just ideas that did not guarantee the survival of the European integration process, which had been ongoing for a decade (Juszczak, Szpor, 2020).

The European Green Deal can be considered on the basis of key aspects, of which certain strategies included therein are worth highlighting and discussing, which include: A(n) (image) strategy for growth and for transforming society to be aware of the goal of 0% net CO_2 emissions by 2050. In this defined context, economic growth, which determines social peace, should be separated from the extraction and exploitation of non-renewable energy sources. And another challenge in this context is to change the mentality and social expectations that manage to be maintained and stimulated during periods of economic growth. Thus, the overarching goal may be to change people's perception of the world in such a way that it is not economic but rather social goods that are most important in life.

The stated aim of the EU common market is to reduce CO_2 emissions and meet ambitious environmental targets to stop deadly climate change, which is more than just increasing the GDP *per capita* and further developing the capitalist or liberal economy.

It is necessary to ratify the climate conventions, which 192 countries of the world already signed in 1990, and there are constant debates over them, which do not stop the destructive actions affecting the Earth's climate change, which are the result of human activity (Rowiński, 2019**)**. Successive agreements signed at successive climate conferences (e.g. COPs) do not reduce greenhouse gas emissions. Ambitious tasks such as those set out in the 2015 Paris Agreement must not only be modified but must be achieved by 2030.

A wide-ranging sociological action aimed at uniting the entire human population (including politicians and business people) around this project is necessary because, in the absence of consensus, it may even lead to a kind of culture war (Kowalczyk, 2022).

The European Green Deal has..., must be an opportunity to lift people out of extreme poverty or deprivation, a disgraceful effect of globalisation which, in the power of its causation, has left out somewhere the human beings with their basic ontological needs. This is why the project of the European Green Deal must include protective measures, right up to the connection

between economics and the sustainable development strategy already defined in 1987 by the United Nations (Kretek, 2021).

In the ongoing discourse, there are many perspectives on the European Green Deal. Worth highlighting and elaborating on are the perspectives proposed during a lecture on 2 February 2022 delivered by H.E. Ambassador Dr Marek Prawda at the "MBA - Energy and Climate Policy Management" course, organised by Collegium Civitas in collaboration with the Paweł Adamowicz Civic Study Centre (including the Gdansk Foundation and the Energy for Europe Foundation (Zielone MBA, 2022).

The first perspective is **Solidarity in the Face of Adversity**, considered from the perspective of the European Commission.

A Union of greater cooperation - that is, accepting change through internalisation.

Such a different kind of EU - such a different kind of thinking, where the Western European debate challenging social paradigms should be accurately understood and interpreted.

A view on the **EU's role in adapting to climate change**, where the question should be answered: is the EU showing solidarity?

4.8. Solidarity in the Face of Adversity

We could not have foreseen the COVID-19 pandemic (Kordel, Wolniak, 2021). It was, and still is, a new situation. There were no provisions in the EU's Brussels procedures indicating how to cooperate during such a crisis, and there was and is no way of knowing how long this crisis will last or when it will end, so we still have unknown and difficult-to-predict consequences ahead of us. Of course, many mistakes have been made. Still, this crisis has shown the practically unlimited possibilities of generating solutions not previously applied, and it is thanks to the problem that both procedural and mental changes in structures and human resources can be accelerated. To combat the pandemic, a special institution, i.e. the European Health Commission, was set up to ensure the "protection of the health of Europeans and to respond jointly to international health crises" (Strategia Unii Europejskiej, 2022). as part of the EC's policy to promote the European way of life (Priorytety UE, 2022), with concrete and tangible results. The emergence of national "egoisms" and attempts to realise particular political interests, which during the first wave or phase became apparent in the form of disputes over face masks, which today seem mundane, but a lack of coordination between the various EU institutions emerged, which in turn led to effective attacks on the EU and the EC as institutions incapable of effectively assisting individual countries, and Poland in particular, as pointed out by Eurosceptic politicians from governmental spheres.

After several months of the coronavirus pandemic, it seems that this tragedy has united the nation-states more around the idea of a European Community and the swift and decisive actions of Ursula von der Layen and the EC in preparing aid and stabilisation packages for citizens in the form of various types of business shield and, among other things, thanks to these actions,

the rise in unemployment in the EU has been significantly lower than in the USA over the same period.

The pandemic or, in fact, the "pandemic effect" may trigger financial crises that are still difficult to predict (Prawda, 2021). A completely new and unknown threat has emerged, which is the inability to insure certain financial instruments due to risks that are difficult to identify. Insurers are looking for insurers, and even the well-organised Swiss insurance companies are not taking on contract insurances because the risks are becoming incalculable.

Eurosceptics use crises to criticise individual bodies or EU institutions instead of calling for more competence, which would be more conducive to deeper integration and its positive societal perception. Thus, it is more common to see a "cry for help" that has become more worthwhile than closer cooperation based on greater competence.

5. Discussion

5.1. Union of Even Greater Cooperation

For the survival of the project, which is the European Union, it is necessary to revise and update the strategy towards even greater cooperation. In this area, Germany, for example, seems to have led the way, accepting Eurobonds and the partial communitisation of debts without making a profit. Another loss suffered during the successive pandemic waves befell the German economy due to the closing of borders, which caused a kind of imbalance in the common market, which needs to be cared for and maintained, as it is not a once and for all project. It takes extraordinary determination to accept the complications and inconveniences arising from this project, bearing in mind, for example, the cycles of the economy (Ruszel, Wiącek, 2022).

In a community, as in every family, there are fissures, such as the rift between the interests of Northern Europe (Germany) and Southern Europe (Italy, Greece), which culminated in a revision of Germany's attitude towards changing its perspective on the future of the EU towards an openness to the initiatives of other Member States, and most Member States saw the attitude towards the European Green Deal as an opportunity for economic, social and even cultural change (Wolniak, Wyszomirski, Olkiewicz et al., 2021). This is the reason for the acceptance of Germany and other economic leaders of the Union to incur further debts on the basis of an already accepted and implemented budget.

New sources of own revenue should be created in the EU (in addition to contributions), such as, for example, the effective enforcement of fines imposed or the creation of further sources of own revenue for the EU on the basis of taxes or fees from international companies

and corporations for participating in the common market, which can change the functioning and, above all, the perception of the Union in terms of operational efficiency.

Another new source of revenue is the issuing of multi-year bonds, the revenues from which are to be transferred to help poorer countries on the path towards equalisation of living standards, as well as to those members of the community whose economies have been hit hardest by the pandemic (Sabato, Fronteddu, 2020).

5.2. European Union in the Face of Reconstruction, Modernisation, Transformation and Reorganisation

After several decades of this project, the question is whether further development should be based on nation-states or a federation of institutions? Certainly, cooperation needs to be tightened up, and this is to be helped by the Recovery Fund, which is already being used by many countries. The idea came from the Member States and is still in development, while Brussels officials have helped to implement this new tool for financing recovery and growth (Hitewa, Sovacool, 2017).

The EU of closer cooperation is unlikely to be a federation, as it is based on the budgets of the Member States and not the funding institutions. However, the new governing coalition in Germany [SPD, FDP, the Greens] (Krzemiński, 2022). has enshrined in a 177-page coalition agreement a move towards federation as a possible and feasible direction rather than an implication.

5.3. Union of Closer Cooperation Based on Values

The EU is a fact based on a two billion euro budget [in €] to which the contributors (governments) have to convince their societies - the voters, using strong arguments, conditioning access to money on respect for the rule of law and the demonstration of relevant economic indicators. Enforcing the rule of law, a problem in several Central and Eastern European countries (Poland, Hungary or Romania), requires more effective enforcement tools, which the EC must develop and introduce. The antidote to the fissures in the fundamental values of liberal democracy on which the European community is based is becoming the so-called conditionality mechanism with an implication: funds for respecting the rule of law. This tough conditionality has been created by making too many political compromises in areas such as trade, agriculture or climate, where it has become accepted to pay with concessions on matters of values. If the EC is consistent, then there will be no need to go further and no need to follow in the footsteps of the Netherlands, whose government can no longer transfer funds to states that do not respect the rule of law [i.e. the fundamental tripartite division of power].

The EU is an organisation that responds to changes, which can stop or at least slow down possible emerging crises. The forward-looking Recovery Fund (RF) has become such a response to the crisis that must follow the collapse of the global economy caused by Covid. Its innovation was based on two basic conditions. Firstly, the possibility for the EU to incur

debt was established, including, among other things, the issuance of multi-year bonds under the guarantees of the Multiannual Financial Framework (MFF) of the basic, traditional budget. Secondly, new sources of own revenue were created so that the Union would gradually raise more and more funds independent of the compulsory contributions of the Member States. These decisions with long-term consequences signal to the world that the Union has moved towards even greater cooperation, as all Member States still have unanimously adopted the MFF (Prawda, 2021).

The citizens of the EU are no longer satisfied with the logic of growth; there is a need for recognition and acceptance of social bonds and values - not necessarily based on economic growth. This is why it has become so important for the maintenance of democracy to elevate the issue of the rule of law to a fundamentally political problem.

5.4. Change of Integration Model - From Convergence to Fundamental Reconstruction

The project that is the European Union requires a lot of patience in the decision-making spheres, for which the overriding aim seems to be to fill in the ditches, to put out fires, i.e. to maintain a unified image on the outside, based on unambiguous and coherent messages, as a model aimed at reducing the gap between the rich and the poorer, which, in turn, several years ago corresponded to Poland and other countries from behind the "Iron Curtain" in reducing the distance to prosperous Western Europe.

Outside the € zone, Poland maintained good relations with the "€urogroup", which even intended to create its own parliament, and this was a rational solution. However, leading toward a "two-speed" Europe could be dangerous for further, more necessary permanent integration.

Poland lost its position as a kind of connector between the old and new states of the EU when it was perceived as a participant in the coalition-building with Poles Jerzy Buzek as President of the European Parliament and then Donald Tusk as President of the European Council. Back then, the Poles were more effective in realising their own interests, and everyone was interested in Poland joining the European elite. Nowadays, the countries that will benefit most will be those that actively participate in setting and implementing the EU's strategic goals. Therefore, Poland should align itself with these goals and return to its previous direction, abandoning the dangerous path with *Polexit* in the background - but towards unity in diversity based on respect for the rule of law (Ruszel, Reginia-Zacharski, 2020).

Furthermore, in the period of Russia's war against Ukraine, which started on 24 February 2022, the fact that the Union is not a military or defence alliance, despite its possessed and well-organised structures such as FRONTEX or PESCO, must become clear: it must have a well-developed instinct for self-preservation because administering collective happiness is no longer enough. Good relations with NATO are apparent; however, transatlantic relations, broken down by Donald Trump's aggressive policy towards the EU, need to be rebuilt. The political change in the US and the election of Joe Biden represent an opportunity for a new opening. It will probably be challenging to return to the TTIP free trade agreement between the EU and

the US. However, an opportunity for a partnership is emerging for Poland, perhaps even based on correct diplomatic relations with the US in the prism of "strategic prudence" (Kretek, 2019; Kupiecki, 2019).

Does the European Union need to determine what defines it? What price is it willing to pay for it? Does it aspire to be a hegemon? It seems that the EU has the potential to speak the language of leadership, so it needs to go beyond generalities and take on a new role; after all, almost 90% of the world's agreements are based on documents and procedures developed by the EU (Urban, 2022).

5.5. Adaptation to Climate Change through the Prism of Financial Mechanisms

Adapting to climate change through the prism of activating and using innovative financial mechanisms is another challenge to which the Brussels structures must give new responsible directions based on intergenerational solidarity. The spending of money should also be based on a sustainability mechanism so that financial resources are not spent today that will have to be repaid by future generations. In the same sense, solidarity between states and between regions is necessary (Meng, Wang, Su et al., 2022).

In this sense, the **ETS mechanism** aims at raising funds from emissions trading (Satoła, Milewska, 2022). which has been in operation since 2013, and the funds raised remain at the disposal of each country and feed the national budgets. In this tool, the emitter pays, and these funds should be used for investments in restructuring the country's energy policy, carried out precisely in the direction of climate neutrality.

As part of EU solidarity, 2% of the ETS is paid to the ten poorest EU countries and forms a modernisation fund.

The **FST mechanism**, on the other hand, is a concept to support those areas moving away from coal mining and burning. Turów can use this fund in Poland, as it has a concession until 2026 [however, an extension until 2040 is likely to be applied for - HAK Note], and if it does not abandon mining, there will be no possibility for it to benefit from the FST funds and thus from €3.8 billion for Poland out of a pool of €17.5 billion. The FST can be regarded as another instrument of solidarity of the European Union which is a kind of lever for national economies (Ferreira, 2022).

The **"fit for 55" package** imposes specific obligations on the Member States. Poland should accelerate action to reduce CO_2 emissions from 2020, and this package aims to accelerate the programme of reducing emissions and deadly substances; on its foundations, a Social Climate Fund is to be established, from which €12 million over the period 2020-32 is to be dedicated to Polish citizens at risk of energy poverty.

The **CBAM** - *Carbon Border Adjustment Mechanism* - is "a carbon price adjustment mechanism at the border taking into account CO_2 emissions. It is a tool we should look at from the perspective of the whole EU ETS reform and the Fit for 55 package" (Moskwa…, 2022).

The mechanism is intended to reduce imports of products that increase greenhouse gas levels in products produced outside the EU.

6. Conclusions

6.1. Summary by Threat

Seemingly, the biggest threat could be a scenario in which Russian flows in Nord Stream 1, the Yamal-Europe pipeline and Ukrainian pipelines are stopped between 1 April 2022 and 31 March 2023, in which case Europe's ability to refill its storage facilities would be seriously threatened. Europe may be able to survive the summer by emptying residual stocks in storage, but this would lead to the need for a significant reduction in demand during the winter. Without mitigation measures, around 40% of winter demand in Central and Western Europe could be left unprotected. There is potential to mitigate this crisis scenario to some extent by diverting LNG to Europe from other countries (Ruszel, 2022**)**, increasing production from Groningen in the Netherlands and additional imports using pipelines from Norway, North Africa and Azerbaijan (Fulwood, Sharples, Henderson, 2022).

Additional support to security needs for the winter period could be provided by the planned pumping of 10 billion m^3 of gas through the Baltic Pipe, which could start transferring to Poland this autumn.

6.2. Forecasting and Conclusions on Reorganisation

Important decisions began to be made just the day before the war in Ukraine. On 23 February 2022, the day before Russia invaded Ukraine, and the day after the German decision, when German Chancellor Olaf Scholz announced that he had instructed Economy Minister Robert Habeck to withdraw the positive assessment of the impact of the launch of the Nord Stream 2 (NS2) pipeline on the security of gas supplies to Germany and the EU (Ruszel, 2018). At this point, US President Joe Biden announced the imposition of sanctions on Nord Stream 2 AG (NS2 AG), the owner and operator of the pipeline, and its CEO Matthias Warnig. The restrictions were implemented under the sanctions provisions of PEESA (*Protecting Europe's Energy Security Act*). They represent the *de facto* revocation of the exemptions that the US administration granted to both NS2 AG and Mr Warnig in May 2021, invoking the national interest (Kędzierski, Kardaś, Łoskot-Strachota, 2022).

There is a lot going on around NS2, whose future should be based on three conditions: ownership unbundling; inclusion of other distributors; transparent tariffs.

These three conditions are the proposals discussed in the ITRE committee in the European Parliament. However, given the war in Ukraine, the topic will have to be considered in

a completely new situation and through the prism of war with its potential consequences in mind.

In addition, the effects of the turmoil surrounding the natural gas exported by the Russian Federation under the contracts concluded must be taken into account, as failure to meet deadlines, supply volumes or disruption of supply chains connected to the potential consequences of the ongoing war in Ukraine may result in penalties or sentences against Russia or its companies. Gas may then flow through existing pipelines as a form of retribution or **reparation**.

It seems that all the actions announced by individual European countries and institutions will be aimed at a rapid transition away from Russian gas. Hydrogen, but the "green" one, can and is to be the alternative, and we are not prepared to produce it sufficiently to supplement the energy mix. The fact is that green H_2 is the fuel of the future for many reasons. It will be the most environmentally friendly, which seems to be exemplified by the argument that when hydrogen escapes, it is not a greenhouse gas and therefore does not pose an environmental threat and does not exacerbate the ongoing climate catastrophe. In addition, "analyses conducted suggest that hydrogen, and in particular the green variety, could become a mainstay of industry in Poland and the EU over the next few decades. However, for this to happen, it is necessary to remove a number of barriers, which are identified in detail in the report, including, above all, those currently blocking the development of renewable sources for hydrogen production" (Miętkiewicz et al. (2022).

It even seems necessary to move towards developing methods for the rapid acquisition of alternative fuel to natural gas, such as hydrogen, including the prospect of using hydrogen in the armed forces (Soboń, Słyś, Ruszel et al. 2021).

There are many ways in which this fuel can be obtained. The leading solutions for obtaining hydrogen are using fossil fuels such as coal, oil or natural gas. Conversion processes of non-renewable fuels produce about 96% of hydrogen, while water electrolysis produces only 4% of this gas. The main methods of H_2 extraction include the *steam methane reforming* (SMR) process, which currently produces about 50% of the hydrogen demand, while the efficiency of the steam methane reforming process is determined to be between 74% and 85% (Kothari, Buddhi, Sawhney, 2008).

However, the mere production or extraction of hydrogen is not enough when there is no adequate distribution network or when there are no reservoirs or storage facilities capable of storing the hydrogen itself and potential surpluses of energy produced from "new hydrogen technologies". Therefore, it is necessary to produce special fuel cells that convert H_2 into electricity.

The next challenge is to prepare a power balancing strategy, which may pose an even more serious challenge than just producing the fuel of the future (Midor, Iwanowa, Molenda et al., 2022).

The next solution could be to develop a network of civic activities that could take a direct part in **reorganising** traditional residential coal-fired boiler plants and replacing them with modern zero-emission hydrogen ones, on the basis of **housing co-operatives** that have been prepared both legislatively and practically for decades.

Therefore, Europe and Poland have a challenge, the keyword of which is **reorganisation** (Toborek-Mazur, Partacz, Surówka, 2022). and almost all the deadly coal- and gas-fired heating plants will be subject to it.

Currently, Poland, by releasing CH_4 methane containing much-needed hydrogen into the atmosphere, and even ½ of the annual demand for this type of fuel, is contributing significantly to the destruction of our environment, so this is another opportunity for the development of the economy, for new jobs and another field for decisive action.

The European Union is an organisation with unlimited possibilities and has repeatedly demonstrated that it will not hesitate to use them.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

INTERACTION BETWEEN THE MANAGER AND THE HIDDEN INFORMAL LEADER

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Purpose: The purpose of this article is to explore the issues surrounding hidden informal leadership. Namely, the theoretical foundations of this phenomenon and the methodological foundations of effective interaction between a formal leader and a hidden informal leader.
Design/methodology/approach: The research method used in the article is the analysis scientific works of researchers studying the psychological features of the leadership phenomenon. The research procedure included a review of scientific literature, methodological analysis, identification of consistent connections between the structural parts of the researched problem, and deductive reasoning.
Findings: The paper examines the issue of hidden informal leadership in the organization. The formal manager's attention to such leaders is necessary because the influence of a hidden informal leader can be both positive and negative. On the one hand, the potential of a hidden informal leader can be realized to achieve the goals of the organization. On the other hand, a hidden informal leader can have a negative impact on the team, impairing communication between the leader and the team. Developed emotional intelligence is a critical leadership quality of a formal manager to manage relationships with hidden informal leaders.
Research limitations/implications: Our suggestions for future research are conducting surveys in organizations of various spheres of activity to identify hidden informal leaders.
Practical implications: Since the effectiveness of organizations depends on the interaction and influence of the formal manager on the team, the socio-psychological direction of these relationships is critical in achieving the point of the organizational system.
Social implications: The activities of employees in progressive organizations with people-oriented styles of interaction between the manager and the staff have a positive effect on the quality of life of each participant in the process.
Originality/value: The results of the study show the importance of studying issues related to hidden informal leadership due to the possibility of positive and negative consequences of the interaction of such leaders with other team members. The established connections between the communication style of leadership and 1) leadership qualities of formal leaders and 2) human-oriented styles of interaction of the manager with the staff make it possible to use the identified practical and methodological approach to the effective operation of the organization.

Keywords: leadership, hidden informal leader, communication styles, emotional intelligence, human-oriented leadership styles.

Category of the paper: Research paper.

1. Introduction

The central resource of organizations' economic development is the organizational system's social component, that is, people. There is a need for personnel management for the purposeful and coordinated activity of groups of people who make up the organization. An effective manager can influence the personnel he manages in such a way that the achievement of the organization's goals satisfies the needs of each participant in the process.

The combination of economic development of the organization and improvement of social relations in the team depends on the level of leadership competencies of the manager. First, leadership is a real and vastly consequential phenomenon, perhaps the single most important issue in the human sciences. Second, leadership is about the performance of teams, groups, and organizations. Good leadership promotes effective team and group performance, which in turn enhances the well-being of the incumbents; bad leadership degrades the quality of life for everyone associated with it. Third, personality predicts leadership—who we are is how we lead—and this information can be used to select future leaders or improve the performance of current incumbents (Hogan et al., 2005).

2. Forms of leadership in the organization

In a broad sense, it is relevant to consider leadership as an intermediary between the environment and the organization system (Shvindina, 2017). Leadership in the organization exists in two forms - formal and informal leadership. The formal leader is the CEO, manager, chief officer, supervisor or whatever title is used (Aarum Andersen, 2009). That is, a formal leader is an officially appointed manager who has three levers of influence on the team: administrative, economic, and socio-psychological. Typically, informal leaders have not been officially vested with any kind of formal status, but they have attained positions of motivator and leader (Smart, 2010). Informal leaders can influence followers by using socio-psychological management methods.

Informal leaders who appear in the team need special attention of the manager. This is due to the fact that an informal leader can influence the team positively and negatively.

The informal leader plays a very influential role and as such gets the group to work together, plays the liaison role between management and the group and due to either age, experience or specific resources and skill has the ability to obtain group results that are sometimes achieved with more difficulty through the leadership of the formal hierarchical structure (Wienekus, 2010). An informal leader who aims to achieve effective results of the organization in which he works is able to positively influence his followers and help realize the organization's mission.

3. Risks associated with the emergence of an informal leader

The real difference between formal and informal leaders is the levels of accountability and authority. Formal leaders should maintain a strong relationship with the informal leader to ensure the greatest social capital, which helps in meeting organizational objectives (Miner, 2013). To form a productive relationship between formal and informal leaders, the formal manager must communicate regularly with the team. Communication with staff can ensure the avoidance of risks associated with the emergence of an informal leader. Scientists who study the peculiarities of the phenomenon of leadership offer three types of such risks. These types are listed in Table 1.

Table 1.
Three types of leadership risk perceptions according to research by Zhang Chen, Nahrgang Jennifer D, Ashford Susan J., DeRue D. Scott

Types of leadership risk perceptions	Characteristics of risk
Interpersonal	individuals' judgment that the act of leading will harm their relationships with other people
Image	individuals' judgment that the act of leading will impair the impressions other people hold of them
Instrumental	individuals' judgment that the act of leading may hinder their personal success due to potential failure in the collective work

Source: Zhang et al., 2020.

Based on the data in Table 1, it can be argued that a negative perception of formal leadership (without objective reasons) when an informal leader appears can cause some damage to the organization. An informal leader can have a negative impact on staff, undermining the authority of the formal leader and worsening the quality of the manager's communication with employees.

4. Hidden informal leaders

Hidden informal leaders need the careful attention of the manager, on the one hand, whose potential can be used for the development of the organization, and on the other hand, to prevent possible negative consequences of the influence of an informal leader.

There are three common reasons why leaders get overlooked, none of them easily overcome by the leadership harvesting approaches prevalent at many organizations:

- Persistent challenges (typical for large organizations, where there is a threat of not noticing the leader due to a large number of employees; bias in the selection process; problem of the narrow top-down lens that senior leaders often use when looking for leadership talent).
- Disappointing harvests (failure to notice leadership qualities in employees who unusually show such qualities). (Lane et al., 2017).

That is, the most common reasons for the emergence of hidden non-formal leaders are related to the communication process between the manager and the staff.

5. Communication style and leadership qualities of the manager

The formation of an effective manager's communication style to identify hidden informal leaders requires the manager to possess certain leadership qualities. Goleman, a scientist in the field of emotional intelligence research, describes four main leadership qualities of effective managers: Self-awareness (emotional self-awareness, accurate self-assessment, self-confidence); Self-management (self-control, transparency, adaptability, achievement, initiative, optimism); Social awareness (empathy, organizational awareness, service); Relationship management (inspiration, influence, developing others, change catalyst, conflict management, teamwork, and collaboration) (Goleman, 2011).

Table 2 shows the characteristics of effective manager communication styles (de Vries et al., 2010; Othman et al., 2017; Radu et al., 2014; Hackman et al., 2013; Bakker-Pieper et al., 2013) and leadership qualities (Goleman, 2011), thanks to which it is possible to form the described communication styles.

Table 2.
Communication styles of a formal leader to identify hidden informal leaders

No.	The communication style of a formal leader	Leadership qualities
1.	Human-oriented leadership is strongly associated with the communication style supportiveness, and to a lesser extent with leader's expressiveness and (a lack of) leader's verbal aggressiveness (de Vries et al., 2010)	Self-management, Social awareness (Goleman, 2011)
2.	Supportive leaders and clear communications positively enact social connectedness between managers and subordinates (Othman et al., 2017)	Self-awareness, Self-management (Goleman, 2011)
3.	Leaders have to assure themselves that the employees have a balanced system of satisfied needs and of the adequate rewards, because, between all the motivating factors, exclusively pecuniary, that may increase the subjective value of work, the recognition of individual success and the encouragement for communication at the working place are determinant in obtaining the performant participation of employees (Radu et al., 2014)	Social awareness (Goleman, 2011)
4.	Good communication: Includes setting goals, setting direction, managing tension and conflict, and summarizing (Hackman et al., 2013)	Social awareness, Relationship management (Goleman, 2011)
5.	In everyday leader practice, the content of the communication should make sense. However, we assume that the level of preciseness will determine the ease and speed (or lack) of the subordinates' understanding of the message. If a leader doesn't succeed in communicating ideas, views, information, instructions, plans, and targets in a clear and unambiguous way, subordinates may find it harder to determine what is expected of them (Bakker-Pieper et al., 2013)	Self-management, Relationship management (Goleman, 2011)

Source: constructed by authors.

The proposed communication styles of the formal manager's interaction with the team allow practical cooperation with informal leaders due to the presence of leadership qualities that are components of emotional intelligence. Emotional intelligence is an essential component of effective leadership. (Kets de Vries, 1994; Sadri, 2012).

6. Human-oriented leadership styles

The process of interaction between a formal manager and a hidden informal leader, whose potential can be effectively used to achieve the organization's goals, consists of three stages: Discover the Hidden Leader, Develop the Hidden Leader, and Support the Hidden Leader (Edinger et al., 2015).

The discover for a hidden informal leader is implemented by interviewing team members. Companies can construct simple, anonymous e-mail surveys to ask, for example: "Who do you go to for information when you have trouble at work?" or "Whose advice do you trust and respect?" (Duan et al., 2014). Such a simple survey is an effective tool in identifying hidden informal leaders. It is the opinion of the team members that forms the list of potential informal leaders. This is due to the fact that employees are inside a group and interact with each other during the work process.

Having identified a hidden informal leader who can be helpful in the development of the organization, the manager faces the task of developing and supporting this informal leader. In our opinion, for Develop the Hidden Leader and Support the Hidden Leader, an effective tool of a formal manager is a subcomponent of emotional intelligence – empathy (Bar-On, 2010). Thanks to empathy, it is possible to understand the motives and needs of other people. (Goleman et al., 2008). The presence of advanced emotional intelligence in leaders ensures the formation of effective patterns of interaction between the manager and the staff, which may include informal leaders – hidden and active.

Therefore, the identification and subsequent interaction of a manager with a hidden informal leader depends on the communication styles of formal managers, which are a component of the leadership styles used by the manager in his activities (Wikaningrum et al., 2018; Çetin et al., 2012; Kelly et al., 2016). For a clear understanding of all the socio-psychological characteristics of the team and the achievement of the organization's goals, the formal leader must use human-oriented management styles (Kuzior et al., 2022). These leadership styles include democratic, transformational, and charismatic leadership styles. Table 3 presents the general feature of the proposed people-oriented leadership styles of the manager.

Table 3.
Features of the manager's democratic, transformational and charismatic leadership styles

Human-oriented leadership style of the manager	Characteristics of leadership style	General feature of human-oriented leadership styles
Democratic	Although a Democratic leader will make the final decision, he/she invites other members of the team to contribute the decision making process. (Bhatti et al., 2012)	A formal democratic leader invites team members into the decision-making process
Transformational	Includes 4 factors: idealized influence (charisma), individualized consideration, intellectual stimulation, and inspirational motivation. A special component belongs to the implementation tools of individualized consideration. They also delegate, coach, advise, and provide feedback for use in the personal development of followers. (Bass et al., 1990)	A formal transformational leader delegates tasks to team members
Charismatic	Includes such components as effective communication, vision, integrity, humor, and delegation to the leadership task. (Bell, 2013)	A formal charismatic leader delegates tasks to team members

Source: constructed by authors.

A unique and general characteristic of the described human-oriented leadership styles is the formal manager's ability to delegate responsibilities to team members. Thanks to this action, in our opinion, there is an opportunity to identify a hidden informal leader and to cooperate with him effectively. By delegating the performance of a task to another person, this person:

- gets the opportunity to develop and improve his skills and competence in a particular field,
- can increase one's self-confidence, which is then transferred to other situations (Baker et al., 2022).

By delegating specific responsibilities, the formal leader gets the opportunity to identify the hidden informal leader and clearly understand what positive or negative results may occur in the organization when interacting with other participants.

7. Summary

Therefore, an effective formal leader is a crucial figure in an organization that ensures its development and high performance. One of the essential tasks of an effective leader is the formation of effective communication with subordinates. Such communication can provide a solution to an essential managerial task – understanding the socio-psychological characteristics of the team.

Hidden informal leaders can become an additional powerful human resource in the organization or harm the activity of the organizational system. Actions by informal leaders against a formal leader can harm the entire organization and its members. They can threaten the stability of the organization. Thus, identifying and interacting with the hidden informal leader are the manager's tasks for the effective operation of the organization.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

ETHICAL PERSPECTIVE OF THE DEVELOPMENT AND USE OF MODERN MILITARY TECHNOLOGIES

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Purpose: The purpose of the article is to identify the state of knowledge and discuss the development and ethical application of modern technologies in the military space. The research question posed is: Does the military take into account the ethical perspective of the development and application of modern technologies for military purposes?
Design/methodology/approach: The article analyzed selected available literature on modern technology for military purposes, as well as texts on the ethics of war.
Findings: The analysis conducted showed that the ethical perspective of the development and use of artificial intelligence for military purposes is not an important issue for the powers that use it. Moreover, it represents a kind of research gap.
Social implications: Societies are unaware of succumbing to manipulation through the media. These manipulations are part of cognitive warfare. In turn, the lack of clear norms of norms during armed conflict in the age of the use of artificial intelligence carries disastrous psychological and health consequences for entire societies in the war zone.
Originality/value: Pointing out the research gap on the ethical perspective of the use of modern technologies, especially artificial intelligence and robotics in the systematic arming of armies around the world during existing or potential armed conflicts primarily in relation to civilians, as well as fighting soldiers.

Keywords: modern technology, artificial intelligence, cognitive warfare, weapons, ethics.

1. Introduction

The dynamics of the network of interdependence on a global scale, the rapid development of modern technologies, the economic, sociological and demographic problems that are occurring, the progressive climate change, the development of the Internet and the growing number of terrorist groups, combined with the unbridled growth of the ambitions of rival powers, are leading to an unbalanced international order and an increasing threat of the outbreak of various armed conflicts and wars. Wars have accompanied mankind since the dawn of time, but in recent times their nature has changed dramatically. The outbreak of war in Ukraine shows

how unstable international relations are and how easily a conflict can change the balance of power in the world. It can also spiral out of control and turn into a global conflict, the consequences of which are impossible to predict. The modern race to guarantee the status of a strong power is not only about the number of troops and armaments, but about the military's use of artificial intelligence. The policy and strategy of 21st century states is primarily determined by technological developments. Modern conflicts are not only about modern weaponry, such as unmanned machines or innovative missile systems, but also the Internet with all its capabilities. Modern warfare is also waged through social media, instant messaging and smart devices. The development of modern technology, especially the development of artificial intelligence and robotics, does not go hand in hand with the development of modern ethics. Ethics has not kept pace with the ethical problems and ethical dilemmas that modern technologies generate. It seems all the more difficult to maintain ethical standards during war, the ethicality of which is itself debatable.

The research problem presented here includes reflections on the nature of the problems associated with the rapid development and use for armed conflict of artificial intelligence. The research hypothesis posed in this context is: the lack of awareness of the danger posed by the lack of clear ethical regulations makes the ethical perspective not a key issue for the development and use of artificial intelligence in the military field. The dynamic development and pace of technological progress without, at least to a basic extent, ethical regulation can generate difficult to predict and irreversible legal, psychological and social consequences for citizens, as well as violations of basic human rights. Ethics education is also important (Kuzior et al., 2019).

2. Methods

The paper is theoretical in nature and is based on a critical analysis of the literature on the subject. The study of the literature, that is, the analysis and criticism of selected publications, made it possible to determine what was published in the subject of this paper. The theoretical method made it possible to conduct a multidisciplinary analysis, selected sources of law, professional literature, statements and scientific research of lawyers, ethicists and engineers, as well as military representatives were taken into account. The paper was prepared taking into account the limitations of the practice of covering strategic and groundbreaking military technologies with state secrets. Lack of access to comprehensive cognitive sources affected the scope and representativeness of the analyses conducted. Due to the lack of access to the results of research, political positions and national policies of most countries, the dissertation mainly examined documents available on the Internet. Nevertheless, the analyses carried out allowed to outline the direction of further research. The paper focused on issues of defining what

cognitive warfare is in its essence (Claveriel, du Cluzel, 2022; Underwood, 2017; Hartley, Jobson, 2021; Claveriel, 2021). Several examples of the use of modern technology in the military field were cited. Attention was paid to the dangers associated with this. Some of the negative effects on civilians in selected situations were described (Różanowski, 2007; Gontarz et al., 2013; Biedrzycki, 2019; CyberDefence24, 2020; Świątnicki, Wantoch-Rekowski, 1998). There have been analyses of texts on the issue of just war and the ethics of war (Walzer, 2010; Luban, 2009; Żuradzki, 2022).

Research shows that the pace of development of modern military technologies is far ahead of human competence in their control and use. There is also a lack of solid reflection on the ethical implications associated with handing over to robots, for example, decision-making in civilian warfare. It becomes legitimate to recall the basic principles of robot ethics (Kuzior, 2021). The presented research does not exhaust the whole issue, but it seems that it can open up new fields and directions of research exploration regarding cooperation between scientists conducting research for the military and scientists working on ethics.

3. Results

3.1. Cognitive warfare

Since the dawn of history, attempts have been made to influence the consciousness and decisions of the enemy in order to gain an advantage over him (Kuzior, Kwilinski, 2021). Current technological advances and digitalization have given this phenomenon an additional impetus and a new dimension. Modern parties to a conflict are trying to influence what individuals think, how they think and how they act, using the latest technological advances to do so. To date, NATO has recognized five areas of warfare: land, sea, air, space and cyberspace. In recent years, the US, UK, France, China, Russia, Taiwan and Canada have added a new area of warfare, namely the human mind. The concept of cognitive, or cognitive, warfare has been introduced as a convergence of information warfare, intelligence, surveillance and reconnaissance, electronic warfare, psychological operations and cyber operations, using digital and network infrastructure (Infosecurity, 2022).

In a report compiled by NATO, it can be found that in cognitive warfare, the goal is to penetrate the adversary's brain, influence his decisions, create confusion, and eventually paralyze his actions and defeat him. The idea is to take advantage of the opportunities offered by digital technologies, algorithms and social media, influencing the minds and behavior of individuals without their knowledge or awareness of being targeted. Cognitive warfare would therefore be a kind of psychological warfare using digital tools. In short, it is about the

application in military operations of the growing possibilities of influencing individual and collective human behavior through algorithms and screens (de Castex, 2022).

Cognitive warfare, also described as the "weaponization of brain science," involves "hacking the individual," where, using the Internet, for example, the enemy seeks to hack into the mind of a chosen target and take control of it. This exploits the weaknesses of the human brain in order to implement sophisticated "social engineering." Consequently, the idea is to make every human individual a weapon. The battlefield of the 21st century is thus to be the human brain (Wood, 2019).

The essential instrument of action in cognitive warfare is the so-called cognitive attack. It is based on specific social engineering, involving the transformation of the understanding and interpretation of a given situation both by the individual and in the mass consciousness. The power of a cognitive attack is not necessarily to deceive or misinform, but to stoke an important controversy established with objective facts (Infosecurity, 2022). An effectively conducted cognitive attack, shapes both individual and group beliefs and behaviors, favoring the tactical or strategic goals of the aggressor (Innovation Hub, 2021). Cognitive warfare objectives can be limited, with a short time horizon. They can also be strategic, with campaigns running for decades (Innovation Hub, 2022)

According to military experts, cognitive warfare should benefit from the achievements in new discoveries and technologies derived from neuroscience research. The military should therefore work more closely with academia to arm the social sciences and humanities and help the alliance develop its cognitive warfare capabilities (Innovation Hub, 2020). Consequently, it's no longer just about information warfare. It's about influencing not only what people think, but also how they go about their thought processes and their ways of acting (Pappalardo, 2021). Research on improving cognitive warfare is also in the area of neuronal interfaces. Brain-machine interfaces, as defined by the OECD, are technologies and procedures that study the structure of human neural systems and how they function in order to evaluate, control, model and influence them (OECD). Some sources say that the French army, for example, in cooperation with private companies, has already been working on a neural interface, based on technologies derived from Elon Musk's Neuralink program, since 2016. This type of interface would aim to improve the cognitive performance of the human brain. Individuals participating in the program would have an implant, connecting them to a system that helps them make decisions and take actions and exchange data between humans and machines. The aim would be to improve decision-making, remotely control equipment, improve performance during action, manage stress, collect and archive data and use it later. The program would allow access to a database that would provide the soldier with information about the context of the operation in which he is participating (Readteamdefense, 2021). The warfare known as cognitive warfare is not just the use of cognition alone, but the overall functioning of the human brain. It seems that the technicized brain may in fact become a new and vast area of military operations. The tools and methods briefly referred to as cognitive warfare may

constitute a new military domain alongside land, air, sea, space and cyber militaries (Castex, 2021).

In the study "Cognitive Warfare. First NATO scientific meeeting on Cognitive Warfare," dated June 21, 2021, experts stress that the war for minds should enhance the synergy between offensive cyber warfare, information warfare and psychological warfare. In their view, it's a confrontation that draws handfuls from technological advances that allow for a wider and more effective impact on the consciousness of individuals, such as through social media. It also makes it possible to integrate cognitive warfare into operations conducted in all domains of conflict, namely land, sea, air, space and cyberspace (Innovation Hub, 2022; Palczewski, 2022). As Amélie Ferey, a researcher at the Institut Français des Relations Internationales, notes, cognitive warfare understood in this way would fall into the realm of so-called soft war. He defines it as the use of coercive tactics that do not fit the traditional definition of armed attacks with bombings and many casualties. It includes all tools such as cyber, economic sanctions, information warfare, boycotts and lawfare. According to Ferey, is calling the new type of violence by the term "benign" is controversial to say the least. It leads to the legitimization of this type of action by defining its nature as not qualifying as violence. Therefore, they should be critically analyzed in light of the legal and ethical norms that traditionally frame the use of violence by states (Ferey, 2020). Conceptual work related to preparation for defense against aggression in the cognitive domain is underway in many countries. The French Defense Innovation Agency has launched the Myriade and Astrid projects to explore new technologies related to cognitive warfare. In the U.S., cognitive warfare R&D is being conducted by the Defense Advanced Research Projects Agency (DARPA) and the Intelligence Advanced Research Projects Agency (IARPA). Also, the theme of NATO's Fall 2021 Innovation Challenge, which took place in Canada, was entitled: "Invisible threats: tools for countering cognitive warfare" (Jawor, 2022).

According to many experts, cognitive warfare has been going on for some time, but societies are not aware of it. The public's competence in this area is low (Kuzior, 2020), and people are often unaware of the consequences that can result from the misuse of artificial intelligence and cognitive technologies (Kuzior, Kwilinski, 2022).

3.2. Intelligent means of physical destruction

Cognitive warfare, to ensure success in armed conflict, must be complemented by a variety of physical means of destruction. The armed forces and special services are trying to use the latest technological advances to their advantage. The priority technology that has become the focus of the new race is artificial intelligence. Artificial intelligence using networks of neurons, operate independently, based on a process of deep learning. Russia, China or the United States are constantly reporting new technologies on which they are researching and experimenting. Korea, which pretends to be a military power, is also trying to match them. There is a whole range of military activities where the technologies used have a positive side. Artificial

intelligence is being used extensively in a variety of systems, from training to command systems to combat. Artificial intelligence also perfectly solves various logistical problems. Unmanned aircraft, or drones, are sent in reconnaissance operations, avoiding the participation of soldiers in dangerous situations. Equipping drones with artificial intelligence, will allow reconnaissance operations without the need for a human operator (Techgame, 2020). Ukraine has begun using Clearview AI technology to recognize dead people. A facial recognition tool has been used. The AI has a database of more than 20 billion images from public online sources. Using this software, Ukraine has been able to attempt to recognize slain soldiers. If the personalities of the fallen can be determined, families can be notified, who are entitled to know the fate of their relative. However, human rights organizations have criticized the use of the Clearview algorithm because of the identification errors that can occur (News, 2022).

In addition to the humanitarian application of artificial intelligence, there is a long list of negative consequences for humans. Nowadays, almost all new war tasks and targets are being completely automated For example, the development of artificial intelligence within the U.S. military has mainly focused on the area of weapons systems, as well as the spheres of offensive operations or cyber security, and in the context of the war in Ukraine, the U.S. Department of Defense is looking for opportunities to realistically apply AI to combat operations (AIMarketing, 2021). The Turkish army is developing a project called Maven, which is concerned with equipping military drones with artificial intelligence capable of autonomous targeting. A report on the development of lethal autonomous weapons has already been published in 2019 by the Dutch organization PAX. Israel, for its part, has made no secret of the fact that it has sent robots equipped with machine guns into the Gaza Strip. It has also used a flock of drones controlled by artificial intelligence in warfare. On its official website, the Israeli army displays a robot named Jaguar. It is equipped with a machine gun, high-definition cameras, transmitters, searchlights and speakers. Its software allows it to find its own way to a charger, to which it can connect itself (Focus). The People's Republic of China is also developing so-called "drone swarm" technology, where a sizable number of machines make decisions on their own based on the information they gather (Cyberdefence24, 2019). It is also researching artificial intelligence that will guide missiles to a specific target and carry nuclear payloads. It already carries a number of threats to every human being (AIMarketing, 2021).

Among the most sought-after technologies designed to change the face of armed conflict are robots. One example of the application of robotics is the robot dogs that are part of the ABMS (Advanced Battle Management System) (Focus, 2022). The plan is to build an assassin robot that will take part in the most difficult military missions and that can replace soldiers. In doing so, it will be ruthless and indestructible. It will not need permission to eliminate its targets immediately, as it will be fully autonomous. According to some sources, work on and robot soldiers is already advanced (AIMarketing, 2021). The most autonomous of these are referred to as LAWS (Lethal Autonomous Weapons). These are machines capable of targeting and destroying a given target in a changing environment and without human intervention.

According to the authors of the French parliament's defense committee report, LAWS weapons are defined in two ways. On the one hand, under the acronym LAWS may be a set of automated weapons capable of inflicting death, regardless of the level of autonomy. On the other hand, in a definition narrowed to the criterion of autonomy, a LAWS is a machine capable of setting its own rules of operation independently of another external operator. This is the definition used by major military powers, including France. The French defense commission gives another definition, acceptable to the international community. According to it, LAWS are weapons systems capable of selecting and destroying targets independently, without human intervention, in a changing environment (Assemble Nationale, 2020; Chojnacki, 2015).

There is also research on superintelligence. There are at least two possible categories of superintelligent systems - biological and artificial (Bostrom, 2014). A key tool on the road to achieving superintelligence may become genetics and genetic manipulation. Experts in the field believe that countries that do not allow the use of this technology will lose out economically, scientifically and militarily (Armstrong, Bostrom, and Shulman, 2013). Superintelligence could potentially be achievable through biotechnological enhancements, which in turn could affect the speed and ability to develop superintelligent machines. However, the lack of control over superintelligence poses a threat to civilization, not least because its goals do not necessarily coincide with those of humans (Marszałek-Kotzur, 2022).

Activities of a military nature have also not been resisted by space. The U.S. and allies are developing in space such areas as satellite intelligence, communications, navigation, target detection and early warning systems. Artificial intelligence is being used here to conduct ongoing data analysis to detect and prevent threats to military personnel in space and potential attacks on US territory. China and Russia are also pursuing their military objectives in space (Space24, 2022-1). With the capabilities of these three rival countries in space, all indications are that space is broadly becoming a subject of militarization as a place to gain a significant advantage over a rival. Both Russia US and China have missiles that can destroy enemy satellites in orbit (Space24, 2022-2)

3.3. The ethics of war

Killing people is generally considered to be the morally worst act, although it seems that perhaps some types of torture rank even lower on the moral scale (Sussman, 2009). In the face of such a thesis, it is surprising the ease with which we are able to pass over contemporary armed conflicts fought at various points around the world. After all, wars by definition should be associated with paradigmatic evil, reflecting organized, mass killing. After all, one of the key goals of soldiers fighting in armed conflicts is precisely to kill enemies, that is, to kill people. However, despite its great sensitivity to human suffering and its emphasis on the value of human life, modern Western civilization also does not cut corners when its armies take part in armed actions, and the ethics of their actions leave much to be desired. The basic dilemma not only for war ethicists, but also for scholars of international relations remains the question

of whether the use of violence is acceptable at all, and if so, the question should be asked: in what situation and by what means? (Rhodes, 2009). Ethics related to armed conflict is very complex and problematic. It draws on the contributions of many disciplines, such as philosophy, political science, sociology and psychology, but still does not provide answers to the constantly emerging new ethical dilemmas. (Wolfendale, Tripodi, 2011). Traditional ethics of war, is understood as a set of beliefs established among both soldiers and civilians. It has been partially codified in the form of public international law (Falkowski, WP; Falkowski, Marcinko, 2014; Flemming, 2003; Lankosz, 2006). It permits, and sometimes even mandates, actions that are considered morally unacceptable in peacetime, or worthy of the greatest moral condemnation. The problem lies in the extraordinary leniency we show for the actions of soldiers participating in war. First of all, it is widely recognized that soldiers have a "license to kill" opponents of the conflict (Zuradzki, 2010). Of course, in theoretical considerations of the ethics of war, we can find a variety of positions. For example, proponents of realism in international relations or political realism are of the opinion that universally applicable laws, including moral laws, do not apply during war (Walzer, 2010). On the other hand, pacifists hold the view that under no circumstances should one kill or use violence against another human being (Cheyney, 2009). In the literature, one can also find many theories of just or unjust war. It is nowadays accepted that in addition to defensive wars, i.e. wars fought in defense of one's own territory, population or resources, one can conduct, for example, humanitarian interventions against some bloody regime. It is not only the state as an entity that is important to defend, but first and foremost the rights of human beings, i.e. the citizens living in the state, must be defended. There has therefore been a shift from thinking about war and the question of the justice of war in terms of states, to the category of human individuals. It is to this issue that modern philosophers and ethicists are paying attention. One element of the traditional doctrine is that soldiers can fight according to the rules and, in a sense, do not commit evil as long as they do not break those rules. Another is the principle that only combatants are acceptable targets for attack, and non-combatants are not. It is also never permissible to attack civilians (Walzer, 2010; Luban, 2009). Nevertheless, an important moral issue is also the fact that the victims of conflicts are rank-and-file soldiers, who very often are not responsible for causing the conflict, nor are they aware of its real goals, or when they fight against their will (McMahan, 2009). One of the goals of modern international law of armed conflict, also known as international humanitarian law, is to protect both belligerent soldiers and uninvolved civilians, and to limit the use of violence as much as possible. It imposes specific duties on all belligerents, which they are obliged to observe (Henckaerts, Doswald-Beck, 2005; Waltzer, 2010). If one were to adopt the modern conception, which recognizes that every human being has an ascribed human right, then no one has the authority to kill another human being, even if he or she is a soldier. Therefore, it is not the case that if Russian soldiers only kill Ukrainian soldiers, they are doing nothing wrong, because they are participating in a war. Ukrainian soldiers, on the other hand, use violence in self-defense - they are defending themselves and their fellow citizens. Under no circumstances can one fight

in an unjust cause with just methods. By assuming that soldiers fighting in an unjust cause do nothing wrong, we accept that the moral evaluation of killing depends on the situation. We apply relativism in ethics, judging the same event depending on the context. Meanwhile, when the human rights of its own citizens on its territory are violated, a country's sovereignty should lose its meaning. However, current international law is a reflection of the traditional doctrine of just war. A ranking Russian soldier fighting in Ukraine cannot be held responsible for the mere fact of killing Ukrainian soldiers. This can be done if he violates the rules, i.e. intentionally destroys civilian targets of the state, causing harm to the civilian population (McMahan, 2009).

Conducting military operations by traditional methods is very complicated from an ethical point of view. The problem is exacerbated when armies work on weapons equipped with advanced modern technology and artificial intelligence, especially autonomous action systems. The development of robotics and artificial intelligence algorithms is so rapid that some of them are beginning to behave like humans. Their increasing level of complexity makes their operation virtually impossible to comprehend by human reason. It is also becoming increasingly difficult to predict the "behavior" of a given algorithm in a particular situation (Kosinski, 2021).

A kind of peculiar categorical swap is occurring more and more clearly, namely, machines are being systematically humanized, while at the same time dehumanizing humans (Marszałek-Kotzur, 2022). Humans increasingly want to put more and more decisions in the hands of artificial intelligence. For this reason, many developed countries have begun work on regulations in this area (Karliuk, 2018; Gennuth, Weng, Matsushita, Kisiel, 2021)

The use of force through weapons equipped with artificial intelligence carries a frightening vision for humans. The report Ethics and autonomous weapon systems: An ethical basis for human control, prepared by the International Committee of the Red Cross, emphasizes the importance of preserving human agency and intent in decisions regarding the use of force. This is one of the key ethical arguments for limiting autonomy in weapons systems. Decisions to kill, injure and destroy cannot be proceded on machines. Humans must be present enough in this decision-making process to maintain a direct link between human intent and the ultimate use of the weapon. Of great importance is not only whether a person is killed or wounded, but also how he or she is killed or wounded. Concerns about the loss of human dignity as an inalienable human right are drawn in the background. If human agency is lacking to the point where machines effectively and functionally take over these decisions, this undermines the human dignity of both the combatants who are targeted and the civilians who are put at risk by attacks on military targets (Ethics and autonomous weapon systems: An ethical basis for human control, International Committee of the Red Cross, Geneva, April 3, 2018). Activists and some UN-affiliated countries are demanding the creation of a new international treaty in which the rules for the use of artificial intelligence in weapons systems would be clearly defined and prohibit autonomous decisions , regarding attacks on human targets made by algorithms. They argue that an algorithm could make a mistake and accidentally attack a civilian

population. However, Australia, Russia, the United States, the United Kingdom and Israel have been against such a ban for many years. States It has been reported that US President Joe Biden, has announced that he will not sign any binding international agreement that would ban the use of "killer robots." Instead, Biden administration officials are proposing to create a "non-binding code of conduct" when it comes to the use of such algorithms (Focus, 2021).

4. Discussion

The cognitive warfare described above is particularly controversial due to the prevailing lack of knowledge and awareness in societies. Cognitive warfare involves not only states through their own secret services, but also transnational corporations and terrorist organizations. Strategic advantage in 21st century conflicts lies in the ability to establish channels of communication, understand their motivations for people's actions and stimulate their beliefs, views and actions in the desired direction (Kuzior, Kwilinski, 2021; Ober, Kochmanska, 2022). This allows access to political, economic, cultural and social networks, both their own and those of a potential adversary. The appropriation of minds is carried out by influencing the perception of the opponent by transmitting and receiving given information, as well as by intimidating and deterring citizens. Other military operations can be carried out on a malleable society shaped by means of cognitive warfare. Defense against manipulation requires public awareness of cognitive warfare. Therefore, it seems that it is the task of the government, the military, institutions, services and citizens themselves to develop such awareness, in order to achieve social resilience to the influence and exertion of the enemy and to develop appropriate responses to suspicious campaigns, already in the process of their formation. NATO plays an important role in promoting and strengthening civilian preparedness among its member states. Article 3 of its founding treaty, establishes the principle of resilience, which requires all Alliance member states to maintain and develop their individual and collective capabilities to repel an armed attack. This includes supporting continuity of government operations and the provision of essential services, including resilient civil communications systems (NATO Review, 2021).

The level of sophistication of technologies related to combat operations in land, sea, air, space areas is also unknown to the average citizen who is not an expert in the field. The military secrecy surrounding research and work on artificial intelligence makes it difficult to reach reliable information.

Among the new military technologies there are LAWS, which fall into the category of intelligent weapons. The introduction of LAWS to battlefields not only implies legal considerations regarding the specific norms applicable to these systems, but also opens

a discussion on how to treat humans in the context of artificial intelligence operations (Chojnacki, 2015).

In addition to the moral problems associated with the proliferation of such weapons, there are other issues. One is the risk of making mistakes related to the actual ability of the algorithms to distinguish between a soldier and a soldier, and between a soldier and a civilian. With the increasing distance of the weapon operator from the point of impact, a person may simply become a target like any other object. Machines can also be vulnerable to accidental or intentional activation or deactivation. From a moral standpoint, it cannot be justified to delegate such decisions to a machine. Allowing a machine to make life-and-death decisions about people goes against the principles of human dignity. A robot, even an autonomous one, will never be able to distinguish right from wrong and make sense of its actions. Its action is limited only to what is quantifiable. Anything beyond the calculable is a limitation for a machine, incapable of solving a moral problem or making an intuitive judgment in the absence of certainty (de Castex, 2020).

This is why there are numerous protests around the world to stop the work being done by military engineering in applying artificial intelligence. This is because there is a serious risk that if countries like North Korea take over these systems, a global war could break out.

While not all of the advanced technologies being tested by the world's armies are designed to kill the enemy, there is no such thing as a humanitarian weapon. The dangers that may result from the deployment of modern technologies in the army call for the creation of new regulations governing the use of artificial intelligence. The idea is to develop an international convention, which should introduce clear rules for the use of algorithm-controlled weapons systems. However, it seems that some of the world's largest armed forces are moving toward developing such weapons with the logic of deterrence in mind. The key to solving this difficult arms race may lie not just in global treaties, but in rethinking what combat artificial intelligence can be used for (Technocracy, 2020)

The algorithmic world is demonstrating that machines are far more efficient, effective and reliable than humans, surpassing their technical and physical capabilities. Algorithms, increasingly incomprehensible, are full of soulless and technical rationality. However, they are slipping out of human control and raising more and more concerns.

5. Summary

The above analyses of the state of development and the latest technologies in the military space were intended to familiarize the reader with the existing technological capabilities of armies, the advent of which has hitherto been regarded as remote or impossible. The outline of the above issues was also intended to draw the reader's attention to the issue of new challenges

to the application of ethical norms relating to means and methods of warfare, as well as to the issue of their potential impact on the way combat operations are conducted. All these issues involve real threats to life, health, psyche, as well as the observance, or violation, of human rights. It is likely that the cognitive warfare already underway is making various changes in our minds, through a series of unethical manipulations, without the participation of our consciousness. Improved killing techniques threaten civilian populations. The lack of reliable work on the development of clear and transparent ethical standards and legal provisions on the prohibition of the development of deadly artificial intelligence, and even the reluctance of the superpowers to establish them harms basic human rights. All this should arouse our universal opposition. Meanwhile, the secrecy surrounding the strategies conducted and the development of advanced warfare technologies prevents the dissemination of knowledge and the creation of awareness among citizens about the consequences of the use of these technologies. This paper is only an outline of the issue and does not claim to be exhaustive. It can be a starting point for conducting detailed research in the above area.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

WHETHER ARTIFICIAL INTELLIGENCE IS INTELLIGENT. PHILOSOPHICAL DILEMMAS

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Purpose: The purpose of the publication is to present an important issue for modern civilization concerning two important concepts - intelligence and AI - shaping the conditions of modern societies and determining the development for the next decades. The article discusses the cognitive mechanisms of artificial intelligence - whether in the future AI will be able to perceive and analyze the environment to such an extent that it will be possible not only to receive information, but also to imitate those functions of the brain that are responsible for interpreting and processing it.
Methodology: The publication is theoretical in nature. The objectives of the publication were achieved using the method of analysis of the literature on the subject. This method made it possible to learn about the current state of research in the field under discussion and indicated the perspective of further issues and questions to which answers are sought, thereby suggesting directions for future research.
Findings: The publication discusses the important attributes of human intelligence from the perspective of human cognitive functions and the limits of its use for building AI systems.
Social consequences: Considerations of the development and operation of AI systems indicate the possible consequences of a different organization and structure of social relationships.
Originality: The publication addresses the question of whether AI can model itself on human intellectual abilities and simulate cognitive processes specific to humans.

Keywords: intelligence, AI, cognition, subjectivity, freedom.

Category of the paper: conceptual paper, viewpoint.

Introduction

Artificial intelligence is a concept that today organizes our development space of technical, social and human sciences to an intense degree. It is a contemporary creator of visions of the world of the future stimulating imagination to search for ideal solutions and provoking action towards streamlining systems to effectively organize and manage many aspects of reality. Artificial intelligence systems are therefore used to improve living standards and conditions,

enhance social and technical safety, and handle repetitive and monotonous tasks. It is in the purely material dimension, i.e. how to use effectively and responsibly the technical potential developed and available now. The answer to this question will determine the direction of AI development, and with it the challenges, opportunities and risks in many dimensions. Research is still being conducted on what constitutes the essence of intelligence as well as what AI is. So is intelligence simply thinking and analyzing, drawing conclusions, adapting to changes, that is, activities inherent only in humans, and AI is just technology, that is, a field of science that deals with the study of the mechanisms of human intelligence and the modeling and construction of systems that are able to support or replace intelligent human activities. The question arises about the limits of AI intelligence and whether that limit will be the self-awareness of the machine or the device. The subject of this paper, therefore, is whether AI can be truly intelligent, or whether AI is just a computer program written by an intelligent human.

Intelligence *tout court*

Intelligence is a term used by scientists from many disciplines in an attempt to clarify or specify what the essence of intelligence is, what its components are, and in an effort to create tools to study and measure intelligence.

Despite the long history of intelligence research, there is still no standard definition of the concept. This creates the notion that intelligence can be described but cannot be explicitly defined. The definitions indicated below, proposed by many researchers representing various disciplines, show the complexity of the matter, which translates into a very complex and ambiguous scope of meaning of the concept. However, the definitions reveal strong similarities between specific functions included in the concept of intelligence, which allows us to distinguish at least two groups defining intelligence. Narrowing the definition to human intelligence, as opposed to the intelligence of the animal world, is a deliberate move in the publication, aimed at distinguishing the elements that characterize human intelligence from the intelligence of the animate world in general.

Charles Darwin wrote "a high degree of intelligence is certainly compatible with complex instincts, and although actions, at first learned voluntarily, may soon by habit be performed with the rapidity and certainty of reflex action, yet it is not improbable that there is a certain amount of interference between the development of free intelligence and instinct, which implies some inherited modification of the brain (Darwin, 1889, p. 68). In the passage quoted above, the founder of the theory of evolution does not give a clear definition of intelligence. However, he emphasizes the fact that it is connected with the development of instincts, understood as the adaptive abilities of living organisms. The development of psychological science has also posed an important problem for researchers to define the concept of intelligence. Here are some

definitions taken from this stream. Like Darwin, Swiss psychologist Jean Piaget presents a definition of intelligence, treating it as an adaptation to the environment. However, it is too general and does not allow us to extract the features relevant to our point of view. Piaget points out that: intelligence is adaptation: "life is the constant creation of increasingly complex forms and the gradual balancing of these forms with the environment" (Piaget, 1952, pp. 3-4). A similar definition can be found in William Stern, the creator of the intelligence quotient concept. However, the German researcher distinguishes intelligence from other mental abilities such as talents. According to this definition, talent is related to a specific domain, while intelligence is a major and general adaptive factor. Stern points to intelligence as "the general capacity of the individual to direct his thinking consciously to new demands: it is the general spiritual capacity to adapt to new tasks and conditions of life" (Stern, 1914, p. 3). This definition clearly distinguishes intelligence from other mental abilities. Howard Gardner, the creator of the theory of multiple intelligences also treats intelligence as the ability to adapt to an environment broadly understood within a cultural context: "intelligence is the ability to solve problems or create products that are valued within one or more cultural contexts" (Gardner, 1983, p. 28). American psychologist Robert J. Sternberg distinguishes three types of intelligence in human cognition. Analytical intelligence is the ability to analyze and evaluate ideas, solve problems, and make decisions. Analytical intelligence builds on known issues requiring only in-depth analysis and critical evaluation to identify the problem and formulate an appropriate strategy. Creative intelligence involves going beyond what is given to generate new and interesting ideas. Creative intelligence, generates completely new, logically consistent and rational ideas. Practical intelligence is a skill that people use to find the best fit between themselves and the demands of the environment. This type of intelligence is restorative in nature, but it too seeks optimal adaptations to the environment (Sternberg, 2018). Another definition from American psychologist Philip Zimbardo classifies intelligence as a general mental capacity that includes the ability to think abstractly and understand complex thoughts: "intelligence is a very general mental capacity that includes, among other things, the ability to reason, plan, solve problems, think abstractly, understand complex thoughts, learn quickly, and learn from experience" (Zimbardo, Gerrig, 2008, p. 285). American psychologist Raymond Cattell, a pioneer of research on personality, divided intelligence into crystallized, that is the ability to use knowledge acquired by an individual and the ability to access this knowledge, and fluid, that is the ability to perceive complex relations and use them to creatively solve problems (Zimbardo, Gerrig, 2008, p. 290). The researchers of the psychometric trend define intelligence as the ability to think abstractly, to approach problems creatively, to understand in general, to learn and to comprehend, that is as a spectrum of adaptability to the environment: "the ability to adapt to circumstances by perceiving abstract relations, drawing on prior experience and effectively controlling one's own cognitive processes" (Nęcka, 2007, p. 726) and "the ability to adapt knowledge and understand and use this knowledge in previously unknown situations" (Carter, Russell, 2006, p. 76). The above definitions are dominated by adaptive traits, the ability

to perceive and analyze information, and creative problem solving, that is, indicating that intelligence is the sum of complex cognitive processes. This does not change the fact that research is still ongoing on the precise definition of intelligence as to what it actually is in addition to being an intellectual capacity that enables complex cognitive processes. This is revealed by the American psychologist Robert Yerkes, who wrote early in the twentieth century, "the term intelligence denotes a complexly interrelated set of functions, none of which is completely or precisely known to man" (Yerkes, R.M., Yerkes, A.W, 1929, p. 524).

Human intelligence

However, abstracting from the above thesis, it is possible to distinguish from the definitions quoted above distinct groups of cognitive functions that characterize intelligence, especially human intelligence. Definitions of intelligence emphasize its general ability to adapt to the broader environment. Adaptive skills can be divided into at least two groups containing distinct abilities. The ability to perceive, store and process information can be assigned to the first group, while abstract thinking and creative problem solving can be assigned to the second group. The separation of intelligence functions into separate groups is a deliberate procedure carried out for the purpose of this publication. This is because these functions have evolved at different stages of evolution and are used to varying degrees by the animate world. Within the first group, three distinct capacities of human intelligence can be considered, each of which contains more or less autonomous features. What then characterizes the first group, which includes the perception, storage and processing of information. Definitions of intelligence do not give a range of these abilities. It can be assumed that perception refers to conscious sensory impressions. Information storage is related to memory, or the ability to encode, store, and reproduce sensory information, and information processing is related to a specific response to a perceived stimulus. The ability to perceive sight was already possessed by primitive organisms, beginning with cnidarians, which developed the ropalium, a simple light-sensitive organ, and transparent cells, which functioned as a lens. The evolution of the eye has developed organs that carry out different adaptation processes, depending on the function they have to perform. For example, bird's eyes allow you to see within 300 degrees. In addition, they have four types of cones, which allows them to see in the ultraviolet, since many bird species have plumage in these colors. Some species perceive the direction of polarization of light, which is important for navigating space. They also have two or three yellow spots on their retina, which allows them to see several sharp images simultaneously. Waterbirds have an extra eyelid that acts as a lens, sharpening the image underwater. The design of the eye of birds of prey can be compared to a camera with a telephoto lens: the lenses of the eye project small fragments of the surface onto the retina, but with very high resolution. The organs of hearing and balance also

arose in a long evolutionary process. The vestibulocochlear organ, responsible for the perception of sound and body balance in space, has only been developed by vertebrates. Invertebrate animals have mostly static organs. The only exceptions are insects, in which the senses of hearing and balance occur together. Also the other senses which allow us to acquire sensory information from the environment were developed at different, often very distant stages of evolution from the present.

Another ability of this group relates to memory. The broad ability to remember sensory information is common in the animate world. Many times it determines the survival of the organism. Typically, offspring learn certain behaviors from their parents through imitation. Sometimes it is a genetic memory mechanism, that is, the generational transmission in the genetic code of basic behaviors common to a species. This phenomenon should not be confused with the so-called lamarkism, or the transmission of acquired traits to descendants, which is generally incompatible with the current paradigm, although epigenetic experiments on mice conducted by scientists led by Professor Wolf Reik of the Babraham Institute in Cambridge shed new light on this issue. Elephants and dolphins have excellent long-term memory. Dogs have an episodic memory, a system of long-term memory also known as event memory, which has its location in space and time.

The last ability is related to information processing, i.e. analysis and reaction to perceived sensory information (one should also remember about internal senses - somatosensory, such as interoceptive, responsible for sensations coming from internal organs, i. e. the sense of hunger, thirst, body temperature, heart rate, vestibular sense, responsible for movement and balance, proprioceptive, receiving information about orientation of the position of one's own body parts from receptors located in muscles and joints). Information processing can mean both a simple, intuitive reflex response to a perceived threat, as well as an elaborate analysis of perceived objects and an appropriate response. The first reaction activates the flee or fight mechanism and is an unconditioned reflex in all animals. The second, an extended analysis, triggers a thought process that allows for an in-depth threat assessment and an appropriate response.

The second group of cognitive functions includes abstract thinking and creative problem solving. The processes included in this group require preparation, specific preprocessing in the form of perception, selection and orderly storage of sensory information (long-term declarative memory, including episodic memory and semantic memory). This therefore applies to the functions contained in the first group of definitions, but raised, as it were, to a higher level. Analysis of information is not instinctive, reflexive. A creative thought process is set in motion. It is possible that the creators of the definition of intelligence, when speaking of perceiving, storing, and processing information, had in mind an extended range of these functions, but it is not indicated that they are phenomena that are the *sine qua non* of complex cognitive processes, and not separate entities. Perhaps this is why it is difficult to speak of a well-defined problem in these definitions that would give us a clear answer. The definition of the creative thought process can be based on the classic definition given by Edward Nęcka. This process consists of

four stages. The first stage is preparation, which is the initial activity of collecting data and preparing the problem to be solved. The second stage is incubation, which involves the spontaneous, unconscious "hatching" of an idea during a pause in intentional work on the problem. The third stage is illumination, which is the dazzle accompanying the sudden solution to the problem through insight, and the fourth stage is verification, which is checking the usefulness of the produced solution (Nęcka, 2007, p. 789). The concept of preparation falls within our preprocessing process. Incubation and illumination eludes the possibility of algorithmizing the problem. A variety of techniques such as brainstorming, used to varying degrees since the dawn of humanity by bodies such as tribal councils and councils of elders, are employed here to achieve a satisfactory result. Another technique is "morphological analysis", which involves analyzing all possible solutions, or finally "synectics" by William Gordon (Gordon, 1961), which combines the two previous methods. An interesting proposal to achieve the goal is the multi-phase "ideal solution method" by Gerald Nadler, which consists of generating an ideal system in the first phase of the process and then gradually introducing constraints until the real system is obtained (Nadler, 1967). This method is the opposite of the classical method of improving functioning systems. Finally, verification is a well-defined problem that allows us to identify functional differences between requirements and our subsequent models.

AI

When comparing man-made intelligence, or artificial intelligence, to intelligence that evolved with human beings, it is important to define the terms AI. The creator of the term was John McCarthy, an American computer scientist at Stanford University, and it was first used at the Dartmouth conference in 1956. In his article "What is Artificial Intelligence?" published in 2007, John McCarthy poses a number of questions and provides answers about artificial intelligence. When asked what artificial intelligence is, he answers, "it is the science and engineering of creating intelligent machines, especially intelligent computer programs. In his article "What is Artificial Intelligence?" published in 2007, John McCarthy poses a number of questions and provides answers about artificial intelligence. When asked what artificial intelligence is, he answers, "it is the science and engineering of creating intelligent machines, especially intelligent computer programs. There are different types and degrees of intelligence in humans, and many animals and some machines also have it. Is there no general definition of intelligence that does not require references to human intelligence? Not yet. The problem is that we cannot yet generally characterize what kinds of computational procedures we want to call intelligent. We understand some mechanisms of intelligence and not others. Isn't artificial intelligence about simulating human intelligence? Sometimes, but not

always. On the one hand, we can learn something about how to make machines solve problems by observing other people or simply by observing our own methods. On the other hand, most work in artificial intelligence involves studying the problems the world presents to intelligence instead of studying human or animal behavior. Artificial intelligence researchers are free to use methods that are not observed in humans, or that require much more computing power", (McCarty, 2007). Hector J. Levesque, a Canadian scientist and researcher on artificial intelligence, situates it outside the biological and social sciences. He writes about artificial intelligence as follows, "Note that the science of artificial intelligence studies intelligent behavior, not who or what causes it. For example, it studies natural language comprehension, not natural language comprehenders. This is what makes artificial intelligence very different from human research (in neuroscience, psychology, cognitive science, evolutionary biology)", (Lavesque, 2014, p. 1). Andreas Kaplan and Michael Haenlein give a definition of artificial intelligence defined as "the ability of a system to correctly interpret data from external sources, the ability to learn from that data, and to use that knowledge to perform specific tasks and achieve goals through flexible adaptation" (Kaplan, Haenlein, 2019). Thus, artificial intelligence is intuitively understood as an imperfect imitation of human intelligence. Nothing could be further from the truth. If a person behaves intelligently, we assume they are intelligent. We judge this based on external considerations. To act intelligently is to be intelligent. So an artificial intelligence that behaves intelligently is a real intelligence, only that it is artificially created. The idea of determining intelligence by external viewing became the basis for Alan Turing's formulation of an intelligence test, known as the Turing test, in 1950, (Turing, 1950). It consists of a game in which a participant (the interrogator) can ask the other party (the witness, who can be a machine), any question via a text-based interface (at the time it was a teletype). If the interrogator is unable to determine whether the witness is a human or a machine, it follows that the witness must have intelligence. Turing assumed that a witness who is not truly intelligent could not feign intelligence with respect to a wide variety of subjects. A competition organized by the University of Reading in England on June 7, 2014 featured a computer program called Eugene Goostman, a chatbot developed by two programmers, Russian Vladimir Veselov and Ukrainian Eugene Demchenko in 2001. It was credited with being the first artificial intelligence to pass the Turing test. Eugene was able to convince 33 percent of the judges (out of the 30 percent required by Turing under the assumptions in his 1950 Computing Machinery and Intelligence article that they were talking to a thirteen-year-old Ukrainian boy. Controversy arose over the behavior of the chatbot, which explained the errors in the answers by a lack of general knowledge due to age and a poor command of English. Besides, he often joked, which was supposed to lend credence to his human personality. This controversy revealed a number of shortcomings of the Turing test. Levesque, one of the critics of the test thus constructed, has pointed out several important problems arising from its use. First of all, the machine does seem intelligent, but the essential point remains that it is created on the basis of a false consciousness, which is no longer part of intelligence. So this is

fraud. In addition, during a conversation, many interactions can be classified as exhaustive of conversation, so elements of conversation such as jokes, intelligent remarks, and interjections may or may not suggest intelligence, since a machine can be intelligent without having human reasoning ability. These intelligent comments are simply pre-programmed. And finally, as for assessing intelligence, humans who are tested can make mistakes, so it is hard to require that such mistakes not be made by machines. In addition, judges can also make mistakes as to what intelligence is being tested. And if so, it can't be evidence of a machine's ability to think. These caveats make the Turing test difficult to consider as an unambiguous verification of artificial intelligence. Levesque proposed a test based on ambiguous multiple choice questions requiring general knowledge. They have a specific structure, the so-called Winograd diagrams, named after computer science professor Terry Winograd of Stanford University. Here is an example of questions formulated according to Winograd's scheme:

- Marysia has much less money than Basia because she just won the lottery. Who won the lottery? Mary or Basia.
- Marysia has much more money than Basia because she just won the lottery. Who won the lottery? Mary or Basia.

Another example comes from an article on testing smart behavior according to the Winograda scheme, (Morgenstern, Davis, Ortiz, 2012):

- A customer entered the bank and stabbed one of the tellers with a knife. He was immediately taken to the police station. Who was taken to the police station? Customer or teller.
- A customer entered the bank and stabbed one of the tellers with a knife. He was immediately taken to the hospital. Who was taken to the hospital? Customer or cashier.

John Searle, an American philosopher and creator of a thought experiment called the "Chinese Room" also questioned the Turing test as the ultimate test to verify intelligence. The experiment showed that even a computer's successful simulation of intelligence is not the same as having intelligence. The performance of certain tasks by artificial intelligence (for example, translation from language to language) does not require understanding, but only knowledge of vocabulary and grammar rules, i. e. there is a mismatch between semantics and syntactics**.** You can generate an "infinite" number of grammatically correct sentences, only some of which will make sense. John Searle's experiment has become central to the debate over the possibility of creating strong (general) AI (Strong/General AI) as opposed to weak (narrow) AI (Week/Narrow AI). The term weak (narrow) AI, Weak AI refers to a limited range of AI problems. It typically applies to a single task that it performs better (faster) than a human. Examples of applications include voice assistants like Cortana or Siri, language translation programs like Google Translator. Autonomous cars (e.g. Tesla) should also be included here. Weak AI benefits greatly from solutions used by fields such as automation and cybernetics. The term strong (general) artificial intelligence, Strong AI would refer to systems that have

comprehensive general knowledge and cognitive abilities. They should be characterized by the ability to think creatively (abstractly) to a similar extent as an intelligent person. A machine with a strong artificial intelligence would be capable of understanding the world and itself, it would have the ability to develop as a person to a degree far more perfect than a human. John Searle was always very skeptical of the success of the Strong AI concept, as expressed in his thoughts on the design of the artificial mind. He posited that "equipping some artifact we have built with a computer program is not sufficient for it to have mental states comparable to humans Such an artifact should, of course, have a causal capacity comparable to that of the human brain. Brain activity limited only to the execution of a computer program does not exhibit brain functioning that leads to a mind" (Searle, 1995, p. 36).

Conclusion

If we could contrast human intelligence with artificial intelligence, Weak AI would be in the first group of our classification, Strong AI would be equivalent to the second group of human intelligence. Thus, it can be hypothesized that only Strong AI will have cognitive functions such as abstract thinking and creative problem solving. Thus, it will be equivalent to human intelligence, and with access to a huge range of data and with computing power that is difficult to predict (account should be taken of the rapid development of computer science, for example quantum computers), it can be assumed that in the foreseeable future it will surpass human intelligence. Artificial intelligence researcher Marvin Lee Minsky of the Massachusetts Institute of Technology formulates this thesis with little optimism, writing that future generations of computers will be so intelligent that "we'll be happy if machines want to keep us in our homes as pets" (Searle, 1995, p. 27).

Discussions on Strong AI attract a whole range of specialists from different fields, both humanities and sciences. From an interdisciplinary perspective, there are technical, legal and ethical arguments. A new phenomenon is emerging, one that is difficult to define and thus eludes unambiguous evaluation, especially since there are many questions and concerns related to the axiological point of view. So with the freedom and autonomy of man, protection of his subjectivity especially in a situation where artificial intelligence systems will be based on the use of neural networks and deep learning processes, that is, artificial intelligent entities.

Artificial intelligence is a technological and mental revolution. The very definition of AI is a linguistic revolution, for there is no general consensus among scientists as to its precise definition, especially since it is being courted by the sciences as well as the humanities. From the linguistic differences come substantive differences. For Scientists, AI is a challenge and contains the hope for progress and development, for further and further subordination of the world of matter to the authority of reason. For humanists, it represents a threat to

technocracy, all the more dangerous the more it becomes an illusory promise of guaranteeing human freedom in many aspects of life, in fact rendering people insensitive and vulnerable to technical domination and scientific development in the world. However, on the other hand: "someone who considers technical progress as the real source of mental and moral barbarization is condemned to barren catastrophic historiosophies that leave nothing to do but impotently wait for the fatally inevitable triumphs of barbarism in all areas of life" (Kołakowski, 2000, p. 258). Thus, on the one hand, the fascination with development, technology, material and physical reality, on the other hand, the humanistic perspective, the interest in spiritual reality and the implementation of values, and therefore sustainable development, are the strength of human reality and the antidote to the barbarization of humanity. This is exemplified by the view that the development of technology requires a humanistic rooting. It is from thinking that the technical arises, it is from thinking that the practically useful arises.... This assumption can have far-reaching consequences, for it can safeguard human existence from the existential emptiness that a utilitarian attitude to science funds. However, the publication also points out that AI can be an end in itself, can be autotelic in nature, that its status need not be limited to the assumption that it is merely a tool for designing a more predictable world of human needs. Since intelligence, by definition, is the ability to find oneself and behave effectively in completely new conditions, machines are already capable of mimicking the processes that determine human intelligence. The ability to repeat a certain behavior is not reduced to decision-making, but is linked more broadly to the ability to acquire data and gain knowledge in general, which in turn requires interaction with the environment. Thus, for intelligence and for an intelligent system, the essence is to act in an uncertain and unpredictable environment and solve tasks. In turn, this distinguishes intelligence from knowledge. As of today, it seems that the definitions of intelligence and artificial intelligence, even if they are not identical, are not contradictory. These are open questions to which there is no answer, the answer is contained in each subsequent question. Perhaps AI is as intelligent as humans are intelligent.... Now this answer seems sufficient, but in the future will this answer be so certain and unequivocal…

So the questions of whether AI can really be intelligent, or whether AI is a computer program written by an intelligent human, and where the limits of AI's intelligence run, and whether that limit will be the self-awareness of the machine or the device, may not matter much in terms of consequences, for: "it can be said that in the entire universe, man cannot find a well so deep that when he bends over it, he does not discover his own face at the bottom" (Kołakowski, 2000, p. 78).

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

PHILOSOPHICAL PSYCHOTHERAPY IN VUCA WORLD AND BANI REALITY: REFLECTIONS ON HEALTH COACHING

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Purpose: The purpose of this article is to demonstrate that coaching is a helpful form of working with another person to discover possible strategies for solving life dilemmas, in particular those related to caring for one's own health and quality of life. When conducting my analyzes, I refer mainly the theses of the monograph Coaching zdrowia… by Zubrzycka-Nowak and Rybczyńska. The monographis unfortunately the only publication in Poland that in a simple way describes/explains the style and technique of combining the coaching method with care for health; I also refer books by Białek and Ostasz.
Design/methodology/approach: The paper uses the method of comparative-descriptive analysis. The method used allows for a thorough analysis of the issue.
Findings: The analysis of the issue confirms the thesis on the significant influence of practical philosophy, on the quality of life of modern man and the validity of humanistic knowledge in solving social, cultural and economic problems of our times.
Research limitations/implications: This article addresses the issue of the COVID-19 coronavirus pandemic at a time when the effects of the virus on the human body are not yet sufficiently understood by medical professionals.
Practical implications: The text is an analysis of the socially important issue of health.
Social implications: The subject matter of the article covers issues important to the quality of life of modern man and society.
Originality/value: The article explores current ways of understanding and interpreting the world around us with a view to taking care of our own health.

Keywords: philosophical psychotherapy, VUCA and BANI world, health coaching, Cascio, Johansen.

Category of the paper: research article, viewpoint.

I wish to take care of my good condition,
to have the strength and energy to live
– Monica[1]

[1] The issue of caring for health and effectively taking care of the quality of life is one of the most common topics addressed during coaching sessions (Zubrzycka-Nowak, Rybczynska, 2013, p. 116).

1. Introduction

Putting classical philosophical thought into a form of philosophical psychotherapy, in this paper I describe the conditions of living in the uncertain world of VUCA and the unstable, pandemic reality of BANI. I also include contemporary methods for dealing effectively with the unpredictable situations of everyday life as dictated by the current context of the times. Using the method of descriptive-comparative analysis, I explain both acronyms, VUCA and BANI, in their classical meaning, attempting to include reflections on health care and health coaching in the considerations undertaken.

Coaching as a supportive form of working with another person, allows „to discover individual strategies for carrying out specific tasks and to skillfully apply them in areas, in which previously a person did not cope well, and in which they want to act effectively (or more effectively)" (Zubrzycka-Nowak, Rybczyńska, 2013, p. 119; Rosinski, 2011, pp. 29-38). The method of coaching involves a strict focus on the person and his/her goal/dilemma. Therefore, the aim of coaching is to help the other person. It is based on comprehensive humanistic knowledge: psychological, social and philosophical. In the article I assume that coaching is a specific form of work based on dialog, close to psychotherapy, especially philosophical psychotherapy (Zubrzycka-Nowak, Rybczyńska, Monostori, 2018)[2]. I demonstrate that philosophical psychotherapy, drawing on the richness of classical philosophy, can become an important aspect of a coaching process focused on health dilemmas.

2. The tasks of philosophical psychotherapy

The role of philosophical psychotherapy is, as Lech Ostasz writes, direct influence on the mind and thus on the remaining parts of our personality, mainly on the character and its shaping. The essence and desirable task of philosophical psychotherapy is – according to the postulates of ancient Greek philosophy – shaping character by strengthening man's ability to think independently and make wise, self-governing decisions. The goal of philosophy as therapy is to achieve a state of euthymia and ataraxia. Democritus' euthymia as an expression of joy and peace of mind, together with ataraxia as achieving the state of satisfaction, control over oneself and efficient independence from unfavourable circumstances, as well as lack of confusion, anxiety, attitude of immobility, harmony and balance professed by sceptics, are nowadays

[2] Coaching, as opposed to classical psychotherapy, is used to help people who are healthy, that is, not mentally disturbed. The clients of coaching are people who want to cope better in everyday situations; coaching also serves those who strive for a chosen goal or want to make changes in their lives.

an important component of philosophical psychotherapy based on interpersonal contact (Ostasz, 2011, pp. 17-50; Irvine, 2019; Ilski, 2017, 2020; Wolska, 2017).

The described postulates of ancient philosophers, which, in addition to Democritus and the skeptics, are also found in the scheme of the Socratic dialogue, in the thought of Plato, Aristotle, and the Epicureans and Stoics. Today they are used in practical philosophy (Cf. Hadot, 2019, pp. 265-279; Stankiewicz, 2014; Fabjański, 2020, pp. 23-41, 103-125). One of the variants of practical philosophy is psychotherapy at the core of which is human-centered philosophical and humanistic thought. Because of this, practical philosophy is also applied today in different types of coaching, among others in health coaching and other therapeutic methods aimed at establishing well-being, improving mental health, developing social competence and relationships. Nowadays, the therapeutic and healing character of many classical philosophical concepts also effectively helps in coping with functioning in the world of VUCA and in the reality of BANI.

3. VUCA and BANI – acronyms of the modern world

The world of VUCA is a world of constant volatility, a constant sense of uncertainty, complexity, and ambiguity. The acronym emerged in the 1990s, i.e. in 1987 it was defined by the U.S. Army War College to describe the specificity of war reality requiring keen observation of the current situation and the ability to respond adequately to circumstances (Piątkowska, 2021, p. 15). The term VUCA has also been usefully adapted in the economic and business field. It is now used both in the way organizations and various areas of social life are managed and in the personal development space (Kucharczyk-Capiga, 2022; Ekes, 2022).

The volatility that distinguishes the VUCA world is one of the key features of the modern world. Both the nature and character of change are constantly reshaped. This means that the decision made today may turn out to be inadequate tomorrow, i.e. not adapted to the current circumstances. The described volatility is accompanied by uncertainty, i.e. lack of predictability of events. Uncertainty goes hand in hand with „everyday surprise and low awareness and understanding of existing problems and circumstances. We do not know what is going to happen, when it is going to happen, and most importantly, why it is going to happen" (Ekes, 2022).

Ignorance becomes a source of chaos and confusion. In turn, chaos and confusion give our reality a complex character. In this way, complexity is also a sign of the times and another hallmark of contemporary reality, in which an excess of striking information complicates its verification. In the atmosphere of informational chaos it is extremely difficult to grasp what is important. The last feature of the modern world is ambiguity resulting from the lack of clear meanings, conditions and different interpretations of causal relations (Ekes, 2022; Piątkowska, 2021, pp. 15-18; Krzemiński, 2021, pp. 14-15).

A sort of remedy for the VUCA reality was proposed by Bob Johansen a distinguished member of the Institute for the Future (Johansen, 2022; Musioł, 2018, pp. 371-382) by replacing the traditional acronym words with new words. These new words are vision, understanding, clarity, and agility – the sine qua non conditions for coping efficiently in VUCA world. Referring to the business sphere, Johansen recognizes that in turbulent times it is necessary to know the vision of one's organization, as awareness of the vision is a form of security for that organization and a guarantor of its survival. In turbulent times, a valuable attitude is the ability to understand, which extends traditional communication skills beyond the existing framework of dialog (including business dialog). New communication capabilities should support both decision-making processes, by providing clear and readable information, and should subsidize/sustain the ability to adapt quickly/nimbly to change (Ekes, 2022; Piątkowska, 2021, pp. 195-205; Krzemiński, 2021, pp. 16-17).

The way of thinking about the modern world and contemporary reality changed with the outbreak of the COVID-19 infectious disease pandemic caused by the SARS-CoV-2 coronavirus. At that time, many intellectuals, especially futurologists, recognized that the previously prevailing VUCA paradigm should be transformed, adapting it to the new conditions. Thus, a slightly different and changed pattern of thinking about the modern world was formulated, which was defined/named with the acronym BANI. The architect of the new idea of defining the world is a futurist, anthropologist, historian, and political scientist, a fellow at the Global Network and the Center for Responsible Nanotechnology, Jamais Cascio.

In 2020, Cascio described his way of framing reality and thinking about the modern (pandemic) world. He expressed his concept defining the conditions of life in a pandemic reality using the BANI model (Cascio, 2021). In his opinion, this model fits perfectly into our chaotic and unsettled current situation, helping us to understand the consequences of the pandemic, the speed of the changes experienced, and the strong need to „define ourselves and the world in a new reality" (Witkowska, 2022). This reality is specified by an acronym whose successive alphabet characters indicate the following characteristics of the contemporary world: brittle, anxious, non-linear, incomprehensible/imperceptible (Witkowska, 2022).

The world's brittleness means the impermanence of its order, the ease with which its order can be shattered and turn out to be a quasi-order/pseudo-order. Brittleness also means a certain inefficiency of the world, its tendency to break down or even to move towards self-destruction, preceded by the risk of the collapse of objective values. In a world that is interconnected by a system of links, local brittleness, limited to a particular place or group, creates a ripple effect throughout the world. The aftermath of constant fluctuations/variations can be catastrophic for the broader system. In the second instance, brittle foundations, instability and lack of resilience to all types of shocks threaten to collapse. Collapse in the sense described mainly refers to the security of an institution or, for example, a market when an adversary changes its logic overnight (See Sridharan, 2022).

Anxiety is another feature of the modern world. In today's anxious world, the constantly accompanying emotions are fear and anxiety. Fear refers to both the concern of losing or overlooking what is important, as well as the effort of making decisions, any of which may turn out to be the wrong decision or the wrong choice. As Mithun Sridharan, managing director of Blue Ocean Solutions, writes: „anxiety also reflects the anguish and stress of our current times, underscored by uncertainty about health and the risk of contracting Covid-19" (Sridharan, 2022).

The effects of becoming infected with Covid-19 and the long-term effects of the virus on the body are unknown. Also, the way the body functions, once the disease has passed, has not yet been fully recognized by medical professionals. This also reinforces the anxiety associated with the possibility of long-term health loss. Apart from fear, an emotion constantly present in human life is anxiety. Anxiety currently accompanies both our personal and professional lives. This emotion, combined with the fragility/unstable reality described earlier, has a significant impact on the personal lives of individuals and the professional/business sphere (Sridharan, 2022).

Another feature of our reality is its nonlinearity. This feature is characterized by the lack of clear causal relationships, also by the inability or difficulty to grasp them. As a consequence of the clear lack of cause-effect relationships, any results of our actions may be disproportionate to the causes. The dissonance of perception, proportion, and the aforementioned lack of dependence between cause and effect, becomes the reason for the loss of linearity as an arrest of continuity in the course of the process(es). This situation is directly related to pandemics: „It is impossible to predict how the emergence of a virus in one part of Asia might cause all the (unfortunately tragic) events we have seen around the world. The concept of flattening the COVID-19 case curve is inherently a war on nonlinearity" (Sridharan, 2022).

The last of Cascio's distinguishing features of the modern world is its unintelligibility. This characteristic implies a certain illegibility of data. The multiplicity and diversity of data causes overload and plunges the knower into incomprehensibility. This is fostered by the furtive/rapid pace of change. Even when, amidst the chaos of data and the accompanying incomprehension, we find an answer to our question, a moment later it turns out to be incomplete, outdated, or even wrong. Cascio opines that „we usually try to overcome this problem by increasing the amount of data available, but this can be counterproductive; the more we try to understand an incomprehensible situation, the more overwhelmed we feel" (Sridharan, 2022).

Cascio is looking for an effective countermeasure to the previously described characteristics/presences of BANI reality. Recognizing the problem, the futurist claims that if the contemporary times are characterized by brittleness, the way to overcome it may be through developed resilience and capacity. Conversely, if anxiety is a defining feature of our time, then empathy and mindfulness are the directive to reduce it. Nonlinearity requires us to learn context and develop adaptive skills; meanwhile, clarity and a high level of intuition should be effective remedies for the incomprehensibility of the present.

An effective method of developing resilience in the face of these two tendencies is – as I mentioned earlier – philosophical psychotherapy and coaching focused on the issue of broadly understood health care. Taking care of the psychophysical comfort and the spiritual aspect of functioning in the world, today constitutes an important element of the efforts to maintain the desired level/standards of life, or to raise its quality, along with the increase in the importance of social life.

4. Caring for body, emotions, thoughts and spirit in the face of multi-level health

Man is not only a social being – he is a multidimensional being realizing himself on the physical-material, intellectual (mental-mind), emotional, psychological and spiritual levels (Białek, 2012, pp. 118-127). Each of the levels highlighted impacts quality of life, including living life to the fullest, which requires „activating all levels of the self" (Białek, 2016, p. 32).

The physical level is the foundation. It is the level that is basic and accessible to every person because it is directly related to their physicality and the physical quality of their life. „Man is considered by academic science as a physical entity. His body is able to convey a lot of information for understanding himself and the world around, as well as his own history, which is the foundation of the quality of life" (Białek, 2013, p. 43). The stimulators deciding about health and life in the bodily-physical dimension include, among others: the environment, understood as the environment in which we function and which we surround ourselves with; taking care of sleep, especially its proper quality and length; taking care of regular/balanced breathing, because proper breathing triggers certain states both in the body and in the mind.

Inducing the desired states in the body, body and mind, nowadays is the basis of the activity of many organizations dealing with caring for physical and mental health, through professional stress and anxiety reduction. An example is the non-governmental organization *The International Art of Living Foundation* operating at the United Nations[3]. The physical level of the body is also coupled with proper nutrition related to the knowledge of the principles of diet that have a natural impact on human development and well-being, and the maintenance of physical activity through systematic attention to movement (Zubrzycka-Nowak, Rybczyńska, 2013, pp. 35-65; Białek, 2016, pp. 32, 45).

The emotional level deals with feelings and emotions, containing specific information about our reactions – human reactions to certain life situations. This level also includes the matrix of developed patterns of our behavior and the range of learned responses to stimuli that strike us.

[3] The Art of Living Foundation is dedicated to promoting healthy living, eliminating poverty and violence, and fostering educational values. The mission of the organization is to spread a holistic approach to health. For more information about this organization, please visit: www.artofliving.org/pl-pl/organizacja.

Not infrequently and directly, emotions are referred to as the language of our heart. Although emotions come from within us and depend largely on our mood, they are shaped by the culture in which we are born and raised; the society in which we function; our family; and our faith (Zubrzycka-Nowak, Rybczyńska, 2013, p. 67; Białek, 2016, pp. 139-142).

The emotional level outlined in this way is inalienably linked to emotional intelligence. „It happens that untamed emotions take over the control of a person's life so that he or she ceases to have any influence on what is said, what is done, and how he or she behaves" (Zubrzycka-Nowak, Rybczyńska, 2013, p. 68.). Therefore, taking care of one's own emotional sphere as a systematic development of the ability to react appropriately, distinguish and name feelings and emotions, preceded by the ability to observe „how I react and what I react to" (Zubrzycka-Nowak, Rybczyńska, 2013, p. 68), is the essence of understanding oneself in the chaos of feelings and emotions born under the influence of the environment. Consequently, the appropriate response, as well as the ability to distinguish and name one's own feelings, determines the quality of coping with the environment (Białek, 2016, p. 36; Białek, 2018, pp. 9-16).

The intellectual level relates to how one thinks about health. „How a person thinks about health is the basis of a self-fulfilling prophecy, which is why it is so important to create a safe – for the person – metaphor of health" (Zubrzycka-Nowak, Rybczyńska, 2013, p. 950). The essence of caring for one's own health on a mental/intellectual level is to become aware of what we have control over and to detect/find a mechanism to release any discomfort from the body and mind in order to return to and maintain good health (Zubrzycka-Nowak, Rybczyńska, 2013, p. 104). Awareness of the factors within our control and the language in which we express our well-being allow us to decide our fate with confidence. The way we think about health engages a sense of responsibility, the sources of which we see either outside or within ourselves. Placing responsibility externally when talking about one's health involves the construction of an expression that anchors the cause of one's own ill-being in an external object. Such a person, instead of taking responsibility for what they do with their health, wrongly „puts the power over their body in the hands of the accused" (Zubrzycka-Nowak, Rybczyńska, 2013, p. 97). Meanwhile, a reliable/effective remedy in caring for one's own health is to shift one's attention from others to oneself and one's own needs.

The spiritual level includes the element of full presence, well-being as awareness of one's own sensations, and open-mindedness. The spiritual realm also includes a concern for energy intensity and broad vision. The sense of being filled with energy correlates with a sense of strength, power, agency, and life. The vital energy corresponds to the rhythm of the body resonating with the breath and the heartbeat. On the other hand, the ability to see widely implies the ability to blend with one's surroundings. Using wide vision, a person expands the horizon of attention to identify with space, without losing the ability to name inner experiences, and with a greater awareness of the impact of environmental conditions and a sharpened sensitivity to perceive all phenomena individually. Elements of the spiritual level support and

foster a sense of balance optimizing the quality of human/individual functioning in the world. This balance can be equated with the state of centering as the moment of achieving wholeness, harmony and peace. Harmony and peace are associated with the development of trust in Life (Zubrzycka-Nowak, Rybczyńska, 2013, pp. 124-126; Białek, 2013, pp. 78-86, 98-106; Aron, 2021).

The problems of trust and faith in human life are included in the category of philosophy of life. Trust and faith are accompanied by intuition. Trust, faith and intuition take part in stabilizing the mental-psychic dimension of a person. Intuition supports the process of finding „the inner essence of oneself, one's identity" (Białek, 2016, p. 249). These emotions help a person in moments of self-doubt and self-capabilities; in moments of breakdown, disorientation, and loss of self-confidence.

However, as Lech Ostasz, an advocate of philosophical psychotherapy already cited in the article, writes: „intuition, trust and faith must give way to experience and reason, especially when there is a conflict between them" (Ostasz, 2011, p. 163). Good, neutral and therefore non-dogmatic, open and free from religious context, faith helps in situations where experience, logic and reason fail. Consequently, „trust-faith makes it possible not to fall to the bottom of psychic experiences when experience and reason fail the individual" (Ostasz, 2011, p. 164). Faith supported by trust means both faith in the meaning of small, seemingly insignificant things, as well as faith in great things, faith in people who are close and trustworthy, and faith in oneself (See Ostasz, 2011, p. 165).

5. Achieving goals related to health and a sense of well-being

For us to cope with the modern reality described by the acronyms above with dignity and efficiency, we should pay more attention to our health in its holistic dimension. Only efficient implementation of goals related to physical, mental-intellectual and spiritual health will allow us to adapt to troublesome/difficult situations of our everyday life. Nowadays, both philosophical psychotherapy and coaching method of work (health coaching) belong to the reliable method of achieving selected goals related to holistic health care (Białek, 2016; Whitmore, 2011).

Any implementation of goals, including those related to health, is closely related to the ability to formulate them precisely. This description should specify: where the person wants to go; the physical well-being that accompanies being in the desired place; the feelings experienced as a result of being in the desired place; and a summary of the state that the person will experience once the action plan has been implemented/the goal has been achieved.

The most important part of describing a desired state of well-being is to engage all levels in the description: physical, emotional, intellectual, and spiritual. It is a serious mistake to focus only on the head realm in describing one's well-being, and thus to consider only the level of thought, the intellectual-mental realm. Significant errors that accompany the goal of well-being are tying the desired goal to a problem or bad condition, focusing on a goal that is someone else's or independent of us, and concretizing the desired goal by negating it. Each of these errors is most often revealed at the intellectual level: in the zone of thought. Monika Zubrzycka-Nowak and Katarzyna Rybczyńska write: „When asked what they want, people very often answer that they don't want to be sick, they don't want to be in such a relationship, they don't want to be tired any more. Their statements perfectly locate the problem, but they say absolutely nothing about what they want in return or what they are aiming at" (Zubrzycka-Nowak, Rybczyńska, 2013, p. 111).

For this reason, the coaching goal, especially the one concerning health, should be positively formulated. It should be specified in such a way that it describes a specific need of the person who formulates the goal and is dependent on it. Effective care for one's own health involves responsible and dedicated cooperation with one's own organism on all described levels, that is, on the physical, emotional, intellectual and spiritual level (Zubrzycka-Nowak, Rybczyńska, 2013, p. 100).

6. Conclusion

Classical philosophy, transformed into philosophical psychotherapy, also confirms its validity today. Today, it is successfully used as a humanistic basis for coaching. In particular, for health coaching, which aims to focus on the physical, mental and spiritual well-being of the client. Meanwhile, as Philippe Rosinski writes in his book Coaching across cultures, „well-being is important, and human development is the main way to achieve good results" (Rosinski, 2011, p. 28).

Proper health care involves an awareness of the conditions in which we live. These conditions today are outlined by the acronyms VUCA and BANI. The range of these conditions affects the personal life of an individual as well as economic and business relations. Therefore, an attitude worth propagating today is undoubtedly coaching taking care of one's good condition, strength and energy for life as well as spiritual strengthening as shaping a strong character.

Coaching as pragmatic humanism involves taking care of oneself, one's own development and increasing the quality of life. Professional health coaching emphasizes the importance of well-being and fulfillment (White, 2014, p. 121). It is an attempt to pragmatically enact the ancient Aristotelian eudaimonia as the fullness of life. It shapes human sensitivity on „subtle

levels"; with the help of the coaching method of work, a person gains a „sense of mission", seeks positive solutions for themselves, the systems in which they live, and Life in its holistic view.

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SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

THE QUALITY AND SAFETY OF MEDICAL SERVICES AND THE PATIENS RIGHTS

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Purpose: the author main objective was to analyze the basis of law act and other publications on the subject, the merits, the stages the idea, as well as to present the results of study showing the condition of Polish health services and the patient rights to the safe and high-quality services.
Design/methodology/approach: the objectives are achieved by Polish law analysis, literature study presented in the paper have been taken from legal act from 2004-2022.
Findings: the paper and its summary discuss the main findings from the and the results of the law act and literature study conducted.
Research limitations/implications: the paper presents the latest data published in law act and the subject publications. It is addressed to the quality and safety researchers of health services.

Keywords: quality, health care, safety, patient rights.

Category of the paper: research paper.

1. Introduction

In accordance with the Constitution of the Republic of Poland, everyone, regardless of his or her financial situation, should have equal access to health care services which are financed from public funds. The conditions and scope of providing these benefits are determined by the Act on health care services financed from public funds. According to the Constitution of the Republic of Poland, the privileged groups in receiving health care are: children, pregnant women, the disabled and the elderly. Public authorities are also obliged to combat epidemic diseases and prevent the negative health effects of environmental degradation. The patient also has the right to quality medical services and safe health care (Act of August 27, 2004 on health care services financed from public funds, Journal of Laws of 2019, item 1373; Journal of Laws 2020, item 849).

2. The Quality of Healthcare Services

The concept of quality in healthcare is a complex and multidimensional term. A Quality Management System can be the solution to the dilemmas associated with the various requirements of stakeholders in healthcare quality. Attempts to ensure the quality of healthcare facilities go in three directions. The first is the implementation of management systems according to ISO standards in organizations providing medical services. The second is accreditation as a way to ensure quality in healthcare, and the third is total quality management TQM. When talking about quality in the field of medical services, it is important to consider the diversity in relation to the entities that work with health care. The differences appear when we talk about the external customer, which is also the patient, and not only the companies involved in the production of medical equipment, pharmaceuticals, etc. In healthcare units, the patient and the provider, doctor, nurse or technician have to control the quality of service. The first contact is very important and the patient should be given special attention because it is the patient who judges the quality of the service. All aspects of healthcare services give us a picture of quality and safety in an organization. Introducing a quality management system should be a priority for both management and health policy makers. Problems with the quality of services and products have been known for centuries. The first mention of responsibility for work was in the law of King Hammurabi of Babylon in 1700 BE. It mandates that if a building has defects that threaten the death of the owner, the builder will be killed, and if the owner's son dies, the builder's son will be killed. In ancient Greek times, Plato was the first to refer to the concept of quality, describing it as a degree of perfection. According to Aristotle, quality is a set of certain characteristics that distinguish an object from others. It is important to note that quality is a complex concept that changes over time and with increasing demands. It is used in different meaning contexts such as relation to quality of work, quality of life, quality of leisure time, etc., Defined differently by different scientific disciplines. According to David A. Garvin, definitions of quality can be divided into seven categories: general (transcendent), production-related, product-related, user-related, value-creation-related, multidimensional, strategic (Hamrol, Matura, 2004; Garvin, 1988). One of the most widely accepted classification of health care services as developed by the US National Academy of Medicine (Institute of Medicine, 2021). It definiens six pillars of high-quality care: safety, effectiveness, patient-centeredness, timeliness, efficiency. Despite this apparent consensus, in practice these domains are considered unevenly. Many quality assessment programs only focus on effectiveness and safety, a few include timeliness and patient-centeredness, and still fewer address the efficiency and equity of care. Institute of Medicine (2005) is selective implementation under-specifies the measured construct of “quality of care” and makes it difficult to draw inferences about the quality of care a hospital provides. Nowadays, quality is defined as conformity to requirements,

a predictable degree of uniformity and reliability at the lowest possible cost, and adaptation to market requirements.

The World Health Organization (WHO) has adopted six principles for building and measuring health care quality:

1. Accessibility measured by the extent of reasonable use of care, regardless of constraints that may be related to geography, money, time, age, language, transportation, building architecture, etc.
2. Equality of care for the entire population based on identified need, regardless of the class of professionals, their cultural, social, racial, or other personal characteristics.
3. Adequacy of types of health care services, package of services, procedures are aligned with the actual needs of the returning community, are needed, expected, required by the individual.
4. Acceptance of health care takes into account the cultural and religious values of the recipients, meets their expectations.
5. Available resources such as money, buildings, equipment, employees are best and rationally used. The basic principle is: the highest effect at the lowest cost.
6. Efficiency care fulfills its purpose in terms of benefits and effectiveness.

3. Patients' rights and the quality of medical services

The individual medical treatment of a patient can only be carried out by an appropriate medical professional. A person who has a state-approved qualification and an obligation to constantly improve his knowledge in his field. It is irrelevant whether the patient is admitted free of charge or whether the consultation, treatment, etc. is paid for in a completely private entity. Medical professions are regulated by the Civil Code. The doctor has a duty to inform the patient about his or her condition, further diagnosis and treatment options. The doctor cannot be unavailable to the patient, if, for example, the patient is after surgery in the hospital, he or she has the right to talk to the doctor who operated on him or her, not just to contact the doctor on duty. The hospital is obligated to tell you when the doctor will be available to answer your questions. The information the doctor is required to provide to the patient should include:

- proposed diagnostic measures (what examination, when, where), what it consists of, possible preparation for the examination,
- further treatment and its foreseeable effects,
- rehabilitation, if necessary,
- changes in lifestyle, if necessary for improvement and maintenance of health,
- results of abandonment of further treatment or rehabilitation.

The customer of medical services has the right to be informed about the patient's rights. In the case of an operation or the application of a method of treatment or diagnosis that poses a higher risk, the consent is given in writing. In any other situation, the patient may express his/her consent or objection orally or through such conduct that undoubtedly indicates his/her willingness to undergo the activities proposed by a medical professional or lack of such willingness.

However, there may be situations where a patient is admitted to a hospital or undergoes medical treatment against their will.

Such situations include:

1. A stay in a psychiatric hospital. If the behavior of a person with a mental illness (or suspected mental disorder) indicates that: 1. is directly endangering his or her own life or health due to an illness (e.g., has made or intends to make a suicide attempt or, for example, has stopped taking medication and his or her condition is deteriorating).
2. Endangers the life or health of others (e.g., acts of aggression or attempted acts of aggression against others have occurred or there is a real risk of carrying out threats of aggression against others).
3. May be admitted without consent to a psychiatric ward for treatment or observation. This may be done only after examination by a physician. This decision is approved by the head of the ward within 48 hours of admission. The head of the hospital shall notify the guardianship court having jurisdiction over the place of the hospital within 72 hours of admission and it is the court that finally gives its approval for the compulsory stay in the hospital. The patient must be heard at the hospital by the appropriate judge (within 48 hours of the court becoming aware of the patient's admission to the hospital without consent), and the hearing should take place no later than 14 days from the date of receipt of the notice of the patient's admission without consent:
    - compulsory detoxification treatment, to which a person addicted to alcohol may be admitted,
    - certain serious infectious diseases, such as tuberculosis (but only in the mycobacterial stage), cholera or typhoid fever, where the law allows for compulsory treatment and isolation in an appropriate facility.

The patient has the right to confidentiality by the doctor and not to be given information about his/her condition and course of treatment to unauthorized persons (Journal of Laws 2020, item 849).

The patient has the right to be provided with appropriate quality of medical services. The evaluation of the quality of health care services is carried out with the help of indicators and criteria for specific standards. Quality indicators in health care illustrate the extent to which a recommended standard has been achieved and implemented in a medical facility. The World Health Organization (WHO) defines health care quality as the degree to which a health care

service increases the likelihood of achieving expectations for treatment outcomes and demonstrate compliance with current and professional knowledge.

Health care quality is a complex and interdisciplinary process. It can refer to both improvements in health care delivery and factors relevant to patient safety. Quality can be shaped by:

- design quality,
- the quality of the process,
- quality of the outcome.

It is important to monitor and evaluate quality properly at each stage of services. A useful method is to use quality indicators.

Quality indicators used in health care can be divided into two types:

- universal (quality measures) - external indicators developed by organizations that deal with quality issues in health care and are suitable for use in any health care facility,
- individual - internal quality indicators developed by the medical facility (Journal of Laws 2020, item 849).

Indicators can be: positive indicators (the higher the indicator, the better the quality) or negative indicators (the higher the indicator, the worse the quality). The development of quality indicators requires the collection of data and its proper processing so that it provides useful information for those who monitor it (Nadziakiewicz, 2018).

Table 1.
Own elaboration based on; M. Nadziakiewicz, Marketing and Quality of Medical Services in the Times of New Technologies

	Characteristics of quality indicators
relevance	should measure and provide specific information necessary for management
specificity	should be able to assign a grade to them
sensitivity	should be achievable with reasonable effort
accessibility	should signal clear changes
reliability	values should be similar with similar measurement

4. Evaluation of the quality of medical services

Evaluating the quality of health care services is done by using indicators and criteria for specific standards. Quality indicators in healthcare illustrate the extent to which a recommended standard has been achieved and implemented in a medical facility. The World Health Organization (WHO) defines health care quality as the degree to which a health care service increases the likelihood of achieving expectations for treatment outcomes and demonstrate compliance with current and professional knowledge.

Health care quality is a complex and interdisciplinary process. It can refer to both improvements in health care delivery and factors relevant to patient safety. Quality can be shaped by:

- design quality,
- the quality of the process,
- quality of the outcome.

It is important to monitor and evaluate quality correctly at each stage of services. A useful method is to use quality indicators.

Quality indicators used in health care can be divided into two types:

- universal (quality measures) - external indicators developed by healthcare quality organizations and suitable for use in any healthcare facility,
- individual - internal quality indicators developed by the medical facility.

Indicators can be: positive indicators (the higher the indicator, the better the quality) or negative indicators (the higher the indicator, the worse the quality). The development of quality is a key element of today's customer value concept. The Quality Management System plays very important role in creating processes that determine the effective functioning of medical facilities. However, one of the most important issues of a medical facility's existence on the healthcare market is maintaining and winning new customers for medical services - patients. Therefore, it is very important to ensure quality at an appropriate level. It is important to take care of patients, generate positive feelings about contacts with a given medical unit, as this leads to customer loyalty and satisfaction with the medical services offered. indicators require the collection of data and its proper processing so that it provides useful information for those who monitor it (Nadziakiewicz, 2018). The safety of patient care is important. It was examined that the degree of protection of doctors against diseases while working with patients (Orzeł, Wolniak, 2021) helped to minimize the risk of being infected, came to the conclusion that due to the additive economy, namely the increase in production efficiency, it is possible to achieve a reduction in social risks, including in the medical field (Melnyk, Matsenko et al., 2022; Kuzior, Kashcha et al., 2022).

5. Quality improvement program

Outpatient healthcare organizations worldwide participate in quality improvement (QI) program. The importance of understanding the financial impact of the program is that in the program there are no established standard methods for empirically assessing QI program costs (Brown, Chin, Huang, 2007). One possible reason for this phenomenon is that outpatient healthcare organizations must expend considerable resources to implement QI program, but they may never financially benefit from them (Huang, Zhang, Brown, 2007). The outpatient

organizations would benefit from evaluations of no matter how much the program cost and run successfully. Such evaluations may also be valuable for policy makers designing and implementing financial incentives to encourage QI activities. There are several well-established methods for evaluating the societal value of healthcare program (Brown, Chin, Huang, 2007) The cost-effectiveness analysis represent the high standard in the medical literature, these analyses do not provide the information organizations need to make informed business decisions (Weinstein, Siegel, 2007). Apart from these methods, the National Institute for Health and Clinical Excellence in the UK provides cost accounting tools for use by local health authorities to inform decisions regarding the adoption of new healthcare technologies (Nice, 2019) Such tool is appropriate for regional policy decisions; however, but need further adaptation for evaluation of program from the perspective of health care organizations.

Table 2.
Application of standard health economic evaluation methods to evaluate quality improvement program

Method	**Purpuse**	**Data requirements**
Cost–effectiveness analysis	Comparison of costs and health effects of a quality improvement program versus usual care	•Utilization data from other healthcare providers • Long-term health benefits to patients
Cost–minimization analysis	Comparison of the costs of two programs with identical health benefits	• Same as cost–effectiveness analysis
Cost–benefit	Comparison of program costs and benefits, all expressed in dollars	• Health benefits of program • Costs of program
Time and motion studies	Real time measurement of changes in resource utilization as a result of a quality improvement program	Measurement of minute-to-minute activities of personnel affected by quality improvement changes

Source: Brown, Chin, Huang, 2007.

6. Monitoring health indicators

Monitoring health indicators is a very important factor in maintaining quality health care services.

There are many different organizations responsible for universal indicators:

1. ECHIM - European Community Health Indicators Monitoring.
2. WHO - World Health Organization - European Division.
3. ECDC - European Centre for Disease Prevention and Control.
4. PATH - Performance Assessment Tools for Quality Improvement in Hospitals.

The organization - PATH - has developed dimensions for assessing the quality of health services, guided mainly by the issue of ensuring safety of care and orientation to the customer of health services - the patient (https://www.path.org).

Quality assessment dimensions and indicators based on PATH methodology can be used to ensure the quality of health services.

Considering the issues of quality monitoring using indicators according to the classical Donabedian theory (Czerw, Religioni, Olejniczak, 2012), quality should be perceived and measured in three dimensions:

1. First- indicators of the quality of the structure in practice means the quality of staff training (specialization).
2. Second, access to a certain type of medical equipment.
3. Third, the number of staff per patient, the number of medical procedures performed annually by a physician, etc.

Structural quality indicators illustrate the structural elements of medical facilities that are considered necessary to achieve high quality care outcomes. They indicate the potential of the facility, but not necessarily the effectiveness of its use.

Process quality indicators are created on the basis of standards, guidelines of good practice in dealing with events, phenomena, activities separated from the elements that make up the diagnostic or therapeutic process. These are elements separated within the activities carried out in medical processes and have the greatest impact on the outcome of health care. The essence of process quality indicators is to identify the elements and desired actions to be taken for patients with specific health problems. (National Institute for Health and Clinical Excellence Costing tools, 2019).

Outcome quality indicators relate directly to treatment effects and are used to measure the success or failure of the therapeutic methods used. Measuring outcome measures only indicates the level of quality of the services provided. When constructing outcome quality indicators, it is necessary to establish a so-called endpoint. Positive endpoint examples could be 5-year survival in cancer therapy or negative death due to hospital-acquired infection.

Evaluation of the quality of medical services is provided according to quality indicators and criteria. The most important element is continuous monitoring and evaluation at each stage of services.

7. Conclusion

Health care quality is a complex and interdisciplinary process. It can refer to improvements in health care delivery as well as factors relevant to patient safety. Quality is a key component of today's concept of customer value. Quality Management System plays a very important role

in creating processes that determine the effective functioning of health care units. However, one of the most important issues of existence of a medical institution on the health care market is to provide safe and good quality service for customers of medical services - patients, with respect for their rights. According to the Constitution of the Republic of Poland, every citizen, regardless of his or her financial situation, is entitled to equal access to health services, which are financed from public funds. The conditions and scope of providing these benefits are determined by the Act on health care services financed from public funds. Patient-centered care was defined as 'health care that establishes a partnership among practitioners, patients and their families (when appropriate) to ensure that decisions respect patients' wants, needs and the preferences and that patients have the education and support they need to make decisions and participate in their own care' (Institute of Medicine, 2021). Such approach was increasingly being acknowledged as an integral part of evaluating health care; in fact, improving patient centeredness was one of aims of Health Care Quality Initiative according to which health care should be safe, effective, patient-centered, timely, efficient and equitable. Numerous contributions to the scientific and the literature have stressed the need to improve patient-centered care and it should be developed in future.

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SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

SOCIAL ASPECTS OF SMART CITY – SOME SOCIOLOGICAL REMARKS ON THE ISSUE

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Purpose: The aim of the paper is to discuss some social issues of smart city from the perspective of sociology and to show why the viewpoint of residents is so important.
Design/methodology/approach: The importance of understanding of social life of the city when planning some changes in it was discussed within the scope of sociology. In the introduction several sociological basic concepts including the viewpoint of the residents in the research on their cities were presented. In the subsequent part of the article some changes in given metropolises have been described and discussed as an example of how controversial or destructive can be the consequences of such changes when a social fabric of the city hadn't been studied thoroughly among others in the scope of sociology.
Findings: As a result of discussion in the summary author accentuates the role of the research methods in the practice of planning changes and solutions introduced in a city. Each of the presented methods gives an opportunity to show how the residents perceive their city and changes taking place there. Thanks to these methods the diversity of social fabric of town/city can be understood/analyzed and in the case of action research method the participation of inhabitants in changes implemented in their city can be induced, observed and their views on these changes can be researched.
Originality/value: The paper presents some arguments and facts concerning the complexity of social fabric of cities and changes planned and implemented in such an environment of everyday life of people. It is addressed to sociologists, social workers and some other specialists in the scope of social sciences and practical professions dealing with the issues of cities and social processes taking place in them.

Keywords: urban sociology, residential environment, humanistic coefficient, research methods in sociology.

Category of the paper: in between viewpoint and conceptual paper.

1. Introduction

As a sociologist, I am looking for social and human content in the smart city idea. Therefore, when considering an intelligent city, I would focus my attention on people (inhabitants) and their needs that they want to satisfy in their everyday life environment, which is the city they live in.

The sociological view on this issue seems important to me (among other views as well), because smart city solutions are addressed directly to residents who differ in socio-demographic and psychological terms, and who are also differently distributed in the city space with all its consequences of a cultural, social, civilization nature, etc. Therefore rightly various social issues, including the quality of living, adaptation to human needs, ethnic diversity and social cohesion are cited as important (Jonek-Kowalska, Wolniak, 2019; Kaźmierczak, 2019; Kuzior, Sobotka, 2019; Osika, 2018; Pichlak, 2018; Rożałowska, 2016). The starting point and the center of these considerations I would therefore reduce to the following questions: What city do its inhabitants need and what needs should this city satisfy as the environment of their everyday life? Sociological research can answer these questions and develop a complex picture of the urban environment that influences the diversity of these needs.

2. The city (perceived) from the perspective of its inhabitants - introductory remarks on the sociological view of the problem

Looking at the social sense of the smart city idea, I will recall the theoretical category which in sociology is related to many analyzed phenomena - it is about social creation of reality (Berger, Luckmann, 2018). This term is sometimes used by sociologists when they want to emphasize that the analyzed phenomenon (it may be an object, tool, practice, procedure or other artifact), since it is an element of people's everyday life environment, is certainly reflected in their consciousness, and the image of this phenomenon and the methods of action associated with it (practices) are socially constructed, i.e. created and then preserved mainly in the process of socialization (upbringing). Learning given phenomenon from the perspective of the people also involves capturing it in sociological research with the so-called "humanistic coefficient", and therefore reflecting the feelings, cognitive constructs, emotions, sensations, experiences or memories of these people related to this phenomenon. A look at social phenomena with this coefficient, although it may also apply to phenomena not only social, was proposed by the outstanding Polish sociologist Florian Znaniecki (Znaniecki, 1922, 1988; cf. Szacki, 2002).

When the city is a phenomenon that affects the quality of people's life, as it constitutes their everyday life environment, it should also be analyzed through the prism of social creation by human communities and with the humanistic coefficient. The development of sociology, including an urban sociology, has revealed various accurate applications of these two theoretical categories. The aforementioned classic of Polish sociology, Florian Znaniecki, applied the "humanistic coefficient" to the sociological description of Poznań in his book "The city in the minds of its citizens" (Znaniecki, 1931). When it comes to the social construction of the city, one should note the well-known publication of another prominent city sociologist, Bohdan Jałowiecki, entitled "Social production of space" (Jałowiecki, 1988), and when it comes to presenting the city with a humanistic coefficient, once again and its social reality, the book entitled "A socialist city and the social world of its inhabitants" by Marek Szczepański, an outstanding representative of this sociological subdiscipline, turned out to be a very accurate and vivid description (Szczepański, 1981). The further development of urban sociology in Poland resulted in the continuation of analyses in a similar vein within the framework of various sociological schools.

Therefore, if a smart city was to be created, and it is known that it is the environment of people's everyday life, it seems logical that it is worthwhile to establish in research what do the city's inhabitants need in it and how do they imagine the city which makes their lives easier due to the use of technical and social solutions. The accurate "matching" of the idea or concept of a smart city to the collective of its residents therefore requires learning the perspective of these residents - and thus learning about their needs, feelings, and experiences related to the current use of space in the city. In this way, knowledge could be gained about what, in their opinion, constitutes an inconvenience, what is missing in the city (Piróg, Kotarski, 2018), what should be provided in the city. If changes in urban space are planned, it is also worth finding out what places and what characteristics of different places are important for the inhabitants. The implementation of the smart city concept may involve certain changes, and it is important that these changes are such and only such that they do not destroy the social and spatial fabric in which the people living there feel at home. That is why participation of the residents in these changes is so significant and, what is more, this is essential for the idea of smart city 3.0 (Cohen, 2015).

From a sociological perspective, smart city is a citizen-friendly city that provides amenities and these amenities are influenced by the citizens themselves, as such solutions are demanded and verified by them, and after a critical but positive verification, accepted or modified when they do not fully satisfy the important needs. Shaping cities in that manner, with the above mentioned participation of their citizens, makes them real smart cities (Hollands, 2008).

When planning to introduce technological and social smart city solutions in a city, decision makers should ask themselves for which inhabitants they want to implement those changes and how they will affect the quality of life of different groups within that population of inhabitants.

It may be helpful to refer, among other things, to the sociological picture of the social world of the city's inhabitants.

3. Solutions applied in cities vs. diversity of residents to which they are addressed

When thinking about the facilities that should be available to the inhabitants of contemporary cities, it is worth taking into account various processes occurring in them. Therefore, it is worth paying attention to at least several issues and phenomena.

First of all, cities are diverse in terms of social characteristics of their residents, civilization, culture, ethnicity, aesthetics, ecology, and so on. These differences may have their spatial correlates, i.e. they may be closely related to the location of certain social groups or categories in space of a city. Thus, there may be certain neighbourhoods, building quarters, or other distinguishable spatial units in a city that are inhabited by people with certain social, demographic characteristics (e.g. age, nationality, etc.). The lifestyles or cultural capital of these different groups or social categories entail different habits and abilities to use these or other amenities, including technical ones. They have different needs, and by virtue of their very different cultures and lifestyles, they envisage different devices - social institutions and technological solutions - for satisfying those needs. Someone may prefer to exchange views in an Internet chat room, while someone else prefers to talk to a neighbour on a bench in front of a block or apartment building. A bench has two meanings here - it is a technical device used for sitting, and at the same time a device or otherwise a social institution performing several important functions related to maintaining social ties, exchanging information or seeking support in the hardships of life, confirming the rules of neighbourhood coexistence (Niezabitowski, 2010, 2018). Taking into account these differences in the cultural capital and civilization equipment of the inhabitants of different areas of the city, it is difficult to imagine that for each of the inhabitants, the technical solutions introduced, implicitly facilitating life, will in fact be unconditionally facilitating. They may also constitute a barrier for using some services if we are not able to operate certain devices. These barriers do not have to do only with the place of residence, but also with age, education, but also, in order to avoid stereotyping, with individual characteristics of particular people, regardless of age or other socio-demographic features. It is therefore as much a social issue as a psychological one.

Moreover, it should be emphasized that despite those differences, which I only superficially mentioned above, a city should be adjusted to the needs of all its present and future inhabitants. It is a very complex problem, considering that contemporary cities are subject to many dynamic changes and this dynamics are expected to continue in the coming decades - I mean, for example, demographic ageing of the population of city dwellers or a huge increase in the

number of inhabitants and transformations towards the so-called "megacity" (multi-million metropolises). Some ideas born on the grounds of scientific discourse, as well as present in the documents of social policy for some time have inspired postulates for the creation of habitats friendly to different groups of residents. Examples of such ideas include: Universal Design, Built for All, as for taking into account the needs of the elderly among other age and social groups, it is worth highlighting the importance of such a document as the International Plan of Action on Ageing - Madrid 2002, which lists amongst the important priorities of social policy ensuring quality of life among others flat and living environment (Szatur-Jaworska, 2012). An important development of these ideas was, in turn, the guiding principle of the year 2012, which in the European Union was declared European Year of Active Ageing and Solidarity between Generations. This idea boiled down to the slogan – a society for all ages.

This idea was developed in Poland by establishing institutions of the so-called "aging policy" defined in the "Act on Senior Citizens". One of such institutions are, according to special statutory regulations, senior citizens' councils, which can be established in municipalities. As these councils, in accordance with Article 5c.1.(3) of the Act on Municipal Self-Government, are entitled to play the role of: 1) consultative, 2) advisory and 3) initiative, they can signal to local government bodies the needs and problems of the elderly, including the need for facilities in the city space. As far as the Council of Seniors of the City of Katowice is concerned, in the previous term it made the following demands[1]:

- elimination of architectural barriers - e.g. narrow and steep stairs in cultural institutions,
- quality of public space - demand for "squats" (benches) for seniors in the city, so that they have something to lean on when they are tired,
- transportation - increasing the font on schedules,
- removal of too high curbs,
- need for escalators at the train station,
- extending bus routes so that every senior can get directly to where they live,
- providing special platforms and curbs high enough to make it easy for seniors to board trams without having to overcome too much height difference.

The problem so far has been the weak position of senior citizens' councils, which cannot hold the city council to account for their actions on behalf of seniors, and which cannot independently apply for grants to finance various activities or infrastructure.

[1] Information collected during an interview in September 2019 with a member of the Senior Citizens' Council of the City of Katowice in connection with the implementation of the sub-topic "The aging of society and the needs and problems of older people in the concepts and strategies of senior policy" (task coordinator - Marek Niezabitowski, PhD, Professor of Silesian University of Technology) as part of the directional research of the Department of Applied Social Sciences of the Silesian University of Technology under the direction of Aleksandra Kuzior, PhD, Professor of Silesian University of Technology (work symbol - BK-232/ROZ-2/2018). I also presented this information in: Niezabitowski, M.: Prawa osób starszych – kilka uwag z perspektywy gerontologii i polityki społecznej. [W:] Kuzior A. (red.), Globalne konteksty poszanowania praw i wolności człowieka: współczesne problemy i dylematy. Wydawnictwo Politechniki Śląskiej, Gliwice 2020.

Senior citizens are one of the age groups living in cities. It is therefore important that they are not separated (isolated) from other residents and that the needs of these other groups are also met.

Meanwhile it happens that the phenomena occurring in the city space and its social tissue, as well as the solutions applied in it, contribute to the creation of isolated areas (ghettos) or to the deepening of social inequalities. Moreover, some of such solutions may be beneficial for some social groups, while others are negatively affected by them. When we consider, for example, demolitions of old districts, which are taking place in gigantic metropolises with millions of inhabitants (e.g. Shanghai) and transferring the people living there to newly-built blocks of apartments, this solution is positively perceived by young people (increase in the standard of everyday life), but it is difficult to find themselves in a new place of residence for old people, who are attached to the previous milieu, where they knew every neighbour and every place, knew where the necessary services were located, and the aesthetics of the district was close to their hearts (they felt familiar and safe there).

The solution is beneficial from the civilization point of view, as it offers better space, equipment and sanitary conditions, but psychologically it is too difficult for seniors. The essence of the problem is attachment to a given unique place of residence, whose elusive genius loci is difficult to recreate elsewhere. So is it a better solution to leave old people in their current place of residence? In principle, in the light of gerontological knowledge, yes, but preferably with access to a support network from younger people and with technological amenities, provided they are able to use them. Possible relocations (transfers) are recommended within a place of residence recognized by seniors (e.g., neighborhood, district, street, quarter) or with people to whom they have become attached (Frąckiewicz, 1972; Niezabitowski, 2018).

The above example shows that the latest in building technology combined with housing policy can solve problems for some groups and create problems for others. Continuing the reflection on social contrasts, it is worth adding that both technology and architecture in cities can unite and divide people.

A spectacular example of a failed urban project that was supposed to reduce inequality and social distances but contributed to their growth is the changes to the urban fabric carried out in Rio de Janeiro in connection with the 2016 Olympic Games. The idea behind the changes seemed fundamentally correct and positive, since the idea was to give favela children access to education and health services, to increase the sense of security and communication between favelas and middle class neighbourhoods. Indeed, cable cars were introduced there, allowing the inhabitants of Rio de Janeiro's favelas to move quickly within the vast expanse of the city. In the past, transport difficulties resulting from the distance and density of buildings cut the inhabitants of these favelas off from other districts of the metropolis. Additionally, new important institutions of social life were created at the train stops: a police station (associated with security), a community center, and a health center. It seemed that this was a particularly beneficial effect, since the provision of technical facilities to meet the daily needs

of residents was to be accompanied by the enclosure of this permanent change of environment with further social facilities (institutions).

These transformations, however, turned out to be beneficial for tourists coming to the Olympics and residents with good incomes, while many residents of poor districts did not benefit from it, since despite much shorter journeys to "better" neat districts, arriving there, they were not welcomed and could not get well-paid jobs they needed. Only watching this better world and seeing how they differed from it, they felt even worse - more excluded, marginalized, pushed away from a good, decent life. Overall, the transportation infrastructure upgraded for the Olympics served the tourists, but the residents of poor neighbourhoods suffered a lot of damage as a result of the spatial and architectural transformations implemented at that time. Many families were displaced from their homes in order to build facilities in the area to serve the people coming to the great sporting event. By appropriating space for these sporting and tourist functions, local businesses and services that cater to the needs of local residents were often deprived of their premises and clientele. Unnecessarily degraded areas of the city began to attract drug addicts, thieves and other manifestations of pathology and crime, which only deepened the processes of degradation of some local communities within the metropolitan area of Rio de Janeiro. The project of transforming this metropolis, although with good intentions, turned out to be only a short-term image success for the sake of tourists and the organization of the Olympics. From the point of view of the quality of everyday life of the inhabitants of poor districts, it turned out to be rather a failure - in their understanding, it only increased social divisions, lowered the feeling of security due to fights between gangs and the police, and attracted pathology to places which previously fulfilled important social functions. In the memory of many families this will remain the trauma of displacement and beatings by the police. As a result of the social, spatial, and infrastructural transformations realized, which were supposed to lead to the elimination of social divisions, the feelings related to the effects of these actions and changes divided public opinion even more, worsened the contact between the inhabitants of favelas and those of middle class neighbourhoods - in general, the poor found themselves in even worse situation, and the goodness of the Games benefited mainly well-off people and tourists - social distances deepened, and this state of affairs may remain for years (Szubert-Kotomska).

The most extreme form of dividing/isolating people in the urban space is ghettoization (Jałowiecki, Łukowski, 2007), in which separate areas of cities are inhabited by people of a certain age, ethnicity, income, etc., and this means cutting them off from the rest of the population, removing to the margins. These may be groups excluded from participation in certain spheres of life due to lack of access to certain amenities. The reasons for this lack of access may be a poor material situation (inability to purchase or cover the costs of some devices or technical solutions, including heating – "energy poverty"), disabilities or psychological and/or cognitive barriers to using technology. It may happen, therefore, that where devices serve young people, they turn out to be too difficult to use, for example, for older people. This is of

course a simplistic view of the issue, since the differences in competences related to ICT usage are not only related to age, but rather to individual differences. Practitioners working with seniors, however, often point out that devices designed for use by seniors are not easy to understand and are difficult to use. Therefore, IT solutions installed in urban spaces, which usually serve young or middle-aged people well, may discourage seniors from using certain places (e.g. parking lots, prepaid toilets).

The double face of technology is also revealed as a consequence of another process that concerns an increasing number of contemporary metropolises - I mean the transformation towards "megacity" (metropolises with more than 10 million inhabitants). Technological progress in this case offers solutions to various problems (e.g. rapid construction of housing for the incoming masses of emigrants, construction of tunnels, sewage systems for the growing metropolises, online applications that make it possible to find friends for the weekend when you are alone in an unknown city, etc.), but at the other extreme there is the effect of overwhelming the human being with technology and its specific aesthetics, mechanized, devoid of human characteristics, human scale, and especially warmth. This effect is noticeable e.g. in Tokyo, where, similarly as in other Japanese metropolises, the unpleasant phenomenon of social isolation of young people caused by civilization stress has been noted. This phenomenon was named Hikikomori. According to the concept of spatial order of Marek Szczepański, the urban landscape of Tokyo is an example of disruption of social and aesthetic order of a city (Jałowiecki, Szczepański, 2006) under the influence of technological solutions and economic and demographic processes. In addition, some technologies, such as the 5 G's, raise very strong health concerns, even though these concerns may be irrational. Creating change in the urban landscape therefore requires finding compromise and calming negative attitudes towards the latest developments when these attitudes are based on false premises.

4. Research methods in social sciences and planning smart city solutions

If creating a smart city were to mean shaping urban space and putting amenities to use for residents according to their needs, the humanities and social sciences, including sociology, can offer a look at the city as an environment for people's everyday lives. Learning about the feelings associated with this environment may involve at least several research methods or techniques:

- Survey – depending on the design and content of the questions in the questionnaire, it allows to determine how elements of the living environment in the city, including infrastructure and other solutions, as well as their lack, are perceived by the residents-respondents in the context of their quality of life.

- In-depth or/and narrative interviews – they provide the opportunity to get to know the deeper background of feelings, experiences, memories related to the place/places which are subjectively important for the inhabitants - here, as opposed to the questionnaire, the psychological, social, cultural and economic context of the perception of the city space and the changes occurring in it can be explored in a subtler and deeper way, the conditions of these attitudes and evaluations can be discovered; it is also possible to grasp the evolution of the attitudes of the resident-respondent against the background of the events in the history of the city or the country which influence the course of his/her life, etc.
- Case studies, also comparative – applied in relation to specific coherent fragments of city space, e.g. districts, housing quarters, cities within a wider metropolitan system; it is then possible to capture the social, cultural, and economic diversities of such smaller social organisms within the city - as they determine the fact that the proposed changes or modernizations in some parts of the city will improve the inhabitants' quality of life, while in other parts they may not even reach the inhabitants, or worse, only deepen the existing inequalities; knowledge about such diversities may make it easier to avoid or level out the negative effects of the introduced changes.
- Action research or in other words participatory research – study in which the residents are asked what changes they expect, and at the same time they are involved in the process of implementing those changes accepted by them; the whole process is subject to research, and after the implementation of the changes proposed by the residents the process is followed by evaluation, i.e. obtaining feedback, i.e. information about the feelings, impact on the quality of life and assessment of whether the residents' expectations have been met. An additional element of the evaluation may be a reflection on whether the initiative was worthy of implementation and perhaps repetition in another city or local community.
- SWOT analyses - those owing to different objectives or social groups at which the proposed/considered actions and changes are addressed - are worth preparing in order to assess their sense as investments in economic, social, cultural, etc. aspects. - for example, an analysis of opportunities, threats, weaknesses and strengths (assets) of housing estate can be carried out in relation to the needs of, for example, older or middle-aged residents or youth and children representing different age cohorts.

Irrespective of the possibility of using various research methods and techniques in creating a sociological picture of the city and the changes occurring or initiated in it, the phenomena of "special concern" should be the risk of perpetuating or increasing social inequalities (some people will greatly benefit from new technologies and solutions, while others will be even more marginalized) and ghettoization, which directly consists in spatial and, at the same time, social separation of certain categories and social groups from the rest of the inhabitants of the city.

Technology and other solutions used in the city should unite the inhabitants, not divide or marginalize them.

If the city is not created or modernized with a "humanistic coefficient," i.e. taking into account human needs and the above-mentioned social issues, it is threatened by the specter of the anti-urban, which was once evocatively presented by Lewis Mumford (1938) - showing a city of the industrial era that is difficult to live in and unfriendly to humans (today, of course, it would be a city of the information era that is not adapted to the needs of various groups of inhabitants). Time will show if and to what extent under the umbrella of the smart city 3.0 the needs of residents will be reflected in the changes made in urban space of today's and future cities.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

CORPORATE SOCIAL RESPONSIBILITY AND THE SMART CITY CONCEPT

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Purpose: The aim of this article is to capture the relationship between the concept of corporate social responsibility and the idea of smart city. Both concepts share the idea of sustainable development.
Design/methodology/approach: The article analyzes selected, available literature on CSR, smart city, and sustainable development. Apart from literature review, the author uses the method of analysis and logical construction.
Findings: The article presents the issue of the relationship between corporate social responsibility and the smart city concept. Due to the fact that most of the world's population lives in cities and the migration process is still ongoing, it is important to make cities a place friendly to its inhabitants and the environment. The condition for this is building smart cities and running a business within them based on CSR principles.
Research limitations/implications: The text refers to a limited number of studies. Further research should be conducted to verify the real impact of CSR application on cities existing in specific socio-economic conditions.
Originality/value: The article refers to selected literature in the field of CSR and smart city. The most important issues related to sustainable development are discussed as an element connecting both title concepts. The value of this article is an indication of the relationship between the concepts of CSR and smart city, also perceived by many researchers, which consists in the fact that CSR is one of the factors of sustainable smart city. The article also emphasizes the axiological dimension of both title concepts.

Keywords: Corporate social responsibility, smart city, sustainable development.

Category of the paper: Conceptual paper.

1. Introduction

The concept of corporate social responsibility (CSR) has been actively discussed for many years in scientific and business circles. The term "corporate social responsibility" was used for the first time by H.R. Bowen in his book published in 1953 entitled Social Responsibility of

Businessman. Despite the fact that the very idea of CSR is a product of the 20th century, it is worth remembering that the thought that business has a certain responsibility towards society has been around for centuries (Adi et al., 2015). According to Bowen (1953), entrepreneurs are obliged to be aware of the expectations, goals and values of the society. Since then, this concept has received many different theoretical approaches. Currently, there is no single definition of CSR. However, a certain evolution of this concept can be noticed, manifested in a gradual departure from its original meaning as philanthropic activity to its multidimensional understanding (Mosca, Civera, 2017).This evolution was caused by the social and economic changes taking place over the years.

Nowadays, the most common definition of corporate social responsibility is that included in the International Standard ISO 26000 Guidance on Social Responsibility of 2010. In the light of this definition, CSR is the responsibility of the organization for its decisions and actions on society and the natural environment. Its goal is the sustainable development of the organization's environment (ISO 26000, 2013). Therefore, the knowledge of the organization's environment becomes a sine qua non condition for the CSR effective implementation. Without thorough preparation and analysis of the environment in which the company operates, it is not possible effectively implement the concept of socially responsible business. It is worth remembering that it is not the company that sets the direction of its socially responsible strategy, but the needs of individual stakeholder groups determine the area in which socially responsible activities are expected.

The smart city concept is a multi-dimensional approach to urban development. This concept is based on various assumptions of ontological and epistemological nature regarding the nature of the world, the place of man in it, the model of the development of social reality, etc. The concept of smart city has evolved from the issues of spatial planning and transport associated with it, at the beginning, to an economy based on knowledge and innovations. The concept in its current meaning combines and allows for synergy between competitiveness and sustainable development in urban areas. Nowadays, the term covers six basic issues: economy, environment, people, mobility, quality of life and management. Smart city is the one that performs well now and in the future in these six areas, created by intelligently combining resources and decision-making, independent and committed citizens (Giffinger et al., 2007).

If we consider management to be one of the key elements of a smart city, then only the concept of management based on CSR fits into the model of a smart city implementing the postulate of its sustainable development. The latter concept is therefore crucial for understanding the eponymous concepts and is the element that combines them. One of the main factors of sustainable urban development are, on the one hand, the emphasis on business focused on urban development, and on the other hand, the view that social and environmental sustainability is an important element of smart city development (Caragliu et al., 2011). In recent years, the dynamic development of cities implementing the smart city idea has been achieved through various initiatives aimed at improving the urban infrastructure and services,

as well as improving people's living conditions and protecting the environment. The aim is also to improve the attractiveness and competitiveness of cities (Jong et al., 2015). Some authors see the genesis of smart cities in the intelligent use of digital information in areas such as education, urban management, health and energy consumption (Deakin, Al Waer, 2012; Townsend, 2013).

The requirement of sustainable development of the city makes us aware of the need to use natural resources for various types of goods production processes in a way that allows economic, social, and environmental protection (Goonetilleke et al., 2014). Smart cities are the future of sustainable development.

2. Benefits of Corporate Social Responsibility

As mentioned above, there are many definitions of CSR. One of the most frequently used is the one proposed by the European Commission, where we can read: ”CSR is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (2010). In the most concise way, it can be said that CSR is a way of running a business that takes into account the benefits of the company's operations for its environment, or more generally, for society. Despite the various difficulties, attempts to define CSR are not pointless. There are various reasons for this, among others, it allows for the creation of a framework explaining the importance of this concept and justifying the expected behavior of the entities involved in its implementation (Sheehy, 2013). Among the latter there are companies themselves, but also scientists, managers, governments and NGO’s.

There are also terms used as synonyms for CSR. One of the best known is the term "corporate sustainability". Sustainable corporate development is a concept that is based on achieving long-term shareholder value by incorporating its principles into nine areas: ethics, management, social commitment, transparency, business relations, financial return, product value, employment practices and environmental protection (Epstein, 2008). The concept of sustainable corporate development is therefore a concept based on similar principles as CSR, taking into account only a larger set of elements constituting it. In other words, it is a more detailed approach to the way of doing business that reflects the content of the CSR concept.

The benefits of running a socially responsible business can be various. One can indicate the improvement of the company's image, but also the reduction of costs, more effective implementation of innovations, or more broadly, more effective impact on the entire social and natural environment. A properly implemented concept of CSR will also determine the long term competitive position of an economic entity. Today, many companies see the need to integrate CSR with all their activities. It is caused by many factors, including pressure exerted by various

circles, such as NGOs, ethical committees, trade unions and media but also due to the demand of employees and customers (Khan et al., 20212).

An important element of CSR are activities related to the well-being and safety of employees. Worker well-being includes activities ranging from the provision of educational services to various forms of health support (Mio et al., 2020). Another important element of CSR is workplace safety. Many companies introduce rules regulating the creation of safe working conditions for employees. This also applies to the issue of diversity in the workplace. It is manifested mainly in such characteristics of employees as: "different sex, gender, ethnicity, race, age, political ideologies, religion, language, educational background, physical abilities or socio-economic status, life experiences, and cognitive approaches toward problem-solving" (Adu et al., p. 7). The essence of this approach is not only to employ people with different characteristics, but also to ensure equal working conditions for all employees.

A very important benefit of using CSR is care for the natural environment. It is also a postulate that implements the idea of sustainable development. There are possibly hundreds of definitions of sustainable development. Literally, the most essential feature of sustainable development is the fact that it relates to the maintenance of development over time (Rogers et al., 2012). The idea of sustainable development combines three pillars on which it is based: (1) economy, (2) environment, and (3) society. There are also suggestions in the literature on the subject that another pillar of sustainable development is needed, namely cultural diversity as the source of a more moral, spiritual, ethical, and sustainable lifestyle. All these spheres are joint vessels of a kind. Satisfying the needs of people, both living at present, and the next generations, can only be achieved through actions taking place within culture (Jansen, 2003).

Culture is an ambiguous term. In the most general sense, culture is understood as the entire set of traditional behaviors that have been created by the human race and are successively accepted by each generation. The various existing definitions of culture seem to coincide, however, with the notion that culture is learned, is peculiar to groups of people, and that its content covers a wide range of phenomena, including norms, values, language, worldview, shared meanings, and patterned ways of behaviors (Birukou et al., 2013). Culture is therefore what a man creates not entirely individually but in a community. If we take into account that business is also a part of culture then it becomes clear that cultural considerations make it possible to better understand social expectations towards companies. On the other hand, understanding the mechanisms governing cultural changes makes it possible to adapt the actions taken to the norms and behavior accepted in a given culture. From the point of view of the subject matter of this article, it should be noted that there is a recent trend that manifests itself in the implementation of culture-based development strategies also in urban areas (Lysgård, 2013).

In view of the existence of different cultures, one should agree with the statement that "when it comes to sustainable development not all cultures are equal, some cultures are more equal than others, depending on the political and historical context" (Rogers et al., p. 36).

The question is whether there are cultures in which the implementation of CSR is easier than in others? It seems that this question should be answered in the affirmative. Without going into detail, there is a general rule that the concept of CSR can be most effectively implemented in cultures based on moral principles, where individual rights are respected. For the above reasons, if culture is considered one of the pillars of sustainable development, it is the central one. Some researchers also point to the growing role of values and religion in the CSR strategy in the light of progressing globalization processes (Ramasamy et al., 2010; Xu, Ma, 2022).

The concept of CSR can also be seen from the perspective of the common good. This concept is based on the belief that the company is to serve the community. It should benefit people. To do so, it serves the community by generating high-quality products that focus on consumers' needs (Rumambi, 2016). CSR fits into the perspective that can be called "the humanistic idea of running a business". It consists in the fact that the company as one of the main goals of its activity assumes service for the common good, i.e. the good of all stakeholders. It should be remembered, however, that business does not determine the content of the common good, but is only obliged to act in such a way that the common good is promoted in the community in which it operates (Chamberlain, 2004). In the most general terms, the common good can be defined as "the overall conditions of life in society that allow the different groups and their members to achieve their own perfection more fully and more easily"(Second Vatican Council, 1965). The most important feature of the common good is that it is the good of the entire society as well as its members (Argandoña, 1998).

Summarizing this part of the considerations, the benefits of CSR can be divided into internal and external ones. The former are the benefits obtained as a result of activities undertaken for the benefit of internal stakeholders. The latter concern those that are achieved as a result of activities undertaken for the benefit of external stakeholders. Due to the nature of the benefits obtained they can, in turn, be divided into financial and non-financial ones. Among the latter, qualitative (increased commitment and motivation among employees, innovation, better relations with investors, new more effective models of services or processes), and quantitative (improving reputation, increasing employee productivity, increasing resource efficiency, increasing production efficiency) benefits can be distinguished.

3. Smart City as a Sustainable Model of its Development

Smart city concept is the culmination of a long process of shaping urban space, mainly under the influence of dynamic technological changes. Its predecessors were the concepts of a digital city, an information city, and a sustainable city (Yigitcanlar, 2006). Despite the discussions that have been going on for years, it has still not been possible to work out a commonly accepted definition of a smart city (Hortz, 2016). However, there is agreement

among researchers that smart city is a concept whose elements are smart economy, smart technology, smart mobility, smart and sustainable environment and others (Lara et al., 2016).

The very concept of sustainability is ambiguous one and raises many methodological problems. There are many definitions of this concept and some researchers dealing with the issue of sustainability do not even define this concept (Ciegis et al., (2009). It seems that four basic meanings of this term can be distinguished (Salas-Zapata et al., 2019):

1. Sustainability as a set of guiding criteria for human action.
2. Sustainability as a goal of humankind.
3. Sustainability as an object.
4. Sustainability as an approach of study.

As shown above, the concepts of sustainability are highlighted complementary to each other. The use of a specific one depends on the discipline to which the considerations conducted by a given researcher belong. The term "sustainability" is therefore used with different but similar meanings depending on the scientific discipline in which the research is carried out. This is because research on a sustainable city is interdisciplinary one. Sustainability is one of the most important strategic goals of a smart city (Toli, Murtagh, 2020). An interesting attempt to study the degree of development of a smart city is the so-called CSR Maturity Model for Smart City Assessment (Suliman et al., 2021). It assumes that the key aspects of a smart city are: connectivity, sustainability and resiliency. The aforementioned model describes five levels of smart city development: initial, improved, sustainable, preventive, and proactive. It seems to be an interesting proposition in this regard.

Caragliu et al., (2011) mention the following elements constituting a smart city: (1) emphasis on business focused on city development; (2) emphasis on the development of the creative high-tech industry as essential for the city's development, and (3) social and environmental sustainability. The most important feature of a smart city is the subordination of all elements that make up the urban area to the overarching goal of making the technology environmentally and people-friendly (Jong et al., 2015). A city arranged in such a way creates a social environment that is friendly to residents, safe and sustainable (Lazaroiu, Roscia, 2012). Pichlak (2018) Pichlak (2018), in turn, points to innovation as one of the most important dimensions of a smart city in its various areas.

An interesting approach is presented by Nam and Pardo (2011) who reduce the smart city to three dimensions: population, technology and institutions. Sustainable development and the quality of life of residents are achieved through investments in the development of technology, education of residents, building a civil society, promotion of responsible management of natural resources and ensuring that institutions provide better services for citizens. Vázquez et al. (2018) also point to the quality of life as one of the objectives of urban planning and key dimensions of a smart city.

One can ask about the characteristics of sustainable urban development. The very concept of a sustainable city was popularized in the 90s (Roy, 2009). Since then, there has been a discussion on the concept of a smart city, which resulted in its various models being developed. In its original meaning, the term sustainable city meant a city in which there is a relationship between economy, community and environment. The degree of balance of these elements can be tested using certain indicators ((Ahvenniemi et al., 2017). As in any empirical project, the method of measuring the achieved results is important. When it comes to smart city, an interesting method is called smartainability (Girardi, and Temporelli, 2017). It is based on measuring the benefits of implementing technologies or specific solutions. Despite the recent dominant tendency, expressed in referring to the three distinguished aspects, different scientists put research accents in various ways.

In the light of the above-mentioned discussions, it is interesting to consider sustainable urban development as a state of balance between urban development and environmental protection, also taking into account such issues as social justice, equal opportunities, employment, access to basic services, etc. (Hiremath et al., 2013). The increased interest in a smart city is caused by factors of various nature. These are the already mentioned factors related to technological development, urban population growth, environmental pollution and climate change, globalization and increasing competitiveness. It seems reasonable to ascribe four basic attributes to a sustainable city: (1) Sustainability; (b) Quality of life; (c) Urban aspects, and (d) Intelligence. They can be attributed to four areas of a sustainable city: (1) Society; (2) Environment (3) Economy; and (4) Governance (Carrillo et al., 2014; Yigitcanlar, Lönnqvist, 2013).

Lipińska (2018) rightly points out that cities should be especially socially responsible structures because they are places where substances dangerous to the natural environment are introduced. One should also remember about the potential risk that may arise when implementing the smart city concept. These are primarily: risk of unfavorable change of climate, and risk of increase in cost of living (Morozova, Yatsechko, 2022). These and other risks can be prevented by applying the principles of sustainable city management, taking into account the sphere of values.

Another extremely important issue when it comes to a smart city and its sustainable development is the issue of values. The concept of smart city discussed here, understood in the 21st century as the idea of sustainable urban development, is a model of a new perspective for the development of civilization. One of the most important foundations of any culture is the value system underlying it. There is no single axiology of sustainable development founding the smart city concept. The development of a smart city that focuses solely on its technological aspects may result in the neglection of human factors (Mullagh et al., 2014; Allam, Newman, 2018). Smart city, sometimes equated with technical infrastructure, is more than just any technology or set of technologies (Sadowski, Bendor, 2019). One should be agreed with the view according to which a smart city is not so much a ready-made project, but a continuous

process of implementing smartness understood as a set of ideas, beliefs and visions regarding the way of organizing urban space ((Jasanoff, Kim, 2015). Values are a necessary element of a city understood this way.

A smart city is a place where many, among others, political, economic and technological decisions are made. They must be undertaken if the smart city goal is to be achieved, from an ethical perspective. It seems interesting to propose an "anthropocentric axiom" understood as a perspective in which man is at the center of the social structure and all actions taking place within it (Bianchini, Avila, 2014). Adoption of such an axiom also assumes respect for other living beings. The authors propose as fundamental values: human dignity, freedom, true altruism, and justice. Decisions would be made taking into account the hierarchy of values, where each value is subordinated to a higher one. Unfortunately, the authors do not justify the adopted hierarchy of values. However, the thesis that sees values as the basic factor determining human behavior, including the satisfaction of their basic mental, biological and social needs, seems to be right (Blazy et al., 2021).

It seems that most of the concepts of smart city found in literature place too much emphasis on technology (Govada et al., 2017). Relatively few works deal with the issue of axiology in a smart city. In the context of the issues discussed in this article, it is worth mentioning that all of the above-mentioned smart city areas also have an axiological dimension. The two basic features of a smart city: smartness and sustainability are achievable only if the city's structure is based on values, but also the city itself must become a factor creating values for citizens (Grossi, Trunova, 2021). Creating smart city economic, social, and environmental sustainability can only be achieved by referring to values (Lim et al., 2021). The choice of a value depends on many factors, including culture, geography or religion. However, there is a set of universal values that should become the axiological basis of actions undertaken within CSR and the smart city structure. These values include good, truth, freedom, and justice.

4. Conclusions

Both the concept of Corporate Social Responsibility and the idea of smart city are concepts that are actively discussed in the scientific literature. The basic idea that combines the concepts of CSR and smart city is the idea of sustainable development. The problem of urban development has become particularly relevant in the 21st century as more than half of the world's population now lives in cities. The present century is also seen as the "age of climate change" that threatens not only the quality of life of people but even the survival of humanity. This situation imposes an obligation to make fundamental changes in all spheres of human activity in order to protect the natural environment and provide the living conditions also for future generations.

The main causes of the climate crisis (environmental externalities of the Anthropocene) are the rapid increase in industrialization combined with a rapid growth of population and an irrational use of natural resources. It is accompanied by globalization, urbanization, agricultural intensification, and excessive consumption-driven lifestyles. CSR is a way in which an organization expresses and develops its corporate culture and social awareness. The basis of CSR is the conviction that business is a part of society. This concept has a significant impact on all elements considered important also for a smart city, such as: environmental protection, knowledge transfer, employment creation and labor practices, education and human development.

An important element of smart city is the concept of sustainability. The term sustainable city, according to most researchers, means the balancing of its three dimensions: economy, community and the environment. There are various methods of measuring the degree of balance of these elements. Some scientists emphasize the importance of indicators such as environmental pollution, water and energy consumption, while others point to social and economic factors such as social justice and quality of life. The biggest problem in research on urban sustainability is the ambiguity of this term. The existence of many, sometimes contradictory definitions, makes it difficult to choose the correct understanding of this term and constitutes a significant methodological difficulty. These problems force researchers to avoid defining the concept of sustainability or to analyze it indirectly by studying social and ecological variables.

It turns out that achieving a balance of any of the factors constituting a smart city is not possible without such activities of organizations operating in its area, which we define as corporate social responsibility. Business is an important element of the structure of a smart city and the way it is run determines the implementation of the smart city concept itself.

It is estimated that 60% of the world's population will live in cities by 2030. In view of this fact, we are threatened by their unsustainable development. Sustainable development should be analyzed from a multidisciplinary perspective, taking into account all factors at stake (Escamilla Solano et al., 2017). A very important factor in this sustainability is the involvement of all operating companies in the CSR project.

A very important aspect of both CSR and smart city is the value system that founds them. Including values in the creation of smart cities is necessary because otherwise they will not become a place friendly to residents and the environment. Researching the axiological foundations of smart cities development seems to be one of the main tasks facing scientists dealing with this issue. These analyzes should also take into account the cultural context in which this development takes place.

The aim of this paper was to indicate the connections between two recently discussed concepts: Corporate Social Responsibility and the smart city. The article is of a conceptual nature and as such is just the first step in the emerging further research. These should be interdisciplinary analyzes of the actual development of cities in which business is developed in

the spirit of CSR. Research should take into account the following aspects: environmental, social, sustainable development, and fundamental freedoms and rights. The latter can be ensured in sustainable urban areas only on the condition that the basic values will determine all actions undertaken in the sphere of politics and management.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

HUMANISTIC AND SOCIAL DIMENSIONS OF COBOTIZATION IN THE CONTEXT OF IMPLEMENTATION INDUSTRY 5.0

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Purpose: The aim of the article is to describe the humanistic and social dimension of the cobotization process in the context of the implementation of Industry 5.0.
Design/methodology/approach: Over the past few years, researchers have focused on analyzing the phenomena associated with Industry 4.0, which has made it possible, among other things, to assess the negative consequences of the proposed approach, and as a result, the necessity to take corrective action has been recognized. This new way of understanding production processes has been called as Industry 5.0. The key threads of this approach include the use of advanced digital technologies in the production process but with a simultaneous focus on human. This is connected with massive use of human-machine cooperation, so called cobotization. The success of this plan requires an in-depth analysis of the human perspective, as the implementation of these solutions depends on it. In the present discussion, it is proposed to take into account the humanistic and social dimensions conditioning the possibility of effective use of cobots in the context of achieving the objectives of Industry 5.0. Conceptual analysis has been used, as it seems to be the most appropriate at this stage of research.
Findings: As a result of the conducted analyzes, key dimensions have been identified from a human perspective, which may contribute to the successful implementation of Industry 5.0. Within the humanistic dimension, attention has been paid to the importance of the very way in which man treats technology/machines (philosophical dimension) with particular emphasis on instrumentalism, substantivism and post-phenomenalism. The forms of human-machine interaction generating different types of interaction (psychological and sociological dimensions) were also pointed out and the relationships that are crucial for human-machine cooperation, conditioning the productive effectiveness of this collaboration, were finally examined.
Social implications: The article has a conceptual function; according to the applied research method it allows developing the concept of Industry 5.0, paying attention to what aspects will have to be considered in its implementation, taking into account the human-centered perspective.
Originality/value: This article is addressed to all stakeholders involved in the implementation of the concept of Industry 5.0. Key in these considerations was to draw attention to the "human" dimensions of cobotization processes, affecting the effective use of human-machine collaboration in manufacturing processes. The author's contribution to the issues at hand should be considered an attempt to use existing research in philosophy of technology, psychology and sociology to develop a holistic view of the dimensions that can influence the building of different types of relationships with robots, including artificial intelligence, from coexistence

and collaboration to cooperation. Overlooking dimensions related to the human perspective in these relationships may result in ineffectiveness of the technical innovations themselves.

Keywords: Industry 5.0, cobot, cobotization, human-machine interactions, human-robot collaboration.

Category of the paper: conceptual work.

1. Introduction

ESIR, means expert group on the economic and societal impact of research and innovation, published a policy brief earlier 2022 year in which they state: "over the past decade, Europe has gradually stepped up its commitment to industrial transformation mostly by working on the transition towards so-called industry 4.0, a paradigm that is essentially technological, centred around the emergence of cyber-physical objects, and offering a promise of enhanced efficiency through digital connectivity and artificial intelligence. However, the Industry 4.0 paradigm, as currently conceived, is not fit for purpose in a context of climate crisis and planetary emergency, nor does it address deep social tensions. On the contrary, it is structurally aligned with the optimisation of business models and economic thinking that are the root causes of the threats we now face. The current digital economy is a winner-takes-all model that creates technological monopolies and giant wealth inequalities. Industry 4.0 lacks key design and performance dimensions that will be indispensable to make systemic transformation possible and to ensure the necessary decoupling of resource and material use from negative environmental, climate and social impacts" (Dixson-Decleve et al., 2022, p. 5). One of the negative aspects of the impact of Industry 4.0 in their opinion we can consider "an inherently social dimension, demanding attention to the wellbeing of workers, the need for social inclusion, and the adoption of technologies that do not substitute, but rather complement human capabilities whenever possible" (Dixson-Decleve et al., 2022, p. 5). After more than a decade of the IT development strategy presented by the German government at the Hanover Fair in 2011, referred to as Industry 4.0, we know that it requires a number of adaptive adjustments. The main assumptions of this strategy concern the possibility of implementing digital technologies in production processes and the emergence of so-called *smart factories* (Schwab, 2016, p. 12; Morrar et al., 2017, p. 17; Piccarozzi el al., 2018; Marr, 2018, p. 2). These transformations have been identified with the fourth industrial revolution or the second machine age, in which computers and other solutions provide strong support for production processes (Brynjolfsson, Mcafee, 2014). The primary issues focusing attention around Industry 4.0, most often concerned proposed models for *smart factories* to maximize their efficiency and thus profit (Kagerman, 2013; Bunse et al., 2014; MacDougall, 2014; Wang, Wang, 2016, Schwab, 2016, Morrar, 2017; Piccarozzi et al., 2018; Stock, Seliger, 2019; Pollak, 2020a;

Gajdzik, Wolniak, 2021), then the social consequences of automation were highlighted (Manyika et al., 2011, 2013, 2017; Brynjolfsson, Mcafee, 2014; Schwab, 2016; Harari, 2018; Osika, 2019, 2020, 2021). However, only now, after a number of experiences, we are beginning to see that full automation of production processes raises a number of practical difficulties and is becoming a source of social instability around the world (Harari, 2018; Osika, 2021, 2022). Therefore, it currently seems that the most promising model in terms of production efficiency, but considered in a broader social context, will be the cobotization model, i.e. close cooperation between humans and cyber-physical systems (Przegalińska, Oksanowicz, 2020). Cobotization as a nonexclusive approach to production processes with the current technological advancement has a chance to counteract the flaws of the existing economic system indicated by Philip Kotler, which include the creation of large groups of unemployed and underemployed and the lack of social values in the market equation (2015). Such hopes are placed in the industrial strategy referred to as Industry 5.0. This strategy assumes the release of industrial potential combined with sustainable, regenerative and circular economic behavior, rather than a short-term model of overproduction and consumption determined by the current growth paradigm (Dixson-Decleve et al., 2022). Therefore, Industry 5.0 is, by definition, meant to be human-centric (Demir et al., 2019), "by bringing human workers back to the factory floor, the fifth industrial revolution will bring people and machines together to further harness human brain power and creativity to make processes more efficient by combining workflows with intelligent systems [...]. Industry 5.0 is to be a synergy between humans and autonomous machines" (Nahavandi 2019, p. 3). However, in order for this cooperation to bring about the expected results, we must try to predict the key dimensions that affect its effectiveness, including those that directly impact the individual themselves, i.e., how can people find their way in this unprecedented form of collaboration? There is a central research question. It is assumed that the answer to it can indicate the conditions for the realization of the concept of Industry 5.0. This paper proposes to analyze two dimensions, humanistic and social, assuming that both are key in building human-machine relationships.

2. Methods

Conceptual analysis will be used to describe the dimensions related to cobotization in terms of Industry 5.0 implementation. As one of the oldest scientific methods (Furner, 2004; Gilson, Goldberg, 2015; Stuart, 2015; Dickson et al., 2018), it allows, on the basis of existing knowledge, to "develop a theory" - that is, using deductive reasoning that requires making initial assumptions, we can formulate conclusions that provide a novel perspective on the problem. Inference carried out in this way allows us to already pose specific research hypotheses in empirical studies. Because conceptual analysis can be used to combine theories, adopt theories

to new solutions, categorize and establish logical relationships between phenomena, and build theoretical models (Jakkolla, 2020), it seems to be an adequate research method given the theoretical advancements of research in the problem area described. According to the stages of conceptual analysis, it is assumed that the following steps must be taken:

1. Defining the basic concepts, describing the initial theoretical assumptions – for this research – terms such as Industry 5.0, cobot, cobotization will be defined.
2. Establishing relationships – for this research – What dimensions of cobotization processes are crucial from a human perspective?
3. Conclusions – from this research – What humanistic and social dimensions of cobotization should be considered in the context of implementing Industry 5.0?

The questions formulated above are the details of the research proposals. The research will make use of conceptual analysis because, as it seems, at this stage of work it is necessary to theoretically develop knowledge that is already well established empirically, which in turn will create assumptions that can be subjected to further empirical verification.

3. Results

3.1. Theoretical framework

3.1.1. Industry 5.0 – definition

According to the assumptions, Industry 4.0 was intended to be the realization of the concept of a smart factory in which the production organization would be based on cyber-designed systems that enable the control of physical processes (Kagerman et al., 2013; Bunse et al., 2014; MacDougall, 2014; Schwab, 2016; Morrar et al., 2017; Piccarozzi et al., 2018; Miśkiewicz, Wolniak, 2020). The entire production process was to be based on automated operations, allowing to minimize to a large extent the participation of humans. Automation was supposed to ensure the reduction of production time and costs (Yin, Kaynak, 2015; Gandomi, Haider, 2015; Alcacer, Cruz-Machado, 2019; Gajdzik, Wolniak, 2021). Therefore, the idea of Industry 4.0 emphasizes the optimal use of existing digital solutions such as: the Internet of People (social and business networks); the Internet of Things (intelligent mobility and sensor data); the Internet of Services (intelligent networks and logistics), all kinds of robot that enable automation of production processes, as well as autonomous manufacturing and processing systems on production lines with full process control and 3D printing that enables the so-called additive manufacturing. An important complement to the cyber-physical system under construction are cloud computing; analytical and computational systems, so-called Big Data (BD) (Mayer-Schönberger, Cukier, 2013; Yin, Kaynak, 2015; Wang, Wang, 2016; Lee, Kao, 2014; Manyika, et al., 2011; Henke, 2016; Alcacer, Cruz-Machado, 2019), and artificial

intelligence and deep machine learning (Kleppman, 2017). However, Industry 5.0, goes a step further, technological innovation and the resource and cost optimization behind it are meant to serve specific social goals, such as increasing the quality of life, developing production while respecting the limits of our planet, and in this sense technology becomes a tool for sustainable development. Thus, we can say that Industry 5.0 complements the existing Industry 4.0 paradigm, directing it towards the realization of values precious from the social point of view (Breque, 2021; Demir et al., 2019; Nahavandi, 2019; Xu et al., 2021). Below, Table 1, we capture the main differences between Industry 4.0 and Industry 5.0.

Table 1.
Difference between Industry 4.0 and Industry 5.0

Industry 4.0	Industry 5.0
• Centered around enhanced efficiency through digital connectivity and AI. • Technology – centred around the emergence of cyber-physical objectives. • Aligned with the optimization of business models within existing capital market dynamics and economic models – i.e., ultimately directed at minimization of costs and maximization of profit for shareholders. • No focus on design and performance dimensions is essential for systematic transformation and decoupling of recourse and materials use for negative environmental, climate, and social impact.	• Ensures a framework for industry that combines competitiveness and sustainability, allowing the industry to realize its potential as one of the pillars of transformation. • Emphasizes the impact of alternative models of (technology) governance for sustainability and resilience. • Empowers workers through the use of digital devices, endorsing a human-centric approach to technology. • Builds transition pathways towards environmentally sustainable use of technology. • Expands the remit of the corporation's responsibility to their whole value chains. • Introduce indicators that show, for each industrial ecosystem, the progress achieved on the path to well-being, resilience, and overall sustainability.

Source: Dixson-Decleve S. et al. (2022). Industry 5.0: A transformative Vision for Europe. Governing Systemic Transformations towards a Sustainable Industry, Luxembourg: Publications Office of the European Union, p. 6.

The emergence of the Industry 5.0 concept is the result of an overlap of several factors: the experience of implementing Industry 4.0 (Krauss, 2015; Christian, Griffiths, 2016; O'Neil, 2016; Zysman, Kenney, 2018; Osika, 2019, 2020, 2021, 2022), the difficulties arising from the Covid-19 pandemic, and future environmental challenges, have highlighted the need to rethink existing ways of farming to be able to make them more resilient to change, more sustainable, and more human-centered. Therefore, human-centricity, sustainability, and resilience are considered the core values of this concept (Xu et al., 2021). "The human-centric approach puts core human needs and interests at the heart of the production process, shifting from technology-driven progress to a thoroughly human-centric and society-centric approach. As a result, industry workers will develop new roles as a shift of value from considering workers as 'cost' to 'investment'" (Xu et al., 2021). Sustainability refers to the development of production processes that allow the long-term use of products and the recycling of natural resources to reduce waste and environmental impact, ultimately leading to a circular economy with greater efficiency and resource productivity (Breque, 2021; Huang, 2021; Xu et al., 2021; Lu et al.,

2021). Resilience is about building the capacity for industrial flexibility to hedge against increasingly frequent geopolitical or climatic disruptions that generate social instability (Xu et al., 2021; Breque, 2021).

From the perspective of this discussion, the human-centered focus of Industry 5.0 and the resulting relationships in human-machine interaction, that is, the cooperation of "humans working alongside robots and IoT devices in the automated industrial environments of the future" (Berg 2022), is crucial. And while the process of automating manufacturing processes itself seems irreversible, how human-machine relationships will evolve requires in-depth analysis.

3.1.2. Cobots and Cobotization: Definition

As indicated earlier, the concept of Industry 5.0 assumes a "social-centric" approach, puts human needs at the center of the production process, and proposes the adaptation of industrial technology to humans, the creation of a safe working environment in which human health and well-being is a priority (Berg, 2022), and automation processes are oriented towards the cooperation of humans and machines. The idea is to achieve high production goals while humanizing the work environment (Przegalińska, Oksanowicz, 2020), using the synergistic action of humans and collaborating machines, what are referred to as co-bots (from *collaboration* and *robots*). 'Collaborative robots (cobots) have emerged as a technological solution for enhanced manipulation of objects while allowing safe interaction with a human counterpart' (Parra et al., 2020). Cobots are defined as robots developed with intuitive interfaces that support human operators in performing mainly physical manufacturing tasks such as handling hazardous materials or performing repetitive tasks with high reliability (Segura et al., 2021; Parra et al., 2020). The realization of the concept of Industry 5.0 is associated with the widespread use of such solutions, i.e. with the cobotization (Przegalińska et al., 2019) of production processes. According to what was said earlier, we can call the cobotization of industry the mass implementation of such a production model, in which the use of technological solutions typical of Industry 4.0 is complemented, or rather enriched by the "human factor", i.e. the manufacturing process is largely based on the interaction of people and machines. We can distinguish several forms of such interaction, co-existence, cooperation, and collaboration (Wierzbowski, 2019; Lu et al., 2022; Simões et al., 2022). “In the case of co-existence, the work areas of the human and the machine are completely separated. Moreover, the machine carries put, a completely different phase of the production processes, so the goals of human’s and machine’s activities are also different. Cooperation […] is a situation where the work areas of the machine and overlap. Thus, each of them performs certain activities, the combination of which is supposed to achieve a common goal. The most integrated form of cooperation is the situation […] where the total integration of activity stands not only a common goal or area of activity, but also jointly performed activities which are complementary” (Wierzbowski, 2019, p. 179). Each of the mentioned forms of cooperation puts completely

different requirements on people, but also on machines, or rather the way they should be designed, because according to the Industry 5.0 assumption, the production process is human-centered. Therefore, the issues related to mutual cooperation should be analyzed, but from the human point of view, this issue will be devoted to the next section.

3.2. Humanistic and Social Dimension of Cobotization

The processes involved in cobotization are unprecedented in the history of mankind; never before have we considered a situation in which it is possible to speak about collaboration with man-made tools. It was only the second machine revolution (Brynjolfsson, Mcafee 2014; Le, Kai-Fu, 2019) concerning instruments that extend human intellectual potential that changed the type of these relationships from *using* to *interacting* with them. If we want to build these relationships according to the assumptions adopted in the Industry 5.0 concept, we must understand the dimensions of influence that are important from a human point of view. The key ones in this respect seem to be, firstly, those that determine how we perceive these tools as "beings", i.e. the philosophical dimension, which influences the type of attitude we adopt towards these tools. Second, what dimensions of our psyche do we engage in our relations with these tools, and third, how are we inclined to include them in the scope of human interactions; thus we are talking about the social dimension. We can therefore speak of two basic dimensions: the humanistic, which includes the philosophical level, and the social, which encompasses the psychological and sociological aspects of the relationship between man and machine. Figure 1 shows these relationships.

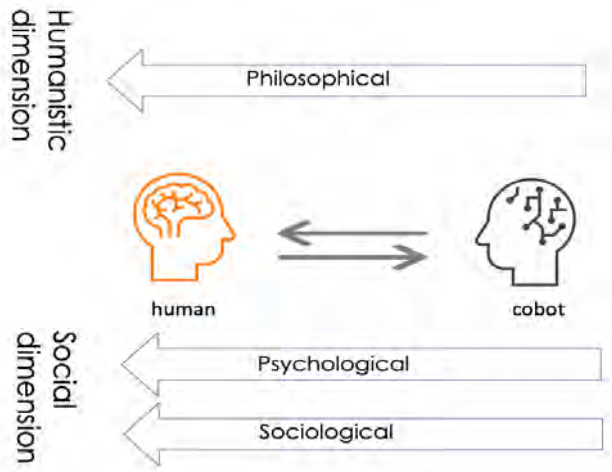

Figure 1. Dimension of Cobotization.

Source: Own elaboration.

3.3. Humanistic and Social Dimensions of Cobotization and Implementation of Industry 5.0

To be able to analyze each dimension in more detail, it must first be defined, and the necessity of including it in the analysis must be justified. Second, the area of a given dimension that will be described should be specified. These tasks should be treated as an attempt to organize knowledge, which is the result of conceptual work (philosophy) and empirical research (psychology and sociology). In the case of the first dimension, the philosophical one, it is important to define what technology is for people, because this elementary, often unconscious assumption determines our entire attitude towards machines. It seems that this dimension is crucial from the point of view of building relations; understanding the nature of relations requires becoming aware of "with whom" this relation is built. The types of approach to technology that are well established in the philosophy of technology, such as instrumentalism, substantivism, and post-phenomenalism (Borgmann, 1984; Freenberg, 2002, 2005; Barney, 2008; Osika, 2017; Vallor, 2022), will be used to describe this dimension. Instrumentalism manifests itself in the superior position of the user over the 'tool', in this approach, we treat machines/technology as being under human control (*humanly controlled*), devoid of autonomy, machines are neutral tools, 'without content', the results of their use depend entirely on the way they are intentionally assigned by man ((Borgmann, 1984; Freenberg, 2002, 2005; Barney, 2008; Osika, 2017). Substantivism takes the opposite stance to instrumentalism; machines/technology are not under man's control but are autonomous in relation to him, for in their mode of construction is "sewn" the way in which human behavior will be shaped and man must adapt to it (Borgmann, 1984; Freenberg, 2002, 2005; Barney, 2008; Osika, 2017). Post-phenomenalism, on the other hand, balances both positions, since it assumes mediation of relations; it is true that each tool influences a particular form of use of that tool, but ultimately it is the man who determines during his work how he will use a given tool, hence the category of mediation (Przegalińska, 2016; Vallor, 2022). The philosophical dimension is important in that the "worldview" about the nature of the relationship between humans and machines also affects the other dimensions, so it is crucial.

From the empirical studies conducted, the need for safety (Złotowski, 2017; Kindal et al., 2018; Janssen et al., 2019; Demir, 2019; Kożusznik, 2020; Berg, 2022; Hjorth, Chrysostomou, 2022) and the directly related degree of stress experienced (Pollak et al., 2020b) and the sense of autonomy (Kożusznik, 2020; Paliga, Pollak, 2021), concerning both the human and the robot, proved to be the most significant in the psychological dimension. Therefore, psychological aspects relate to what is most fundamental in the interaction in terms of how the relationship is experienced, that is, whether they feel unsafe and how their ability to influence each other is assessed. In the case of the sociological dimension, it turned out to be important to what extent working with the cobot gives a sense of teamwork (Kożusznik, 2020; Lu et al., 2021) and the related sense of "social" trust and empowerment, i.e. how individuals evaluated their participation in creating the situation in which they worked (Janssen et al., 2019; Kożusznik,

2020); Przegalińska, Jemielniak, 2020; Przegalińska, Oksanowicz, 2020; Kożusznik, 2020; Paliga, Pollak, 2021). As can be seen, the psychological dimension and the sociological dimension are strongly interrelated because how individuals "experience" a situation determines what kind of social relationships they generate. Table 2 juxtaposes these dimensions with the various forms of co-working mentioned above (coexistence, cooperation, collaboration). This allowed us to trace the existing relationships and develop an opinion on how different aspects must be taken into account when building a work environment in accordance with the assumptions of Industry 5.0.

Table 2.
Humanistic and Social Dimensions of Cobotization – Type of Interactions

		Humanistic dimension	Social Dimension	
		Philosophical	**Psychological**	**Sociological**
Type of interaction	**Coexistence**	This type of interaction fosters an **instrumentalist** approach to co-work, it is even difficult to speak of a real interaction, and therefore there may be a contextless perception of work by humans, i.e. that a machine is also involved in the whole performance of work, this may generate various forms of instability.	This type of interaction provides a high sense of **safety**, also carries a low **stress** load, and there is low awareness of dependency and therefore low restrictions on a**utonomy** - for a person, this is a relatively favorable relational situation. On the other hand, it has the disadvantage of being too strong in separation for a co-working situation. This can result in an unwillingness to familiarize oneself with the way the machine works.	This type of interaction does not synthesize into **teamwork** behavior; the category of trust is not social, it is rather **trust** in the reliability of the tool. The sense of **agency** is recognized according to the functionality of the machine, and it is the human being who decides whether this functionality is useful for doing the work.
	Cooperation	This type of interaction fosters a **substantivist** approach to co-work, since the interaction is almost physical, related to working in the same physical space, in this case, the difficulties may be related to a too deterministic perception of this relationship, resulting in the triggering of a "technological proof of equity" (Osika 2021).	This type of interaction provides a relatively low sense of **safety** and is therefore more **stressful** for the individual, there is also a reduced sense of **autonomy** due to the existence of physical and task dependencies.	This type of interaction triggers a **quasi-teamwork**, co-working is the effect of complementing each other's potential for action, i.e., on the part of the human, the competence and skills, on the part of the cobot available functionality, **trust** is the result of a sense of reliability of the tool, in relation to the **agency**, it will depend on the specificity of the task and the proportion of actions taken by the human and the cobot.

Cont. table 2.

	Collaboration	This type of interaction is conducive to a post-phenomenalist approach to co-work, it seems to be the most constructive and effective creates the potential for mutual shaping until full synergy is achieved; however, it requires from a human an attitude of openness to this type of interaction (education is important), but also from a machine the ability to personalize its functionality for the specific person with whom it works; therefore, a relatively flexible interface is necessary.	In this type of interaction, both feelings of safety and stress levels can take on different values, and the key in this regard will be a sense of autonomy. Contrary to initial intuitions, research shows that humans view a high level of cobot autonomy positively and if there is an interface possibility, they themselves are willing to increase it (Kożusznik 2020). However, there is also research indicating a sense of danger from the increased autonomy of cobots (Złotowski 2017; Pollak et al., 2020b). There is no problem with including machines in the joint execution of work if the collaborative situation can be flexibly shaped by humans.	This type of interaction allows, to the greatest extent, to treat machines as part of a team and to consider the man-machine system as a working team. The level of trust is the result of two factors, the awareness of reliability of the tool, but also the adaptive potential of the interface, which gives the possibility of flexible human binding to the task performed. Similarly, the synergy in the work of human and cobot is possible thanks to the autonomous decision of human, which range of agency wants to cede to cobot, of course within its functionality.

Source: Own elaboration.

The analysis allows us to draw several conclusions regarding the conditions that must be met by the cobotization process to think about the implementation of the Industry 5.0 concept, i.e. human-centered industry. First, a general social re-evaluation of the way we interpret technology, including machines, is important. It seems that in this respect the post-phenomenological approach (Przegalińska, 2016; Vallor, 2022) is the most promising because of its open and very flexible attitude towards technology, allowing us to put the human being at the center and at the same time taking into account the influence we are subject to when using any technical invention. This condition applies to the education of the whole society, but mainly to designers, who should take this aspect into account in their work. Second, cobots should not be treated as simple tools only with a view to their usefulness, but also consider their impact in psychological and sociological dimensions; in this regard, it is necessary to educate the workers who work with the machines and the people who make decisions about this collaboration.

4. Discussion

Since the beginning of the 21st century, there have been extensive discussions on the use of advanced digital solutions in manufacturing processes. It is assumed that one of the first strategies was developed by the German government's Foresight presented in 2011 at the

Hannover Fair, called "Industry 4.0". The main idea of this strategy included an attempt to combine the latest digital technologies with real production, thus creating a kind of *smart factory* (Kagerman, 2013; Bunse et al., 2014; MacDougall, 2014; Wang, Wang, 2016, Schwab, 2016, Morrar, 2017; Piccarozzi et al., 2018; Stock, Seliger, 2019; Pollak, 2020a; Gajdzik, Wolniak, 2021; Morrar et al., 2017; Piccarozzi, Aquilani, Gatti, 2018). The main goal of this concept was to minimize the participation of people in production processes, allowing to reduce manufacturing time and cost. The systematic introduction of the assemblages of Industry 4.0 made it possible to reveal the social and environmental consequences of these transformations (Manyika et al., 2011, 2013, 2017; Brynjolfsson, Mcafee, 2014; Schwab, 2016; Harari, 2018; Osika, 2019, 2020, 2021). An additional factor that modified the assumed plans was the COVID 19 pandemic and the predicted climate crisis, which decided on the need to formulate a new strategy called Industry 5.0 (Dixson-Decleve et al., 2022; Breque et al., 2021; Berg, 2022; Huang, 2021; Xu et al., 2021; Lu et al., 2021; Nahavandi, 2019; Hjorth, Chrysostomou, 2022). The key to this strategy is human-centered, sustainability and resilience, but with the use of advanced technology. It is not so much the minimization of employment that is assumed, but its new form, the so-called cobotization, that is, using the cooperation of man and machine (Wierzbowski, 2019; Przegalińska et al., 2019; Przegalińska, Oksanowicz 2020; Przegalińska, Jemielniak, 2020; Segura et al., 2021; Parra et al., 2020; Hjorth, Chrysostomou, 2022). Implementing this new vision requires studying many aspects of this cooperation. This article proposes to analyze the humanistic and social dimensions of the cobotization process (Złotowski, 2017; Kindal et al., 2018; Janssen et al., 2019; Demir, 2019; Kożusznik, 2020; Berg, 2022; Pollak et al., 2020b; Paliga, Pollak, 2021). Attention was drawn to the different types of this cooperation (Wierzbowski, 2019; Lu et al., 2022; Simões et al., 2022) and the parameters that should be taken into account in the implementation of Industry 5.0. Due to the conceptual nature of the research conducted, it seems necessary to subject the formulated assumptions to empirical verification, and this should be the focus of further research. This will allow a variety of factors to be considered when implementing Industry 5.0 to ensure proper adoption.

Conclusion

As indicated in the Introduction, the strategy referred to as Industry 4.0 is currently undergoing necessary modifications, taking the form of the concept of Industry 5.0. It takes into account the necessary corrective actions which make it possible to eliminate the negative social effects of the changes on the labour market that were caused by Industry 4.0. The key features of the new approach are: focusing on human in production processes, combined with maintaining production efficiency thanks to the use of advanced technologies; production

sustainability and its resilience. The realization of these assumptions is connected with cobotization processes, i.e. basing production on close cooperation between people and machines. The full utilization of the effectiveness of such a strategy of action requires the consideration of many factors, in the present considerations a view from a humanistic and social point of view is proposed. Conceptual analysis was applied in the research. The following research steps were performed:

- Basic concepts were defined and described, such as: the concept of Industry 5.0, "cobot", "cobotization" - this allowed to understand the changes taking place.
- Key dimensions of cobotization processes were identified from the human point of view, including philosophical, psychological, and sociological dimensions, which allowed us to concretize the areas of further research (Scheme1). This area of research work is the author's contribution to the issues at hand; on the one hand, it provides an understanding of what cobots can be to humans and, consequently, how humans are inclined to treat them. But also what specific aspects of interaction can influence the building of relationships with non-human agents of interaction.
- In the final part, the relationships that occur between various forms of human and machine cooperation and the philosophical, psychological, and sociological dimensions were established in tabular form (Table 2). This section develops the author's proposal for understanding how particular philosophical approaches can affect relationship building psychologically and sociologically. This section is crucial from the point of view of the assumptions entered in the introduction.

As a result of the analytical work, findings have been obtained on the possible ways of interpreting technology/machines affecting the type of cooperation, in the psychological dimension, attention has been paid to the sense of security, stress level, and sense of autonomy as the most crucial. Regarding the sociological dimension, the tendency to treat cobots as team members, trust, and agency. The developed areas can be considered as a valuable indication for further empirical research, allowing to determine the conditions for the implementation of Industry 5.0 taking into account human-centered assumptions.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

MANAGING QUALITY OF LIFE IN THE POST-PANDEMIC PERIOD

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Purpose: The main purpose of the article is to draw attention to the subject of quality of life, with particular emphasis on Poland. An analysis of this guess is particularly important at the moment we have it right now, namely right after the covid-19 pandemic and in the face of the ongoing war in Ukraine. It can be easily noticed that situations such as a pandemic or war have a diametrical impact on the quality of life not only in the areas where they take place, but also these factors have a much wider impact, such as the ongoing war, which affects not only neighboring countries, but in this case also all of Europe, and even beyond. For this reason, it is worth trying to assess the quality of life and compare the current state with previous years.
Design/methodology/approach: The article uses the method of analyzing the results of quality of life research available in the literature on the subject and in Internet sources, the so-called desk research. Desk Research is a research method that boils down to the analysis of records of available data sources, including in particular their compilation, mutual verification and processing. Such an analysis is the basis for drawing conclusions regarding the problem under study. Desk Research analysis is most often based on official statistical documents, reports, analyzes and publications, statistical yearbooks. Then, after data mining (during which generalized rules and knowledge contained in the database were discovered), the obtained results were analyzed, which led to the formulation of conclusions - the results presented in this article.
Findings: The most important thing for every person is their individual quality of life. From time to time, we reflect on the course of our lives, evaluate them and make a balance of events and expectations according to our own subjective criteria, using the methods and measurement tools we have chosen. Particularly noteworthy is that these criteria are not constant and change over time, and with them measurement methods and tools. Different types of achievements and problems may occur in a person in the next decades of his life and he will perceive the expectation module and the desired quality of life differently. All this means that the assessment of individual quality of life is subjective and variable over time, as it depends on the criteria of assessment that change along with the course of life, as well as the methods and tools for measuring individual quality of life.
Research limitations/implications: The article refers to the results of research on the quality of life, both in Europe and in the world, with emphasis on the place of Poland against their background. Research is conducted on a continuous basis, because the factors that directly affect the quality of life can change dramatically in a relatively short time, which can be seen, for example, through the prism of the last pandemic or the outbreak of war in Ukraine.

Social implications: The research results shown are important from the point of view of society. They are also a hint and a hint for future situations that may happen that it is worth being prepared for any changes, which is of great importance from the point of view of quality of life and crisis management.
Originality/value: The article is innovative based on an in-depth analysis of the factors contributing to the increase in the quality of life, with particular emphasis on the place of Poland. The obtained results of the analysis and the formulated conclusions may allow their implementation to improve the quality of life in the future.

Keywords: quality of life, management, pandemic, covid-19, sustainable development.

Category of the paper: research paper.

1. Introduction

There are many definitions of quality of life that cover both material standard of living and a host of other factors such as employment opportunities, education, social status, health, environment and more. The main aspects of quality of life statistics are: overall life satisfaction, personal relationships, living space, commuting, living environment, local recreation, workplace, time use and financial situation.

Another aspect also related to the quality of life is the sense of security (ensuring objective safety and improving the subjective sense of security among the population, fighting crime, ensuring road safety, restructuring the asylum system and ensuring professional, risk-oriented enforcement of penalties and measures).

In addition, issues related to sustainable development (in the context of spatial planning and investment) and environmental protection are also discussed as leading topics in the discussion on quality of life in Europe, in addition to: promoting sustainable spatial development; business location enhancement; infrastructure optimization; ensuring social stability in areas such as health, education and social policy; careful use of natural resources (promoting biodiversity and supporting the optimization of the material cycle), i.e. helping to ensure that the natural bases for life are available to the next generation as much as possible; continuation of the advanced energy policy (reduction of CO2 emissions in line with target values) (Kuzior et al., 2022).

However, the concept of quality of life takes on a broader dimension, especially in crisis situations, such as the outbreak of the COVID-19 pandemic and its effects (Vasylieva et al., 2020a, 2020b; Smiianov et al., 2020; Letunovska et al., 2020; Kuzior et al., 2021a, 2021b), or the outbreak of war, when the conditions and rules of functioning in social life are changed. The aim of the paper is therefore to present precisely those areas that are subject to change in the transformed living conditions.

2. The concept of Quality of Life

R. Kolman understands the quality of life as "the degree of fulfillment of the requirements determining the level of material and spiritual existence of an individual and of the entire society" (Kolman, 2007, p. 14).

E. Skrzypek proclaims that "the quality of life is not only physical existence, but also the possibility of enriching the spirit, mind, education and creativity [...] the sum of efforts, struggles, struggles often with oneself, it is the sum of skills right choices is also a dependence on compromises; it is primarily the ability to make decisions and accept their consequences with full responsibility" (Skrzypek, 2001, p. 8).

K. Lisiecka sees the quality of life as a philosophy of life based on responsibility, morality and purpose of life. The idea of life, based on true and healthy morality, on honesty, encourages people to reflect more deeply and to look ahead than ever, to reflect on the meaning of life (cf. Lisiecka, 2001, p. 4).

According to A. Niesior, quality of life is "the degree of fulfillment of the requirements determining the level of material and spiritual existence of individuals" or, more broadly, "it is a function between expectation (expactivity) and their fulfillment (perspective)" (Niesior, 2000, pp. 8-9).

Therefore, in his opinion, the quality of life of a given individual should be defined taking into account the time perspective and the social context.

According to R. Kolman, the quality of life (QL) depends on the set of qualitative changes (Ch) that take place in it the following component areas:

- quality of family life (F),
- quality of mental life (M),
- quality of functional life (F),
- quality of somatic life (S),
- quality of environmental life (E),
- quality of habitat life (H) (cf. Kolman, 2004, pp. 129-130).

According to A. Kuzior in the book entitled "Axiology of sustainable development", "The quality of life is a central category of sustainable development and one of the basic values which, using M. Scheler's typology, can be situated within the vital values.

[...] W. Tyburski, the value of life in the axiology of sustainable development relates mainly to human life, although due to the holistic approach to the value of health (human health and the health of ecosystems) as the basic factor determining the quality of life, the range of life values is extended also to other beings animated. [...] Human life and quality of life largely depend on the condition of the environment, nature as a home in which he lives and the possibility of creative development in harmony with nature" (Kuzior, 2014, p. 76).

Moreover, A. Kuzior draws attention to the very important fact that there is no uniform definition of the quality of life, which would include social, biomedical and natural aspects. Also in medicine, no single definition of this concept has been developed (cf. Kuzior, 2014, p. 76).

The quality of life is closely related to its measurement and assessment by each individual or group of people; so we can distinguish:

- individual quality of life, relating to individual people,
- group quality of life, relating to a group of people, distinguished on the basis of the adopted criterion, e.g. occupation, capital resources, place of residence, etc.

The most important thing for every person is their individual quality of life. From time to time we reflect on the course of our lives, we evaluate them and make a balance of events and expectations according to our own subjective criteria, using the methods and measurement tools we have chosen.

Particularly noteworthy is that these criteria are not constant and change over time, and with them, measurement methods and tools.

"People in Scandinavia or Switzerland [other countries] are simply not keeping up, at least not in terms of satisfaction/contentment.

In [these countries] people are not really happy in any area of life" (Spiegel, 2015, f.p.).

According to the ranking of the Eurostat statistical office - the EU statistical office - the following data appears: Statistics rate the quality of life on a scale from "0" (not at all satisfied) to "10" (completely satisfied). The following aspects are taken into account: general satisfaction with life, personal relationships, living space, commuting, living environment, local recreation, workplace, use of time and financial situation.

3. Quality of life in the post-pandemic period

The table below with data from (cf. Numbeo, 2022) provides a complete overview of data on life satisfaction in different countries around the world.

Table 1.
Quality of Life Index by Country 2022 Mid-Year (top 10 + Poland) by Quality of Life Index

Rank	Country	Quality of Life Index	Purcha-sing Power Index	Safety Index	Health Care Index	Cost of Living Index	Property Price to Income Ratio	Traffic Commute Time Index	Pollution Index	Climate Index
1	Switzerland	195.27	118.44	78.32	74.85	123.35	8.29	28.50	19.59	80.21
2	Denmark	192.36	99.45	73.44	80.07	84.12	6.78	28.52	20.97	81.80
3	Netherlands	185.38	87.99	72.12	75.56	75.66	7.15	27.40	25.07	87.11
4	Finland	184.96	91.02	72.75	76.31	73.20	7.95	27.80	12.09	56.64
5	Australia	183.81	104.63	56.15	78.14	77.75	7.20	34.78	23.85	92.70
6	Iceland	182.26	77.06	76.47	66.36	94.86	6.36	19.77	15.83	68.81
7	Germany	180.27	103.08	63.63	73.25	65.58	8.93	31.14	27.75	82.44
8	Austria	179.16	77.25	73.92	76.75	71.04	10.75	25.55	21.73	77.15
9	New Zealand	176.81	83.63	56.70	73.32	74.52	7.96	30.78	23.62	96.69
10	Norway	176.39	83.11	66.15	76.83	100.90	8.04	26.91	17.95	68.68
38	Poland	140.02	59.95	70.21	57.76	38.95	11.21	31.81	54.74	76.03

Source: Own study, based on data from: Numbeo, 2022.

The above data shows that Poland is among 38 countries in the world in terms of the quality of life in mid-2022. Compared to 2019 (the time before the pandemic), Poland fell from 35 to 38 in this ranking in terms of quality of life.

The table below with data from Numbeo (2022) provides a complete overview of data on life satisfaction in individual countries only in Europe.

Table 2.
Quality of Life Index by Country only in Europe 2022 Mid-Year (top 10 + Poland) by Quality of Life Index

Rank	Country	Quality of Life Index	Purcha-sing Power Index	Safety Index	Health Care Index	Cost of Living Index	Property Price to Income Ratio	Traffic Commute Time Index	Pollution Index	Climate Index
1	Switzerland	195.27	118.44	78.32	74.85	123.35	8.86	28.50	19.59	80.21
2	Denmark	192.36	99.45	73.44	80.07	84.12	6.30	28.52	20.97	81.80
3	Netherlands	185.38	87.99	72.12	75.56	75.66	7.36	27.40	44767	87.11
4	Finland	184.96	91.02	72.75	76.31	73.20	7.54	27.80	44816	56.64
5	Iceland	182.26	77.06	76.47	66.36	94.86	6.80	19.77	15.83	68.81
6	Germany	180.27	103.08	63.63	73.25	65.58	10.60	31.14	27.75	82.44
7	Austria	179.16	77.25	73.92	76.75	71.04	10.88	25.55	21.73	77.15
8	Norway	176.39	83.11	66.15	76.83	100.90	7.83	26.91	17.95	68.68
9	Sweden	175.30	98.14	51.00	68.71	71.74	9.52	29.43	18.32	74.92
10	Estonia	174.19	63.46	76.18	73.33	53.68	10.06	24.51	19.75	64.28
25	Poland	140.02	59.95	70.21	57.76	38.95	13.49	31.81	54.74	76.03

Source: Own study, based on data from: Numbeo, 2022.

When it comes to the quality of life in Europe, Poland ranks 25th in mid-2022. It is worth adding that compared to 2019 (before the pandemic) Poland fell from 23rd to 25th place among European countries ranked according to the quality of life index.

It is worth noting that the decline in the quality of life index in Poland is related to many factors, including the effects of the pandemic.

The table below with data obtained on the basis of online research by the Department of Theory and Research of Social Practices at the Faculty of Sociology of the Adam Mickiewicz University in Poznań (cf. Drozdowski, Frąckowiak, Krajewski, Kubacka, Modrzyk, Rogowski, Rura, Stamm, 2020) contains information on our feelings during the COVID-19 pandemic.

Table 3.
Distribution of answers to the question: Please specify how intensely you feel individual emotions in recent days [during the pandemic]

	Very strong	Rather strong	Neither strong nor weak	Rather weak	Very weak
Fear for your own health	11%	30%	33%	16%	9%
Concern for the health of loved ones	36%	45%	13%	4%	2%
Fear for your own financial resources needed to live	17%	30%	29%	14%	10%
Fear of running out of food in stores	3%	11%	32%	31%	23%
Fear that the pandemic will last for a very long time	19%	42%	22%	12%	5%
Dissatisfaction with too burdensome measures taken by the authorities to curb the epidemic	7%	11%	25%	22%	35%
The frustration of not being able to do my job normally	17%	27%	23%	18%	15%
The frustration of observing those who don't have to work	5%	9%	24%	15%	47%
Frustration of inactivity and the belief that I am wasting my precious time	10%	18%	23%	18%	31%
Frustration of not understanding everything that is happening right now	4%	15%	25%	21%	35%
Fatigue with the epidemiological crisis	17%	31%	25%	15%	13%
Pleasing to have more time	8%	19%	32%	17%	24%

Source: Own study, based on data from: Drozdowski, Frąckowiak, Krajewski, Kubacka, Modrzyk, Rogowski, Rura, Stamm, 2020.

On the basis of the results presented in the table above, it can be concluded that to a large extent we have started to be accompanied by negative feelings related to our sense of security, primarily about health, therefore it can be stated that our perception of the quality of life has deteriorated. Appreciation of the benefits of having more time at home due to the pandemic has proved to be only marginal.

4. Sustainable development and quality of life

A. Kuzior notes that "[in] e all documents resulting from debates at United Nations conferences on sustainable development we deal with a global approach to the issue of quality of life" (Kuzior, 2014, p. 78).

Sustainable development also has a high priority for the current governments of Europe, as reaffirmed in all governmental guidelines as an overarching maxim. In the current years, three political priorities are shaping the work of European governments and thus the political discussion: finance (develop a tax strategy), spatial development (use of available land is still being developed, also for further development), and investment and promotion of innovation, but finally also the protection of cultural property.

Environmental policy should therefore, first and foremost, consist in carrying out all activities only in a responsible and sustainable manner, which can help to reduce negative effects on the natural environment and ensure that future generations can meet their needs. And so, as part of a joint effort to help our planet, buildings / commercial premises are improved in all countries where we operate in such a way that they are consistent with the principles of sustainable development. This involves, among other things, reducing the consumption of water and paper, fossil fuels: gas and oil (the use of videoconferences is promoted instead of traveling to meetings by car), and above all, reducing the emission of pollutants and the amount of solid waste generated as part of recycling, through education, better monitoring and management of waste streams, as well as by introducing dedicated recycling points in all publicly accessible buildings, in line with the principle that it is necessary to work towards creating a "paperless" environment and to encourage optimization of energy consumption and gas emissions to the atmosphere. thus reducing the carbon footprint per capita (CF), educating all citizens on environmental issues through regeneration or volunteering.

In addition, providing alternative means of transport (as well as limiting business trips to videoconferences, or jointly driving to work), educating and encouraging not to spare efforts to protect the natural environment not only in public places, but also outside your workplace, at home and in your neighborhood.

Given the enormous importance of infrastructure for economic development, it is important that sufficient resources are made available in the current years for future investments. On the one hand, they should serve to maintain and renew existing infrastructure, as well as targeted extensions.

5. Conclusions for the future

In conclusion, the goals of greatest importance for the present and future development of Europe as a whole should therefore be defined in the following points:

- “Promoting sustainable spatial development – i.e. spatial requirements to create jobs in Europe.
- Strengthening the business location - further implementation of the economic strategy.
- Optimization of infrastructure despite the difficult financial situation.
- Ensuring social stability in areas such as: health, education and social policy.
- Careful use of natural resources (promoting biodiversity and supporting the optimization of material cycles), i.e. contributing to ensuring that the natural bases of life are accessible to the next generation as much as possible.
- Continuation of the advanced energy policy (reduction of CO2 emissions in line with target values).

- Strengthening education (continuing consolidation of the education system, improving employment conditions for teachers and maintaining and developing operational capacity, ensuring the financial stability of educational institutions).
- Ensuring safety (ensuring objective safety and improving the subjective sense of security among the population, fighting crime, ensuring road safety, restructuring the asylum system and ensuring professional, risk-oriented enforcement of penalties and measures).
- Effective region positioning (cooperation between regions that jointly implement key projects and take greater account of common interests at national level)" (Postrzednik-Lotko, 2020, pp. 602-603).

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

INTRODUCTORY REMARKS ON AXIOLOGY OF TECHNOLOGY

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Purpose: The main goal of the paper is to present an initial version of possibly comprehensive and detailed axiological fundamentals for the Technology Assessment.
Design/methodology/approach: The paper can be placed in the tradition of the analytic philosophy – historically (in the sense of history of technology) informed.
Findings: A classification of values relevant for technology-assessment has been constructed. A certain number of instances have been given for each values-group.
Research limitations/implications: The analysis carried out in this text presents the results of the first stage of the technological-axiological studies. They should be widened (many relevant values have not been even mentioned) and analytically developed (more precise descriptions should be given).
Practical implications: The axiology-of-technology investigations, even in its present form, can be useful for all institutions and organizations active in the domain of technology assessment and in related fields (in particular: technology policy and management).
Social implications: The analyses presented in this text could make the public debates on technology more nuanced and less ideological. They should help overcoming the schematic opposition of techno-optimism and techno-pessimism.
Originality/value: The paper seems to start from where many other works end: The general thesis about "saturation" technology with values has been soundly substantiated and can be regarded as well-founded. It is time to make further steps – toward systematic and detailed axiology of technology. This text seems to be one of the first steps in this direction.

Keywords: value, sustainability, responsibility, ontology of technology.

Category of the paper: viewpoint, general review.

1. Introduction

Two complementary theses about the development of technology can be formulated: Firstly, a thesis stressing the continuity of this process since the beginning of the history of the *Homo sapiens* species (since the Paleolithe). Secondly, a thesis emphasizing the historical importance of the passing from agrarian to industrial civilization (societies); in other words – emphasizing

the historical significance of the (first) industrial revolution that started in the second half of the 18th century.

The complementarity of these two theses would deserve a separate discussion. At this place, I would like to make but two brief comments on this issue. First: The development of technology can be regarded as – "roughly taking" (leaving aside many otherwise important mathematical "details") – an exponential process (Similarities with other global processes – demographic, ecological, etc. should be noted). And second remark (of epistemological, psychological and sociological character): very slow processes are weakly (individually and socially) "perceivable". Only when a threshold has been exceeded the given processes starts to be widely perceived (Vallor, 2022).

So, it is not a coincidence that the development/progress of technology began to be a subject of analyses and many controversies in the 18th century (Franssen, 2009; Lizut, 2014). Symbolically, though not only, the publication of the Jean-Jacques Rousseau's "Discourse on the Sciences and Arts" can be regarded as the starting point of these debates. This work was published in 1750: one year before the publication of the first volume of the "Encyclopedia" of Jean de Alembert and Denis Diderot – the great work of the Enlightenment, a work that played significant part in the popularization of the idea of progress, also – of technological progress.

The history of these debates would deserve a rather large book (Mitcham, Briggle, 2009). To my knowledge, no such book has so far been written. For this reason, as only interpretative hypotheses I will formulate a few comments on this history. It appears that for the whole 19th century dominated criticism of technology expressed by philosophers, poets, artists…shortly put – by so called "humanists" of various sorts. In the 20th century the situation began to change. There is little doubt that the two world wars and the role technology played in them both (in particular: Hiroshima and Nagasaki) contributed to gradual change of the situation. The cultural shift in the 1960s (most vividly manifested in 1968 – "Paris May" and the like events), and – even more importantly – the development of ecological consciousness, environmental movements etc. – they have also played a significant role in this process. Without going into its details but trying to mention some concrete events, I want to say a few words about the first – published in 1972 (also the year of the UN Stockholm conference) – report to the Club of Rome (established in 1968) "Limits to Growth". It was and remains a very controversial document. Nevertheless, whatever your opinions about this text might be, two points are significant and deserve attention: First, the Club of Rome members were engineers, economists, businessmen, etc. – and not "humanists". Second, modern scientific methods and technologies (computer modelling) were applied to produce this report. – To summarize these reflections: In recent decades the "external" criticism of technology has been supplemented by the "internal". In my opinion, this change should not be underestimated. Due to this change criticism of technology has become more concrete, more specific, much less utopian. Somewhat paradoxically: more practically critical, less – rhetorically (so to speak: less radical in words, more radical in deeds).

Ending these introductory remarks, I would like to locate the criticism of technology in a broader context. First: Philosophers have criticized not only technology but also – philosophy. And even some mathematicians have criticized mathematics. Second: these phenomena can be regarded as instances of this trait of modern culture that some sociologists (e.g. Anthony Giddens, Alan Touraine) call – self-reflexivity.

It is rather obvious that each criticism (of a person, of a theory, of a social order… – of whatever) presupposes some criteria of evaluation. And it also should be (but actually is?) obvious that any criticism (so, in particular, of technology) can also be an object of criticism. I think that criticism that is based on clearly (precisely, systematically…) explicated evaluative criteria is – all other factors equal – better than one based upon "tacit" evaluative intuitions. In short, axiology of technology is a precondition of the "good quality" of the criticism of technology.

In the next chapter I will present an overview of the general axiological *problematique*, and in the subsequent – an overview of the axiology of technology (Vermaas, 2022).

2. Axiology – an overview of the problematique

Though the term "axiology of technology" has recently been quite often used, the term "ethics of technology" seems to be still more widespread. Even for this reason only, it might be useful to say a few words on the relations between axiology and ethics. These remarks will be not only of conceptual character. I am going to present the substantive reasons why I prefer the concept of axiology to the concept of ethics.

The concept of ethics goes back to Aristotle; incidentally – like that of logic. The idea of good (goddess) is central for ethics, while that of truth – for logic. These two (good, truth) – together with beauty (aesthetics, the discipline for which this concept is central, was constituted – as autonomous branch – only in the 18th century) – co-create a system often called "Plato's triad". Let us underline right away that the word "triad" is to indicate the fundamental character of these ideas (or – values, as we would say today) and their strong interconnectedness.

The concept of axiology is much "younger": it was introduced at the beginning of the 20th century (1902) by a French philosopher Paul Lapie (except for this terminological invention almost completely forgotten) and used some years later (1908) by a noted German thinker Eduard von Hartmann. The term "axiology" is coined on the basis of the Greek word *aksia*, translated into English as "value" or "worth". The second word deserves some attention due to its familiarity with the German "*Wert*". – The last word was in the second half of the 19th century adapted by German philosophers (Herman Lotze and others) from the British economy in which theory of value played an important part (Adam Smith, David Ricardo). A significant role in popularization of this notion played the Friedrich Nietzsche's philosophy, and in

particular his book "*Jenseits von Gut und Boese*" (Beyond Good and Evil, 1886) in which he proclaimed the "revaluation of all values". – There is no doubt that the very notion of "value" and the Nietzschean ideological program exerted significant influence on the cultural transformations in the 20th century. But other phenomena should also be taken into account. Their systematic overview is not possible here. Nevertheless, I would like to invoke at least one phenomenon: so-called "cultural relativism" – an important current in 20th-century social sciences – initiated (1887) by an American anthropologist Franz Boas. This phenomenon has been a of great many debates and controversies… In whatever way we would like to summarize them, one point seems to be obvious: the differentiation of axiological systems (systems of values) – in time, and geographical and social space –is great.

It appears that these cultural-anthropological or historical studies have had more far reaching consequences for theory of values: It is difficult or perhaps even impossible to compare various axiological systems using but three values (or types of values) such as goodness, truth, and beauty. Interestingly, some philosophical investigations lead in a similar direction: Max Scheler, one of the important ethical thinkers of the 20th century, distinguishes religiously-relevant values, spiritual values (interestingly, this group comprises both the intellectual and moral values), vital (or hedonistic) values and sensible (or utilitarian) values.

I would like to end this chapter with a remark on philosophy of values – on their metaphysics (and epistemology). An analogy with mathematics should be useful: the majority (if not all) of mathematical problems can be solved without resolving disputes over the nature (the mode of existence…) of mathematical objects. By the way of analogy: we can debate on the relations between justice and mercy, between freedom and solidarity – without deciding how these (and all other) values exist.

I would even say that it would be immoral to wait for resolving fundamental metaphysical issues (in particular – these belonging to the metaphysics of values) – however interesting this question might be for some of us: In practical life it is much more important to achieve axiological agreement (consent to some values), even partial, than – the metaphysical understanding (consens).

3. Axiology of technology - an overview

I am profoundly convinced that the "value-ladenness of technology" (Lizut, 2014) should be today regarded as well-established fact (Rapp, 1981; Poel, 2009; Radder, 2009). But what kind of values are at stake here? – To answer just this question is, in my opinion, the main task of axiology of technology.

I believe that any "regional" axiology (e.g. axiology of sciences or of a particular discipline – mathematics or psychology…, of art or of education…; the concept of "regional" ontology/axiology is drawn from Husserl's phenomenology) should be based on the ontology of the given "region" (Brey, 2022). In accordance with this conviction, my overview of axiology of technology will be based on its ontology. I will avail of the version of the ontology of technology presented in the paper of W. Czajkowski (2022).

Therefore, this chapter will be divided into two parts. In the first one, the axiology of technology viewed 'structurally' ('statically') will be outlined. In the second – the axiology of technology development (of technology viewed 'dynamically') will be discussed.

So, let us pass to the first part of this chapter. It should be convenient to subdivide it further – in accordance to accepted here ontological assumptions – into two sections. In the first section the 'internal' values (Alexander, 2009) of technical objects will be discussed, and in the second section – 'external'. (It must be emphasized here that it is not my intention to contend that one can draw a sharp division line between these two groups of values. Nevertheless, this division seems to be useful.) The simplest characteristic of this division might be given by formulating supposition that the 'internal' values are discussed mainly by engineers, and the 'external' ones – by social scientists and philosophers (A similarity between 'internalist' and 'externalist' approaches in the epistemology and philosophy of science may be noted).

Let us start from a value that can be called "simplicity" (Interestingly, it is a value appreciated both by methodology of science and art criticism; likewise – by the legal theory). It should be stressed that neither general version of this concept nor its special version (applied directly to artifacts) is itself very simple: Its systematic analysis would demand application of some mathematics; it is not possible here. I have to limit myself to making three remarks. First – on the relative character of this value: Paraphrasing Albert Einstein, one could say: artifact should be as simple as possible, but – no more (Compare 'simple bicycle' with 'simple jet' – nothing more is to be added here). Second – on various 'dimensions' of simplicity: for instance, it is by no means obvious that there always is a simple (linear) correlation between simplicity of construction of an object (of its structure) and that of technology of its production. And third – on the relations between simplicity and other 'internal' values.

With simplicity is closely connected a value that can be named 'transparenc' (I have chosen this word on purpose – to suggest some connections with issues being in focus of, say, the well-known organization – Transparency International). This value seems to be particularly important in the case of great technical systems such as energetic system or Internet.

Transparency is one of a whole group of ('internal') values that could be defined as, say, 'epistemic'. Predictability is other value belonging to this group. Its characterization I will commence from a general note on the importance of knowledge (of various kinds): For various reasons (grouped around/connected with the value of safety – one of the most important in our life), we want to possess knowledge about some elements of the future: about the weather in our city, about the situation on the stock exchange, about emotions of some persons important

for us… Adding new items to the world we live in, we would not like to raise the level (sufficiently high…) of unpredictability of 'our' world.

With the value of predictability are connected still three other values. One of them I will call 'controllability'. It is doubtful if you can formulate a definition of this term both precise and valid for all technical objects; I am going to describe here only some intuitions labelled with this term. We can control (some) simple technical objects (tools): we can stop at any moment hammering a nail (though we are not able to stop the arrow we have just fired). But it is much more difficult to stop functioning many complex systems. But, regarding all other parameters as fixed, we prefer those artifacts that can be stopped and restarted as soon as possible and at possibly little costs.

The second value connected with predictability is one well-known under the commonly accepted name of 'reliability': In short, the probability that the technical object will function without failures for a certain (fixed) period of time.

Closely related to predictability is also a value that can be called 'diagnosability' (let us note that simplicity of an object seems to be a precondition of its diagnosability). With this word you can characterize the level of ease (or difficulty) of checking whether the structure and functioning of this object remains regular.

And the last but not the least: despite the process of miniaturization, some (technological) artifacts are sufficiently large to be visually perceivable. Therefore, among values that characterize these objects we should distinguish a set of esthetic values. On the one hand - intrinsic values (values analogous to those which characterize a painting or a sculpture), on the other – elements of a landscape (either natural – e.g. cable transport in mountains, or – of a city e.g. Street lights). Let me say here a few words about the building of the Centre Pompidou in Paris: Technical solutions and artistic ideas (and respective values) are there closely interconnected.

At this point, I have approached the border area between 'internal' and 'external' values. Thus, let us look at this second group. Roughly speaking, it contains values characterizing relations between technology, and social and natural world.

Let us start from the well-known: 'sustainability' and – hereof: sustainable technology) (Kuzior, Kiepas, Leks-Bujak, 2012). It is interesting and significant due to two facts. First, it is an important element of the language of the current (scientific, political, ideological…) debates on globalization (Ciążela, 2006) and related issues. Second: it designates a value that may be regarded as/called meta-value (second-order value…). This value characterizes a relation between a certain number of (first-order) values. In the case of mathematically measurable values a precise, formal characteristic (definition) might be introduced here. But many (if not the larger part of) values are not measurable thus only an intuitive characteristic can be given: For instance, if all parameters characterizing an object (a situation etc.) assume positive values then the object is more "sustainable" than if some parameters would assume better values but at least one – negative. – Though I must confine

myself to this short and sketchy comment on this problem, I would like at least to stress its great importance for the axiology of technology.

And now, let us look at the values grouped under the label ‘sustainability’. According to the standard view, three types of values constitute denotation of this term (Kuzior, 2014). The first group contains ‘environmental values’, the second – ‘social’ ones, and the third – ‘economic’.

I would like to stress that in all the three cases the word “value” is used in the plural form. For sure, I will not be able to list all the values that should be included into one of these three groups. – Much extensive text would be necessary. Thus, let us discuss briefly some instances only.

Let us start from ‘environmental values’. First: those characterizing the level of the exploitation of natural resources (coal, oil, copper, etc., etc.). Second – the (unintentional) ‘production’ of by-products (carbon dioxide, methane etc.) It should be stressed that from the perspective of the axiology of technology, neither the global exploitation of resources nor the global ‘production’ of by-products are particularly important. These global parameters depend only partly (even: to a limited degree) on technology. Much more important is global demand for various products that in turn depends on the number of people and on many social/economic factors. For the evaluation of technology much most significant are relative parameters: the use of resources (similarly: the emission of by-products) per unit of product (one car, one TV-set etc.) per the unite of a product (one car, one computer, one dress etc.).

Let us move on to the “social values”. There is no doubt that the development of technology has had great influence on many (if not all) characteristics of social world. Let us take into consideration but two phenomena (processes). First: industrial revolution. And second: the development of Internet (Kiepas, 2017). The choice of these processes is not incidental. Both processes have many consequences that can be evaluated in various ways. For this reason, the next limitations will be necessary.

In the case of the (first) industrial revolution I want to focus our attention on only one (though very important) of its consequence: urbanization. But, at this (very complex, multifaceted) process I would like to look from a special perspective: Urbanization has been a very profound change of the social space (this term is to denote, roughly speaking, materially transformed by humans and culturally experienced geographical space of our planet) – one of the most fundamental elements of the social world/social reality. Various characteristics of social space have a significant influence on the character of interpersonal relations (e.g. their /in/stability) and on the quality of human life (from physical parameters such us the level of noise to aesthetic and cultural values).

Communication (its structure, various characteristics etc.) between people is also one of the most fundamental elements of the social reality. It is obvious that many of its essential characteristics have been determined by technology (invention of writing, invention of print etc.) The rise and development of the Internet has transformed very profoundly various aspects (economic, political, psychological, cultural…) of communication. – It is the most doubtful as

to whether it is possible to formulate a single (be it positive or negative) evaluation of these transformations, thus – of the Internet. If you cannot formulate an unequivocal evaluation of one (even very great and important) technological innovation, how should formulate a simple and unequivocal evaluation of the whole technology? (Incidentally, a similar remark could be formulated in relation to science or religion, to politics or business…).

A few words at least should be said about technology and violence (in its various forms: from violence used in interpersonal, even familial, relations to world wars). – This is a huge subject (comprising the problem of self-defense, the concept of just war and great many others). Mentioning this issue, I would like to formulate two remarks. First: no systematic and comprehensive (thus much more extensive than the present text) presentation of the axiology of technology cannot neglect this issue. Second: any discussion of this issue should take into account the fundamental difference between such devices as knifes or baseball bats (that happen to be instruments of violence only occasionally) on one side, and machine guns or atom bombs (designed as possibly effective instruments of mass killing) on the other.

And now, a few words on "economic values". Let us leave aside the general problem how to distinguish "social values" and the "economic values" (and the question whether such a distinction is useful or even meaningful). I will tentatively assume that this distinction can be connected with the important idea of theoretical economy that distinguishes real economy and nominal (financial) economy. Many economists hold that currently (for the last three decades or so) financial economy has dominated real economy, and that this domination has had some negative social, political and economic consequences. Even if you are not prone to accept fully this opinion, the quick development of financial economy can hardly be doubted. And it is rather evident that this process has been possible due to development of the Internet. – So much about axiology of 'statically' (or 'structurally') viewed technology. Let us pass now to the axiological problems of the technological development (Rapp, 1981).

Discussing these problems, I am going to take into account not only actually existing (either in the past or currently) mechanisms of technology development but also those that coming into existence (or even just possible).

I will begin from the concept of democratic decisions concerning technological development. In the contemporary world it is a product of collective work of great many people using expensive instruments – it must be financed. In many countries – from public (state) sources. Thus, in democratic societies citizens should have voice also in the issues of technology policy. This is perhaps the simplest and most convincing argument. But other arguments also, perhaps more controversial, could be formulated. For instance, some decisions concerning the development of Artificial Intelligence can have some fare reaching consequences affecting the nature of man and society. It can be held that such decisions should not be undertaken by elites (of whatever sort: be scientific, or business, or political, or any combination of them) but by the global society.

On the other hand, one can be skeptical as to making democratic decisions concerning technology development, if democracy should be understood here in the simplest way – in which just voting plays the central role. The problems of technology development demand rather deliberative democracy – democracy in which unrestrained debate plays the key part. This thesis leads toward a more general formulation: Due to the variety of consequences of the technology development, this development should be accompanied by critical (the words 'critical', 'criticism' or 'critique' should not be understood here in the ordinary language sense, but rather in the spirit of the Kantian tradition).

Among issues concerning the development of technology, one issue seems to be closely connected with the idea of responsibility for the future generations (Ciążela, 2006). Assuming that the possibility of making decisions about preferred way of life can be regarded as an important value if related also to societies and not only to individuals, we can claim that technological solutions that leave open alternative options of future technological development are better than those that determine strictly the future development.

With the previous two values still one value seems to be closely connected. It can be defined as "optimal pace" of technological development: neither "zero growth" of technological innovations (to be more precise: I mean here "real life" innovations and not those existing in an "ideal" form) or faster and faster tempo of innovations. The word "optimal" can be understood here in a few ways. For instance: in more objective sense: as denoting such pace that leaves time for analyzing various consequences of technological innovations. Or. in a more subjective one: as characterizing "psychological tolerance" for changes.

4. Final remarks

We – all the people – are responsible for our common future (Ciążela, 2006; Kuzior, 2014). – I accept this opinion if to regard it as the initial most general assumption that requires concretizations, reservations, etc. I would commence from emphasizing that the burden of responsibility is not – and neither could or should be – evenly distributed: it rests on some of us more than on others. It depends on the (material and other) conditions of our life, on our education and place in the social division of labor…And our responsibility differs not only in degree but also in type.

If you accept the conviction that technology influences the current and future state (Abney, 2022) of our world and that its development should be controlled (Grunwald, 2009; Johnson, 2022) then you should also accept that the development of the control of the technology development is a task for which some of us are responsible in a particular way (Ess, 2022).

First: philosophers (in cooperation with sociologists, historians etc.) Controlling the development of technology is a very difficult and subtle task: too much control may be more dangerous than too little. Good control of technology development demands good theoretical foundations – to be delivered by philosophers. And not only by the philosophers of technology. Good philosophy of technology needs support from ontologists, social philosophers, ethicists and philosophers of history…It could be said that one of (let us stress the last two words) the tests of significance of a special issue (studied in this or that branch of philosophy) for the philosophy of technology (Mitcham. 1994).

Second: engineers, and especially – the academic teachers of engineering sciences. I see two specific tasks for them (Dietrych, 1985; Kroes, 2009). *Primo*: (much more active) participation in the development of the philosophy of technology. Neither ontology nor axiology of technology will achieve such level of precision, concreteness etc. as it would be demandable if philosophy of technology is not only to comment but also effectively participate in the development of technology. *Secundo*: they should regard philosophy of technology as a part of fundamental engineer education – on a par with mathematics or physics.

Third: politicians (Briggle, 2022). They should be aware of two their responsibilities. Firstly: for supporting institutions delivering opinions about technology development. And secondly: for studying and using theses opinions (Hitachi, 2020; Kuenkel, 2019).

Let me end this text with these words: the future is open and we can participate in its formation.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

HOW TO CARE? AN ANALYSIS OF THE CONTEMPORARY SOCIAL ISSUES THROUGH THE LENS OF CARE ETHICS

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Purpose: This article aims to analyze the ethics of care and how it can help mitigate some of the negative impacts of social risks for vulnerable groups.
Design/methodology/approach: We analyze various books, documents and academic articles that provide essential information about care ethics, autonomy, justice, dignity, human rights, socially excluded groups and social risks. Overall, we aim to identify how the ethics of care can help prevent and protect the socially excluded from the negative impacts of social risks and contemporary issues.
Findings: Our article found that care ethics provides significant benefits while formulating policies for socially excluded and vulnerable groups such as people with disabilities. We have also identified several factors while care ethics provides original inputs for the new and reformulated social policies.
Research limitations/implications: The future research could expend on the ability of care ethics to introduce the concept of vulnerability in a specific policies aimed at improving living conditions, overall quality of life, upholding of human rights and dignity.
Social implications: We hope our article will impact political laws, support vulnerable groups, and help reduce discrimination against people with disabilities. Our paper should support the debate about broader consideration of dependency and vulnerability within social policies.
Originality/value: We have analyzed a significant theory that deals with vulnerable groups in society and places value on relationships and the dependency of all human beings. Our analysis tries to bring in the vulnerability of all human beings and how we should consider that while formulating any kind of governmental policy.

Keywords: ethics of care, vulnerability, ethics, human rights, capability approach.

Category of the paper: Research paper (ethical/human rights analysis/philosophy).

Introduction

Ethics of care is a controversial approach toward human beings as it focuses on the weaknesses of all humans. The specific character of care ethics does not lie in a simple acknowledgement of human vulnerability. It lies in a completely new approach toward sensitive topics within society. It is not common to find an understanding of human beings in more vulnerable aspects, as they seem not to rely on the accomplishments and superiority of humanity. Care ethics seems to deal with more reality-based concerns rather than relying on an idealized understanding of human life. The present circumstances (climate change, wars, economic crisis, shortage of resources) have already shown us that there are new challenges and obstacles we need to face constantly. Governments can adopt social policies to combat harmful and long-term effects on citizens. The best practice is to adopt mechanisms that include the real-life scenarios of citizens and provide support that reflects the vulnerability and fragility of human life. In our article, we want to demonstrate that care ethics provide an adequate argumentative foundation for social policies and measures. We will first discuss the harmful effects of contemporary issues and the role of care ethics in social policies. In the next part of the article, we define different aspects related to care ethics and how it relates to all human beings and not only the most vulnerable (autonomy, dignity, freedom, justice). The third will conclude our analysis and focuses on the specific case of people with disabilities and how ethics of care can target policies to combat contemporary social issues. Contemporary social issues show us how vulnerable citizens are to several factors (environmental, economic, political, etc.). Many socially excluded groups suffer heavily during turbulent periods. We argue that all citizens suffer in crisis; however, we must particularly focus on the most vulnerable groups because they must deal with the worst impacts on their everyday functioning. Our primary focus group are people with disabilities because they suffer from all sorts of negative impacts, such as poverty, unemployment, poor quality of education, undignified living conditions etc.

Ethics of care and its place in developing social policies

Ethics of care present a significant addition to our perception of justice, dignity and freedom of all human beings. Through the lens of ethics of care, we can perceive human beings as realistically as possible while developing any theoretical position concerning justice, equality, dignity, freedom or human rights. The notion that all human beings are vulnerable to different external (societal, political, environmental, etc.) and internal (disability, bodily, family, etc.) factors enhances our capacity to form arguments and conclusions regarding the organizational structure of society. We pay special attention to the vulnerable groups that rely on various social

measures to help with specific needs (socially excluded groups, people with disabilities, the elderly, etc.). We will specifically focus on the rights of people with disabilities, as ethics of care often provides interesting remarks regarding their needs and appropriate social support by the government. We chose to focus on people with disabilities because they tend to suffer many negative consequences from inadequate social policies.

Contemporary social issues show us how vulnerable citizens are to several factors (environmental, economic, political, etc.). Many socially excluded groups suffer heavily during turbulent periods. We argue that all citizens suffer in crisis; however, we must particularly focus on the most vulnerable groups because they must deal with the worst impacts on their everyday functioning. Our primary focus group are people with disabilities because they suffer from all sorts of negative impacts, such as poverty, unemployment, poor quality of education, undignified living conditions and etc.[1].

The state's role is to provide policies that combat social issues and prevent people from being socially excluded. We argue that poverty, lack of employment or similar factors can cause social exclusion. Therefore, the state should adopt policies to help citizens to counter an increase in prices, unemployment, and lack of resources. The three named factors are a few examples of what citizens could face in a crisis. We see how different events create these sorts of issues for all citizens. Still, we see a lack in creating adequate social policies or policies in general that would support citizens, especially the most vulnerable. Many authors write on the topic of rules and laws. Some specialize in the field of social justice. Zuzana Palovičová, an expert on ethics and social issues, argues that the state has a responsibility to enforce social rules that protect the rights holder, and these rules are legally binding to all citizens (Palovičová, 2017, p. 162). Social rights and rules are fundamental for any society and the quality of life within that society. They are closely related to employment and poverty within the country as they provide the necessary support to all citizens. These policies offer necessary support against social exclusion to the most vulnerable. Palovičová argues that rights and rules are social constructs, and so we are free to invent and reinterpret our current ones (Palovičová, 2017, pp. 162-175). We mentioned the terms social exclusion and socially excluded. These are crucial because they explain what happens when a citizen is not being protected by proper governmental measures for various social risks (poverty, unemployment, housing and others).

[1] For description of different social risks and modernization impacts on citizens see Ján Keller and his two works "Nová sociální rizika a proč se jim nevyhneme" (2011) and "Teorie modernizace" (2007). Here, he, in detail, explains why the states should react to the new changes in employment, environment and culture. He describes negative impacts on vulnerable groups and warns about the long-term consequences of government avoidance and reluctance.

Social exclusion, dignity, autonomy, human rights and their connection to care ethics

The term social exclusion is broad and involves various issues. Different authors tried to identify specific aspects of social exclusion. Experts on the topic of exclusion, Tania Burchardt, Julian Le Grand and David Piachaud, wrote that "an individual is socially excluded if he or she does not participate in key activities of the society in which he or she lives" (Burchardt et al., 2002, pp. 30-31). They argue that exclusion is "relative, that is, to the time and place in question. It is not restricted to citizens of a particular state" (Burchardt et al., 2002, p. 31). So socially excluded people are disadvantaged against others because they are excluded from crucial societal activities. Poor people, people with disabilities, minorities or other similar groups suffer most from social exclusion, especially during a crisis. World Health Organization (WHO) states that "exclusion consists of dynamic, multi-dimensional processes driven by unequal power relationships interacting across four main dimensions – economic, political, social and cultural – and at different levels including individual, household, group, community, country and global levels" (World Health Organization…). Social exclusion is a real problem for many groups and endangers all citizens, especially the most vulnerable.

Employment serves an essential function in our existence. It provides us with money and options to live in dignified living conditions and, most importantly, be independent. Besides simply providing a decent living, employment also allows us to feel like a part of society (a sense of belonging). The Universal Declaration of Human Rights says that "everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment" (Universal Declaration of Human Rights…). Our understanding of care ethics also focuses on vulnerable groups (often socially excluded) with worse employment conditions. For instance, people with disabilities have many obstacles depending on their specific disability. They may face physical, environmental or other barriers that limit their ability to get employed. The main issue is that the Universal Declaration of Human Rights guarantees us the same "just and favourable conditions of work and to protection against the unemployment" (Universal Declaration of Human Rights…). People with disabilities[2] are often excluded from good work conditions. We need to ensure that it is not the case as we are obliged by different human rights documents to hire all groups without discrimination and treat them as equals. This approach requires new policies protecting the fundamental rights of vulnerable groups, such as people with disabilities. For instance, governments can make different preparations, support mechanisms or financial contributions to employers to hire people with disabilities in suitable positions. Many employers can be

[2] For more sources on people with disabilities and human rights, see the publication "Sedová, Tatiana (ed.). 2019. Ľudské práva osôb so zdravotným postihnutím: Od ideí k realite". The book contains significant chapters regarding employment, education or other aspects regarding people with disabilities.

reluctant to hire a person with a disability because they cannot provide sufficient work conditions.

Similarly, different experts argue that poverty is the most threatening factor for many vulnerable groups, and economic participation must be ensured (Levitas et al., 2007, p. 9). European Commission states that "employment: raise significantly the share of persons with disabilities working in the open labour market. They represent one-sixth of the EU's overall working-age population, but their employment rate is comparatively low" (Persons with disabilities…). The employment of people with disability is a global problem that requires further discussions and systematic solutions. For our purpose, it demonstrates that many groups are vulnerable to recent changes, especially regarding employment, education, living conditions, etc.

Ethics of care provides an alternative to traditional thinking about intervention and support for various socially excluded groups. For instance, Eva Feder Kittay interprets care ethics as a critique of modern liberal theories of justice that often rely on idealized definitions of human beings. Ethics of care provides a different perspective on human life, justice, rights, and diversity and reflects the harsh realities that many theories choose to ignore. Kittay says that vulnerability and dependency start from the very beginning of our lives and continue through the different stages as we grow older (Kittay, 1999, p. 29). Kittay focuses on a new element in her analysis, and that is the relationship between caregiver and care receiver, as she understands the care work as a form of employment (Kittay, 1999, p. 30). The importance of the relationship between the caregiver and care receiver is often underestimated. Author Laura Davy argues in her article that we cannot simply ignore the relationship because we cannot simply define our own self and identity. We are always in relation to other people, and our stories are connected to other human beings (Davy, 2019, p. 111). Davy argues that having a disability and being dependent on others is not a burden but a normal part of the human experience (Davy, 2019, p. 107). Another expert on the topic of ethics of vulnerability and relational autonomy, Catriona Mackenzie, says that we cannot simply ignore the fact that human beings are self-determining and need to be also recognized as autonomous human beings (Mackenzie, 2014, p. 41). Mackenzie also emphasizes the fact that all human beings are inherently vulnerable. All human beings need nutrition, shelter, clothing, good quality of life, social interactions and much more (Mackenzie, 2014, p. 54). Ethics of care does point out such factors as crucial, and any reasonable social policy should reflect on these needs and much more. For instance, if we develop a policy regarding dignified living conditions. We must consider that people with disabilities can have limited access to decent incomes to secure proper housing. Therefore, either government must provide adequate housing to all or financial funds. These must be easily accessible and available without discrimination or unnecessary bureaucratic procedures.

We mentioned autonomy within the context of a relationship with other people. German philosopher Axel Honneth writes in his works that all humans need to be respected as diverse individuals with their own needs, desires and self (Honneth, 1995, pp. 131-132). Honneth

argues that we need to have control over our bodies, and we cannot violate this control by force or other means (Honneth, 1995, p. 133). We need to respect the rights of others because we also want our rights to be respected by others (Honneth, 1995, p. 133). Honneth is not the only expert that perceives autonomy as crucial for all human beings. In a study from 2003, authors argue that modern culture relies too much on individualism and places too much responsibility on the individual (Riddell-Watson, 2003, pp. 6-7). We realize that we want a person to be autonomous as possible. On the other hand, we cannot place too much responsibility on individuals because there are things beyond one´s control. For instance, a person with a disability cannot be responsible for adjusting the environment to their specific needs. The government needs to make particular adjustments to fully integrate the person with a disability according to their specific needs. Different authors argue that we need to secure social rights for all people as they are crucial for the 21st century. Judith Wyttenbach writes in her analysis of social rights that the role of government is to ensure that every person can achieve a decent standard of living necessary for dignified existence (Wyttenbach, 2017, p. 332). Wyttenbach points out that we constantly face the threat of new social risks that can negatively impact many socially excluded individuals (Wyttenbach, 2017, p. 332). We mentioned dignity[3] several times in our article because it is a crucial term related to human rights and belongs to every human being. A human being is vulnerable and can suffer if his rights are violated. Human dignity is essential to human rights because, without it, we could not even begin to understand what human rights are (Menke, 2017, p. 172). We need to respect the freedom of every human being to make their own choices because that is the core of their dignity (Menke, 2017, p. 175). The article's primary aim is to analyze how ethics of care relate to contemporary social issues and what insights it can provide to help mitigate various negative impacts. We have shown that ethics of care is often used when analyzing human rights, human dignity, autonomy, justice, freedom or equality.

People with disabilities, care ethics and social policies

Our article mentions how care ethics focuses on different aspects of our lives (dignity, freedom, vulnerability, and dependency). We have also noted how some social policies might be changed through ethics of care and mentioned employment because it can benefit from the perspective of care ethics, especially how it understands people with disabilities and their dependent position on government support. In our analysis, we want to mention that ethics of care does not simply focus on vulnerable aspects of life but also provides us with focus through

[3] The study "Analyzing dignity: a perspective from the ethics of care" by Carlo Leget (2012) provides some interesting insights into the connections between different historical understandings of dignity and how they relate to care ethics with interesting insights on modern authors.

different theories that lack these elements when analyzing how to build a socially just society. For instance, in the capability approach introduced by Amartya Sen and Martha Nussbaum, we can see how such a concept fits within their understanding of just society. Sen's just society aims to maximize the real opportunities of an individual to live such a life as he deems worthy. An individual should do things that he thinks are important for him and his wellbeing. We should respect different life forms and personal choices of lifestyle (Sen, 2000, p. 75). Sen's understanding strongly correlates with notions introduced through analysis of care ethics as he places value on individual quality of life. Sen's approach does not exclude any groups as he believes we should provide real opportunities even for those most unfortunate. He thinks that we should respect the rights of the excluded groups and provide them with the same opportunities (Sen, 2010, pp. 226-227).

Similarly, Martha Nussbaum[4], in her interpretation of the capability approach, connects the idea of human dignity and flourishing as something central for all human beings (Nussbaum, 2007, p. 182). Nussbaum, in her concept, specifically mentions people with disabilities because they are often excluded when dealing with an understanding of justice society. In our analysis, that means that when a government is developing a policy, it should consider the specific needs of vulnerable or excluded groups and form the policy to address the specific requirements. For instance, if we were to make changes regarding housing policy, we should consider which groups live in the most unsatisfactory conditions. If people with disabilities cannot afford to live independently and have one of the poorest quality of life, government policy should consider them first and propose adequate solutions. Nussbaum claims that many theories of justice simply ignore the specific needs of people with disabilities. The capability approach places a central role in considering all people equals within the society, and we should not neglect the option to let them live a productive life (Nussbaum, 2007, p. 98). Both Nussbaum and Sen agree that people should live dignified lives and that society should create just conditions for them to flourish. For our analysis, it is sufficient to say that the capability approach uses many elements from ethics of care as it reflects on all human beings' vulnerability and dependency and considers it a natural characteristic of human existence.

Conclusion

To conclude our analysis, we have tried to demonstrate that the contemporary issues, whether related to COVID-19 consequences (Kuzior et. al., 2021, 2022) new employment challenges (Kuzior et al., 2022), the invasion of Ukraine, climate change (Barchielli et al., 2022)

[4] For more information on Nussbaum's understanding of the capability approach, see her other work, "Capabilities, Entitlements, Rights: Supplementation and Critique" (2011) or "Creating capabilities: the human development approach" (2011).

rising prices and many others, need to be addressed thoroughly and effectively to avoid any long-term adverse effects. Especially regarding the most vulnerable groups, as they are the ones who suffer the most substantial consequences. For instance, people with disabilities are among the most vulnerable, and governments should take measures to minimize these new challenges' negative impacts. We understand this is a complex issue to be solved with just philosophical analysis. However, ethics of care shows us that we often tend to ignore the harsh reality of vulnerability and dependency of all human beings on different policies and means of support. The ethics of care offers provides a helpful tool that seeks to identify which groups to focus on and what sort of help we should provide to counter the negative impacts of contemporary issues. Our analysis supports new research aimed at proving the fragility and instability of human existence and specific social and political measures that aim to prevent further discrimination and social exclusion.

Acknowledgements

This publication was funded by the The Slovak Research and Development Agency (APVV) within project APVV-20-0137 Philosophical Anthropology in the Context of Current Crises of Symbolic Structures.

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SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

ARTIFICIAL INTELLIGENCE AND ITS APPLICATION IN BUSINESS MANAGEMENT

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Purpose: The paper aims to conduct an in-depth analysis of artificial intelligence applications in business management with a bibliometric investigation.
Design/methodology/approach: (mandatory) The objectives are achieved by carrying out the research with the use of the VOSviewer software, developed at Leiden University's Centre for Science and Technology Studies (CWTS), Leiden University, the Netherlands. This software allows conducting a literature review by generating, visualising and analysing bibliometric networks. The scope of the study is limited to data retrieved from the Scopus database obtained by three search queries.
Findings: The work identifies the main topic areas related to the application of artificial intelligence application, particularly in business management.
Originality/value There are lots of materials devoted to artificial intelligence though there is still a lack of materials related to AI technologies categorisation and its application in certain areas. The paper points out how artificial intelligence technologies are adopted in business management. The paper also defines potential areas for research or which areas require future examination.

Keywords: artificial intelligence, business management, application, VOSviewer.

Category of the paper: Research paper, Literature review.

Introduction

Nowadays people deal with large volumes of information every day. Artificial intelligence (AI) simplifies big data analysis by automating and improving preparing and visualization of data and other complex analytical tasks. Though AI performs tasks reliably, there is still a need for humans to set up systems to gain an edge. AI is used to automate recurrent data learning and exploration. Furthermore, AI adds intelligence to existing products. Automation, conversational platforms, bots, and smart machines can be combined with large amounts of data to improve many technologies. AI adjusts by using progressive learning algorithms to allow the data to do the programming. AI finds patterns and structures in data so that algorithms can learn

skills. AI analyses more and deeper data using neural networks. The use of artificial neural networks allows us to create functional models for forecasting the safe development of society, which are not predetermined in advance but are determined by the data itself (Kwilinski, Tkachenko, Kuzior, 2019). To effectively train deep learning models, you need a lot of data due to the ability of models to learn directly from the data itself. The accuracy of artificial intelligence is greatly improved through deep neural networks. AI can make the most of data by using self-learning algorithms. Artificial intelligence can be a very useful tool when it comes to managing business information. AI algorithms are already helping businesses manage their data more effectively through deep analysis. This is especially true in industries such as finance and marketing, which are already benefiting from AI technologies. Since the role of data in business is growing in importance, it can give a company an advantage over its competitors. According to MIT Sloan Management Review's 2017 Artificial Intelligence Global Executive Study and Research Project, nearly 85% of executives believe that AI will enable their companies to gain or maintain a competitive advantage (Ransbotham, 2017).

Artificial intelligence can help improve productivity and help solve complex problems (OECD, 2019). The AI economic landscape is changing as AI becomes more broadly applicable. Through more accurate predictions and recommendations, artificial intelligence promises to generate productivity gains, improve well-being, and help address complex challenges. To use artificial intelligence effectively, companies will need to make a few investments, including in data, skills, and digital workflows. This will vary depending on the industry, and the adoption of AI will be gradual across many companies.

AI funding doubled in 2021 while global AI funding was up 108% YoY in 2021, led by healthcare AI (18% of total) (CB Insights, 2022a). In addition, Global funding to AI start-ups reached $15.1B in Q1'22, a 12% decline from $17.1B in Q4'21(CB Insights, 2022a). Despite the drop, this was AI's fifth-largest quarter for funding (CB Insights, 2022b).

Artificial intelligence technologies can automate a wide variety of tasks that consume much of employees' time. On the other hand, machines can perform tasks much faster and more accurately than humans. PwC's research also shows that by 2030, 45% of total economic gains will come from product improvements, stimulating consumer demand (PwC, 2017). This statement predicts that artificial intelligence will lead to increased product variety, personalized appearances, and affordability over time. Furthermore, it can be stated that a part of the mentioned total economic gains will be based on the applications and uses of artificial intelligence in business management, which is expected to save time and generate huge profits.

Thus, in the meantime, any organisation is ruled on the base of a set of rules to satisfy customers' needs and be profitable. Therefore, each organisation is interested in effective business management. Further AI technology applications can be embedded through it demands the coverage of issues as follows: (1) investigation of the topic areas that are the subject of most publications, (2) revealing of the research opportunities for AI application in business management. This article aims to provide keyword visualization maps as a tool for the

bibliometric analysis of the literature related to AI applications in business management. The study shows the most frequent topics of publications on AI in general and AI application in business management, and how it has evolved. Furthermore, the paper addresses the analysis of the clusters based on the analysis of the keywords of the examined publications as well as words appearing in titles and abstracts.

Methods

Visualization of similarities (VOS) viewer is used to perform network visualization. VOSviewer is a great tool to display and visualize where keyword networks take place in a research area (McAllister, Lennertz, Atencio Mojica, 2021). In the research, VOSviewer is used to create networks of keywords, where keywords are connected by occurrence (Van Eck, Waltman, 2022).

To construct a network, bibliographic database files, particularly from Scopus, have been provided as input to VOSviewer. Three query searches have been used to examine the objectives of the research.

As of the mid of August 2022, 22 documents have been obtained by the search (1) (TITLE-ABS-KEY ("artificial intelligence technologies") AND TITLE-ABS-KEY ("artificial intelligence application")) AND (LIMIT-TO (OA , "all")); 37 documents – (2) (TITLE-ABS-KEY ("artificial intelligence") AND TITLE-ABS-KEY ("business management")) AND (LIMIT-TO (OA , "all")); 4 documents – (3) (ITLE-ABS-KEY ("artificial intelligence application") AND TITLE-ABS-KEY ("business management")). The received results have been downloaded in a CSV format for further analysis using VOSviewer.

Results

Data is transforming nearly all aspects of the way we understand and shape our world. Organizations are turning to artificial intelligence to uncover trends and patterns that signal opportunities for better decisions. Ingesting massive amounts of data and seeking to integrate and analyse it to generate insights are the main reasons for that. AI accelerates tasks and expands human expertise with speed and accuracy. Machines equipped with AI technologies learn through model training, finding patterns within data. This helps organisations push efficiencies within various business processes and manage operational costs while improving performance and enabling better products and services (IBM Cloud Education, 2020).

AI experts have different standpoints and put AI technologies into different categories. Chai et al. (2019) categorised AI technologies as follows: sensing technologies, cognition techniques, and decision techniques. This classification reflects the key characteristics of an AI system. Such AI definitions include big data, reasoning, problem solving and learning (van Duin, Bakhshi, 2018).

According to the "WIPO Technology Trends 2019 – Artificial Intelligence" report (WIPO, 2019), Table 1 represents AI techniques. This categorisation is the most complete and extensive as AI has made great progress.

Table 1.
AI techniques

Technique item category	Technique item subcategory
Machine learning	Rule learning
	Logical and relational learning
	Probabilistic graphical models
	Deep learning
	Neural networks
	Support vector machines
	Classification and regression trees
	Instance-based learning
	Latent representation
	Bio-inspired approaches
	Machine learning (general)
	Unsupervised learning
	Supervised learning
	Reinforced learning
	Multi-task learning
Probabilistic reasoning	
Ontology engineering	
Logic programming	Logic programming (general)
	Expert systems
	Description logistics
Fuzzy logic	

Adapted from: "Artificial Intelligence" by WIPO. 2019.

Different AI techniques may be used to implement different AI functions, namely machine learning, fuzzy logic and expert systems that allow the calculation of duties normally performed by humans. A subfield of artificial intelligence and computer science called "machine learning" uses data and algorithms to simulate how people learn, gradually increasing the accuracy of its estimates. Machine learning algorithms are usually created with frames that speed up the development of solutions (IBM Cloud Education, 2020). Deep learning and neural networks, the machine learning techniques, single out as the fastest growing AI techniques in terms of patent filings. Deep learning grew at a rate of 175 percent from 2013 to 2016, reaching 2399 patent filings in 2016; and neural networks showed an average annual growth rate of 46 percent over the same period, with 6506 patent filings in 2016 (WIPO, 2019).

Table 2 contains AI functional applications.

Table 2.
AI functional applications

Functional application category	Functional application subcategory
Speech processing	Phonology
	Speaker recognition
	Speech synthesis
	Speech-to-speech
	Speech recognition
	Speech processing (general)
Predictive analytics	
Distributed AI Robotics	
Natural language processing	Morphology
	Semantics
	Natural language generation
	Dialogue
	Machine translation
	Information extraction
	Natural language processing (general)
	Sentiment analysis
Robotics	
Knowledge representation and reasoning	
Planning and scheduling	
Control methods	
Computer vision	Computer vision (general)
	Augmented reality
	Image and video segmentation
	Biometrics
	Character recognition
	Object tracking
	Scene understanding

Adapted from: "Artificial Intelligence" by WIPO. 2019.

Furthermore, the authors (Chai et al., 2019) distinguish the following key AI technologies: speech recognition, natural language processing, image and video recognition, and knowledge graph are the key technologies that support business management applications.

The search query by phrases "artificial intelligence technologies" and "artificial intelligence application" resulted in 22 documents. The brief conclusions of the articles with open access are listed below.

Cui, Xu and Razzaq (2022) claimed that the use of artificial intelligence can greatly enhance the level of corporate governance, and the use of artificial intelligence can have a positive impact on the level of corporate governance through the effect of information symmetry. The authors stated that (1) there is a demand for the advancement of the research and application of artificial intelligence technology in enterprise operation and management not only from the perspective of technology but also from the perspective of management, (2) a great role is given to the government as a body that issues guidelines for supporting the application of artificial intelligence technologies closely related to business management, (3) the application of artificial intelligence is beneficial for companies to build and improve the decision making brain function of business management.

Qi and Lyu (2022) studied the applications of AI in two important branches of daily life, child and elderly care, and short videos, a daily necessity for young people during the pandemic period. The common AI technologies used in both industries are computer vision, machine learning or deep learning and natural language processing.

Chi and Li (2022) proposed a Few-Shot learning method to identify dance fitness movements based on contour image spatial frequency domain features and illustrated the effectiveness of the fusion feature algorithm.

He et al. (2021) provided an overview of the application of artificial intelligence technologies in decision making, optimization, prediction and control in the four processes of desalination design. As a result, the authors summarized the application and future development perspective of artificial intelligence in the field of seawater desalination.

Luna et al. (2021) evaluated the ability of a commercialized artificial intelligence mobile application to identify and improve bodyweight squat form in adult participants compared to a physical therapist.

Schmid et al. (2021) presented a practical classification scheme for AI applications, consisting of three dimensions: AI methods, AI capabilities, and the criticality of the AI application.

Guo et al. (2021) proposed an action recognition algorithm based on the new graph convolution model to realize karate competition video technique and tactics analysis.

Huaping (2021) aimed to study the issues related to global cultural communication. Particularly, analyse of the results of artificial intelligence research gave the possibility to create a model of a global cultural communication system based on artificial intelligence application.

Huang et al. (2021) analysed the overall situation of artificial intelligence applications in smart construction at this stage based on artificial intelligence technology and studied in detail the application of artificial intelligence systems in various aspects of smart construction.

Li X. (2021) constructed the dance application system focusing on solving technical problems in software and hardware engineering from data acquisition to algorithm programming, providing a functional platform for intelligent dance analysis and auxiliary training.

Hussain et al. (2021) focused on the artificial intelligence technologies and robotic applications deployed during COVID-19, presenting their functions, effectiveness and diagnostic methods.

Wang (2021) investigated artificial intelligence applications in the supply chain logistics industry. They concluded that artificial intelligence is a powerful driver for the transformation of the logistics industry supply chain and gave recommendations for logistics companies.

Artificial intelligence applications could help to assess and holistically treat the psychological consequences and potential psychiatric comorbidities associated with obstetric and gynaecological diseases. Furthermore, artificial intelligence applications are beneficial in optimising patient care, ensuring the efficient use of limited resources, and improving health

economic models. Delanerolle et al. (2021) stated that the ubiquitous application of AI-based tools could assist physicians in patient care by accurately predicting patient outcomes while minimizing adverse events.

Li et al. (2020) summarised the properties of publicly available genomic databases and discuss the trends of artificial intelligence applications in predicting drug susceptibility for cancer cell lines, including machine learning, networks, and multimodal deep neural networks.

DAI et al. (2020) attempted to outline the general overall architecture of machine intuition and determined the rationale and connotations of several major functional modules, such as holographic perception, intuitive cognition, intuitive decision making and game action.

Guo et al. (2021) reviewed the current state of artificial intelligence applications in retinopathy of prematurity and provided insights into challenges and strategies to bring these algorithms to the bedside.

Lin (2020) described the development status of intelligent technology and artistic product design and discussed the application examples of artificial intelligence technology in the art field.

Xu (2020) presented the status of applications of artificial intelligence and its development advantages and proposed specific applications of artificial intelligence in computer networks on the base of the importance and necessity of applications of artificial intelligence.

The research of Abdullah and Fakieh (2019) showed that there is a fear that artificial intelligence would replace healthcare employees and a general lack of knowledge regarding artificial intelligence as well as unawareness of the advantages and common disadvantages of artificial intelligence applications in the healthcare sector, indicating a need for training. The authors also proved that technicians were most often affected by artificial intelligence applications due to the nature of their work, which does not require much direct human interaction.

Based on these articles, we can state that artificial intelligence adoption is examined in a great variety of subject areas, namely computer science, engineering, physics and astronomy, medicine, environmental science, mathematics, earth and planetary sciences, energy, materials science and multidisciplinary.

The result retrieved with the VOSviewer visualiser represents keywords network visualisation on the base of query search (1) with the minimum number of occurrences of a keyword: 1 (Figure 1).

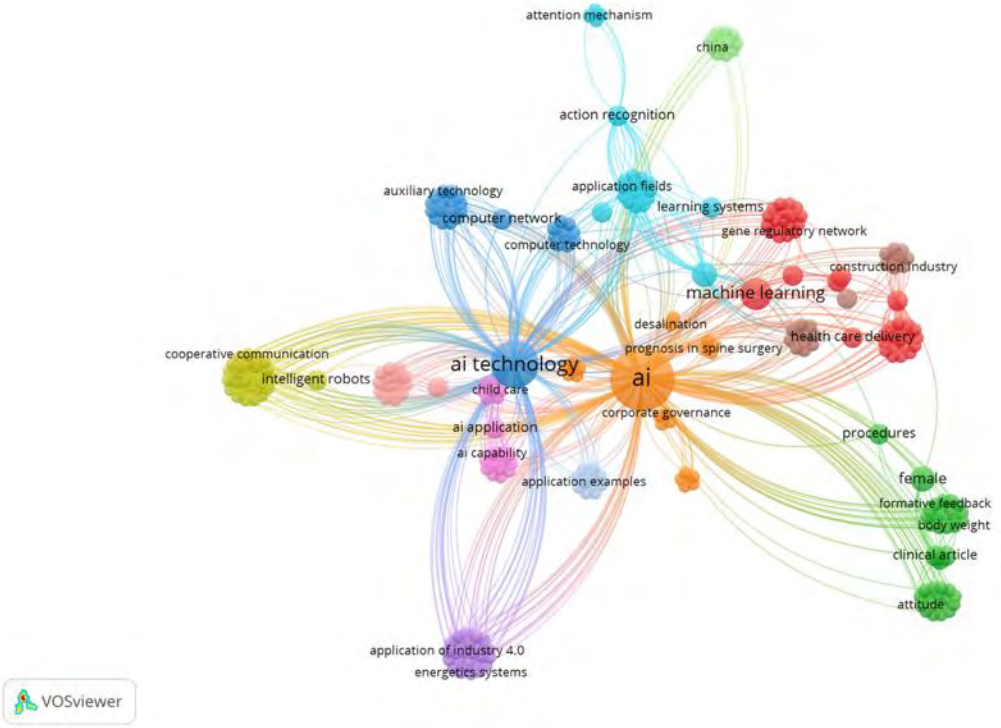

Figure 1. Keywords network visualisation on the base of query search (1) with the minimum number of occurrences of a keyword: 1.

288 keywords are divided into 12 clusters. 266 keywords have occurred once. The top five keywords due to the highest number of occurrences are AI (19, 279), AI technology (11, 191), machine learning (5, 82), female (3, 67) and algorithm (3, 40) where AI presents seventh orange cluster, AI technology – third blue one, machine learning – first red one, female – second green one and algorithm – sixth turquoise one. The first number in brackets is the occurrence of the keyword and the second number is total link strengths. Within the timeframe of publishing years, in the 2020s such keywords as machine learning, artificial neural network, deep learning, deep neural network, image analysis, health care delivery, and personalised medicine; in the 2021s – AI, AI technology, computer network, intelligent robots, AI application, and continuous development; in 2022s – algorithms, action recognition, engineering education, and learning systems have been used.

The first red cluster is the most extensive one (Figure 2). It includes 42 items. Above the artificial intelligence techniques, the main one – machine learning and its subcategories – deep learning and neural network (deep neural network and artificial neural network), this cluster includes keywords related to health care delivery and personalized medicine. Keywords that are combined in groups have the same rates of occurrences and total link strength.

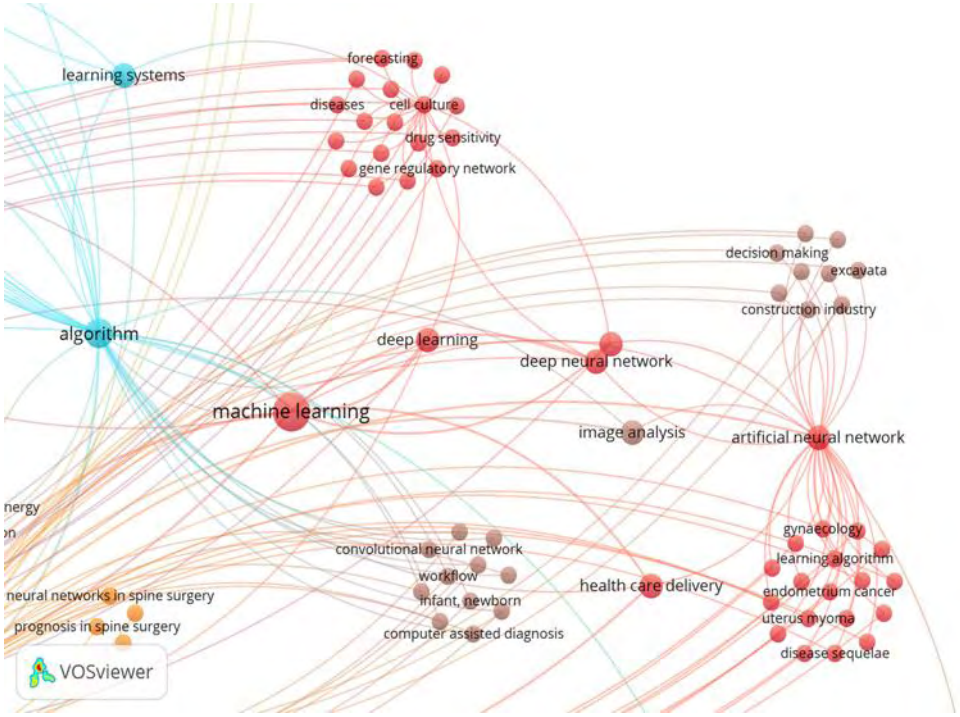

Figure 2. First red cluster visualisation.

The second green cluster consists of 39 items (Figure 3). The most occurred keyword female relates to case-control studies and bodyweight keywords. The keyword body weight and keyword attitude are closely related to the keywords located close to them.

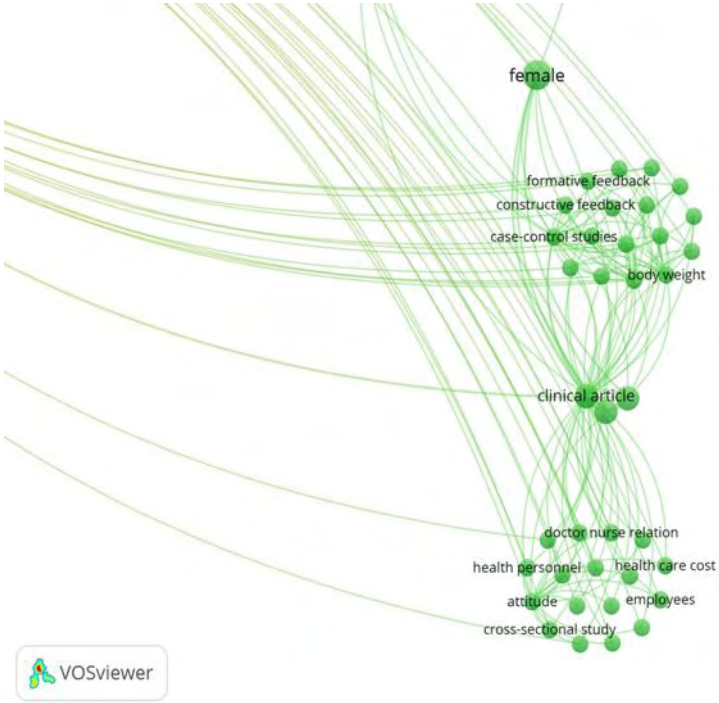

Figure 3. Second green cluster visualisation.

The third blue cluster consists of 29 items (Figure 4). The keyword computer network is connected to the most occurred keyword AI technology with the strongest total link and two groups with a strong connection between each other as they are located close to each other.

The keywords auxiliary technology and animation represent the group located to the left in Figure 4 while the keywords application status and big data present the group located to the right in Figure 4.

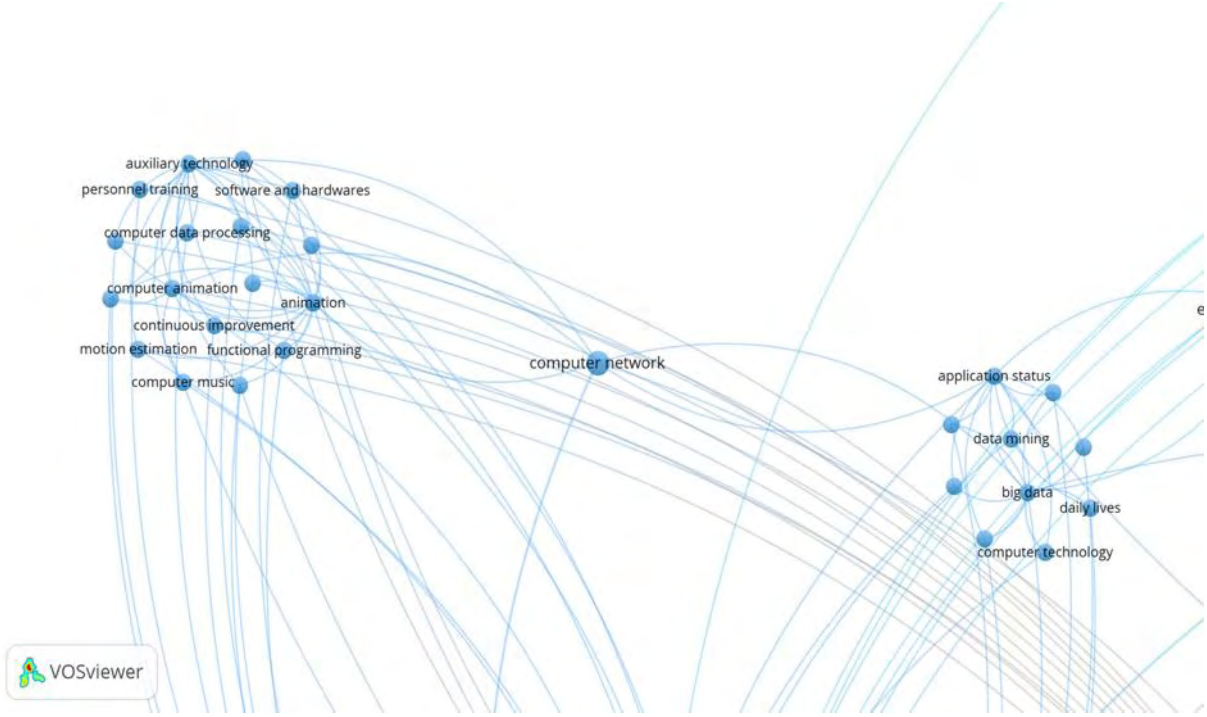

Figure 4. Third blue cluster visualisation.

The fourth yellow cluster consists of 29 items (Figure 5). The keyword artificial intelligent relates to all other keywords in this cluster. Keyword intelligent robotics has lower link strength compared to others.

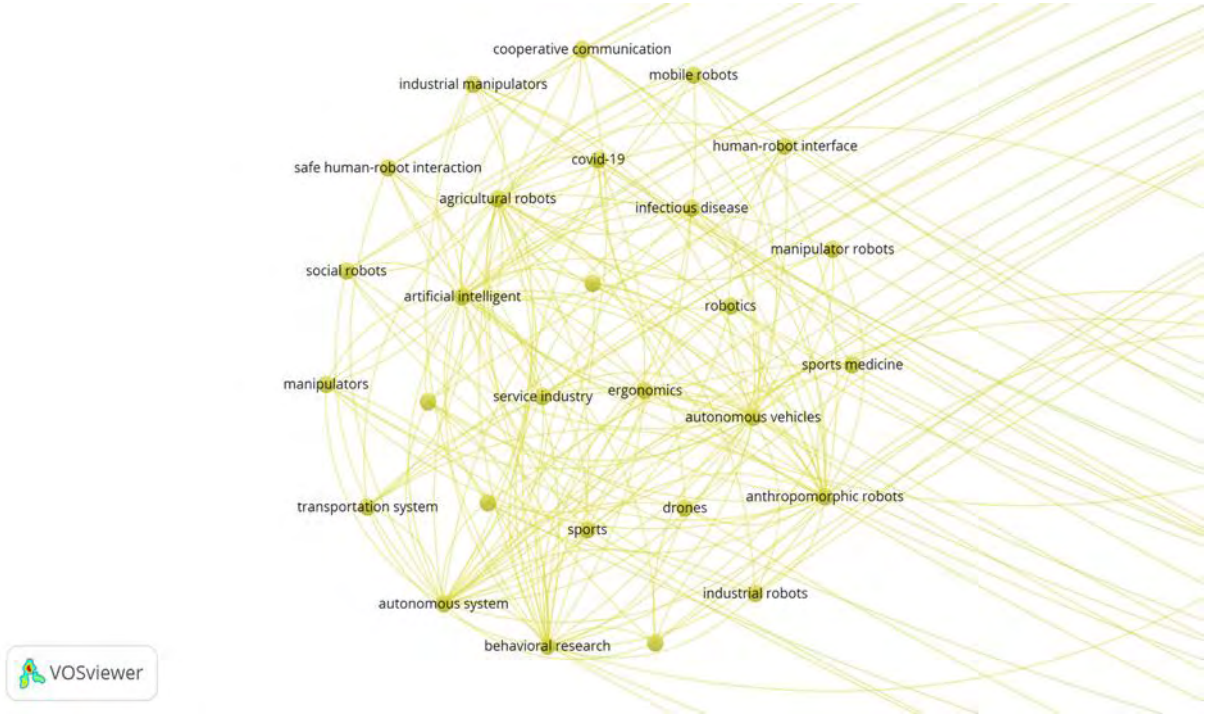

Figure 5. Fourth yellow cluster visualisation.

The fifth violet cluster consists of 25 items (Figure 6). Keyword application of industry 4.0 relates to all other keywords united in the violet cluster. It is vital to mention that other keywords are related to the energy sector. Furthermore, such AI technology as fuzzy logic is shown in Figure 6.

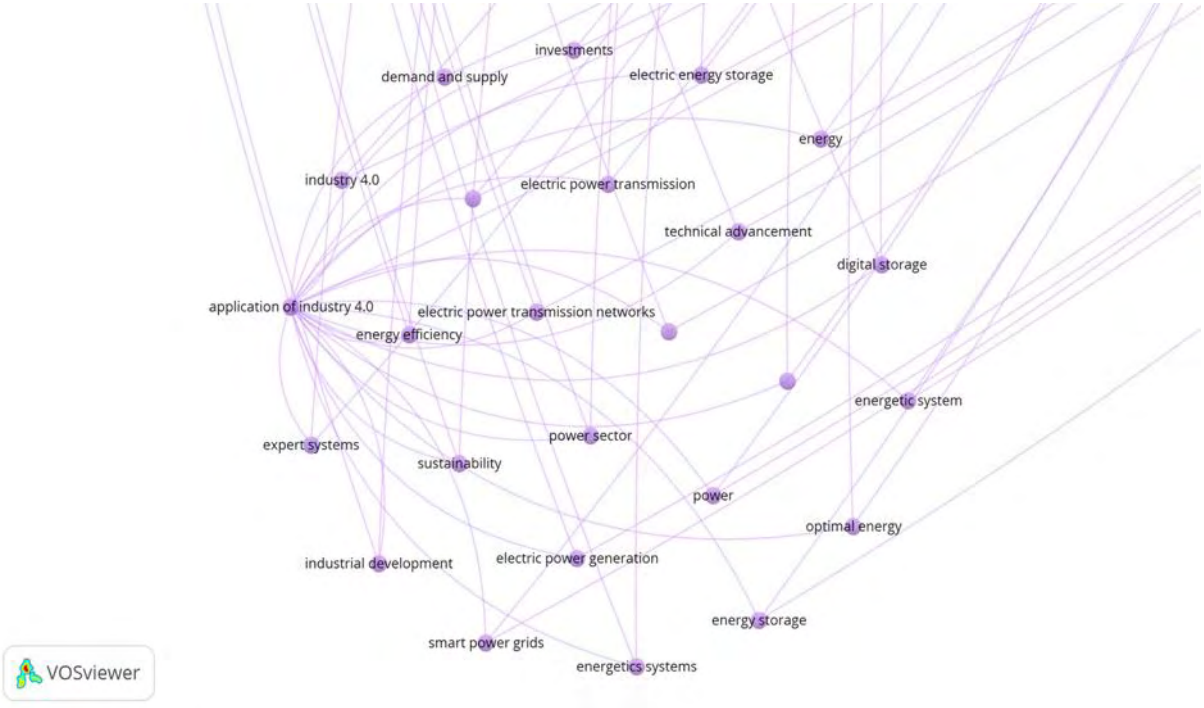

Figure 6. Fifth violet cluster visualisation.

For instance, Kuzior, Kwilinski and Tkachenko (2019) determined which fuzzy inference models can be used in the management information system to help the organization develop effectively.

The sixth turquoise consists of 23 items (Figure 7). The centre keyword in this cluster is action recognition. Another point is that keyword natural language processing systems belong to the sixth turquoise as natural language processing is one of the AI functional applications.

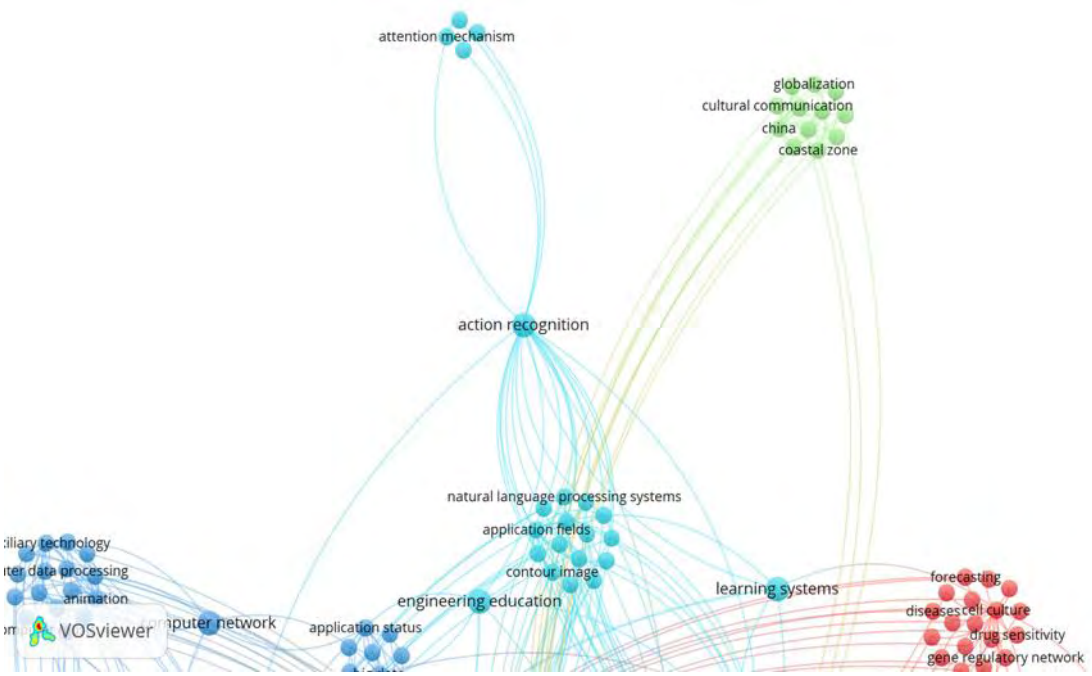

Figure 7. Sixth turquoise cluster visualisation.

The seventh orange cluster consists of 21 items (Figure 8). This cluster includes the most occurred keyword AI. Keywords corporate governance and automated decision making are of interest in terms of research of AI applications in business management. Keyword corporate governance is one of the essential terms in business management as corporate governance can directly influence the effectiveness of the organisation because the more efficient and productive regulations and procedures to define and conduct the business, the more successful business management is.

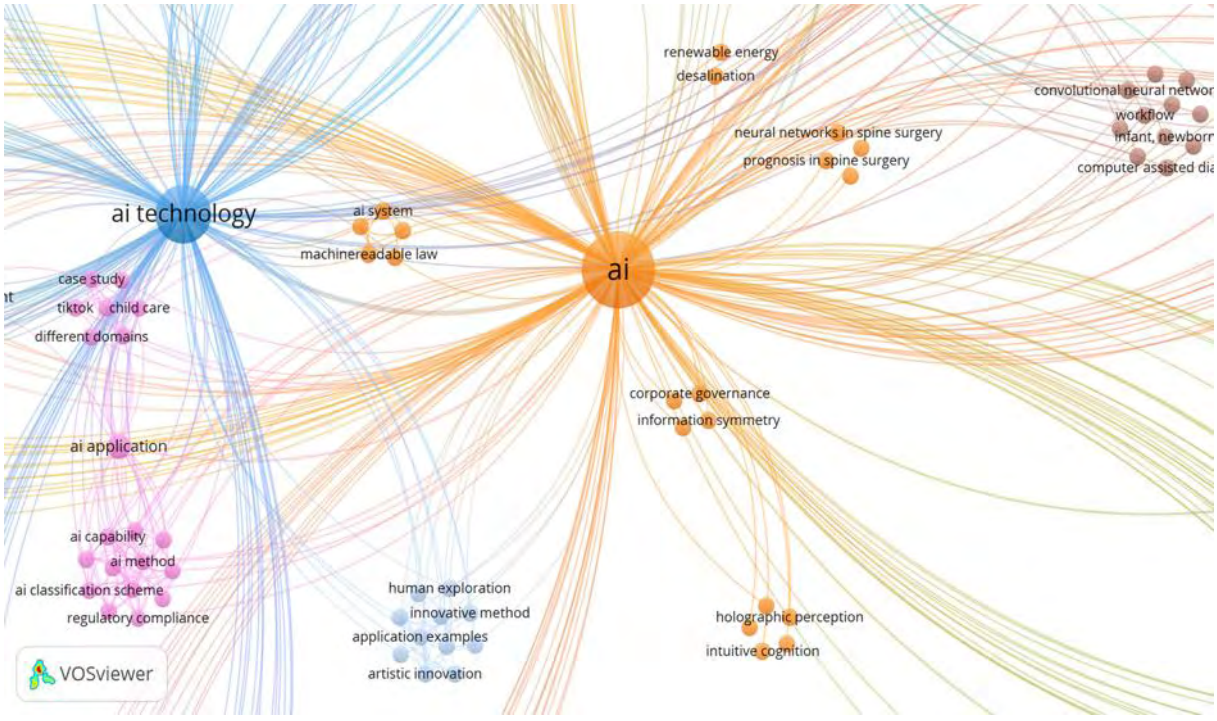

Figure 8. Seventh orange cluster visualisation.

The eighth brown cluster consists of 21 items (Figure 9). No keyword connects all the keywords in the cluster. The keywords that can be singled out are image analysis and image recognition, feature extraction and neural network (convolutional).

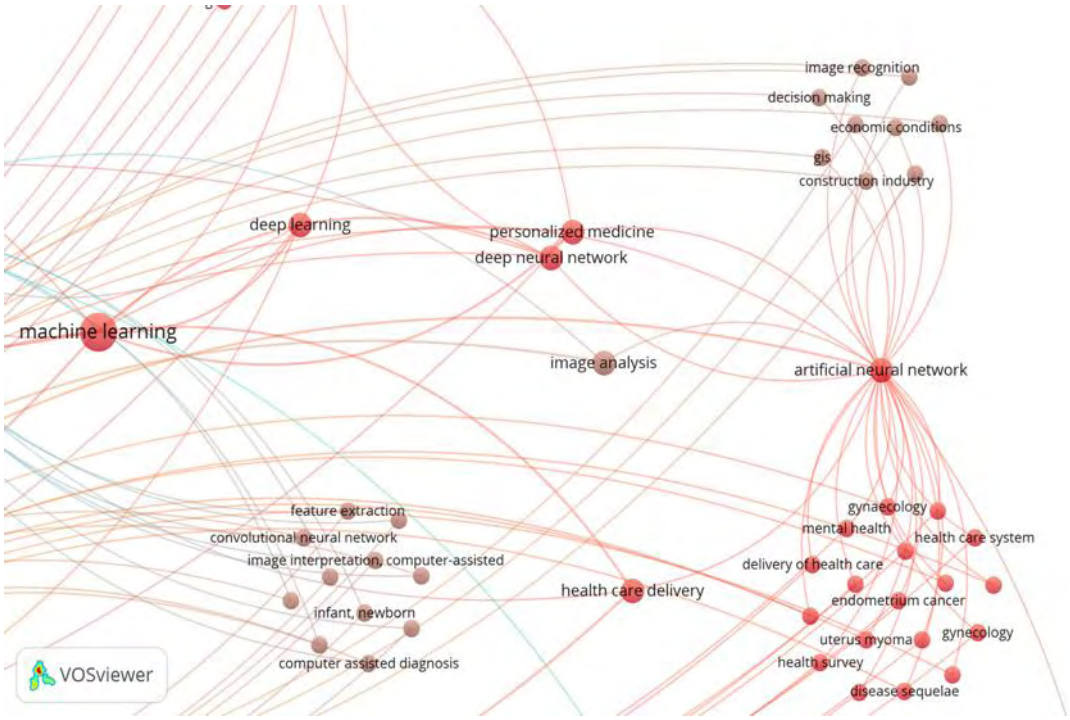

Figure 9. Eighth brown cluster visualisation.

The ninth pink cluster consists of 20 items (Figure 10). The keywords presented in the pink cluster refer to the keyword AI application.

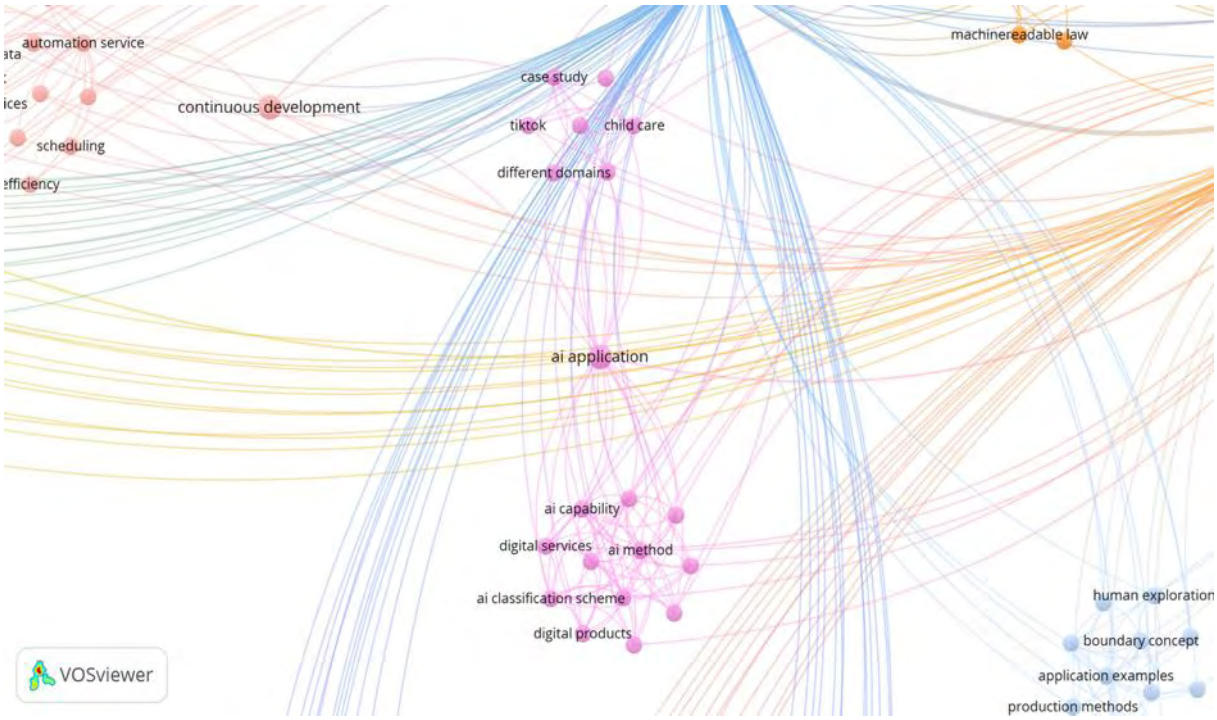

Figure 10. Ninth pink cluster visualisation.

The tenth light red cluster consists of 16 items (Figure 11). In the cluster keyword automation service is linked with other keywords.

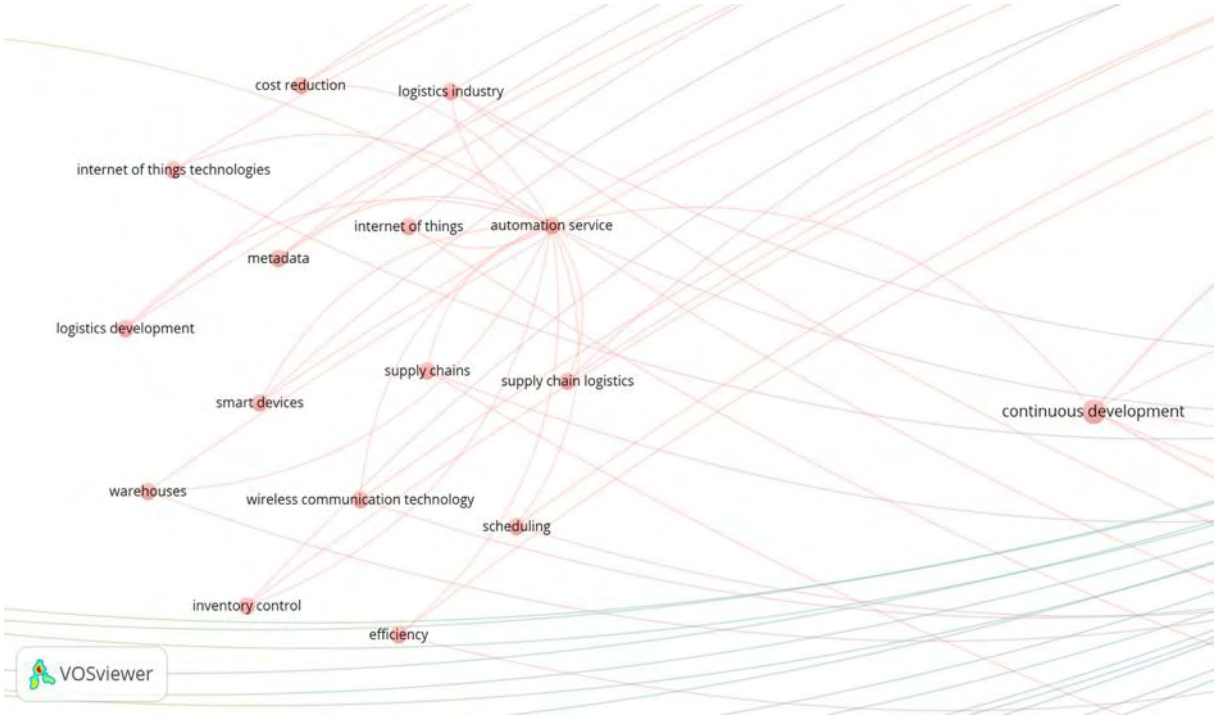

Figure 11. Tenth light red cluster visualisation.

The eleventh light green cluster consists of 12 items (Figure 12). In the cluster, the keyword coastal rainfall relates to other keywords.

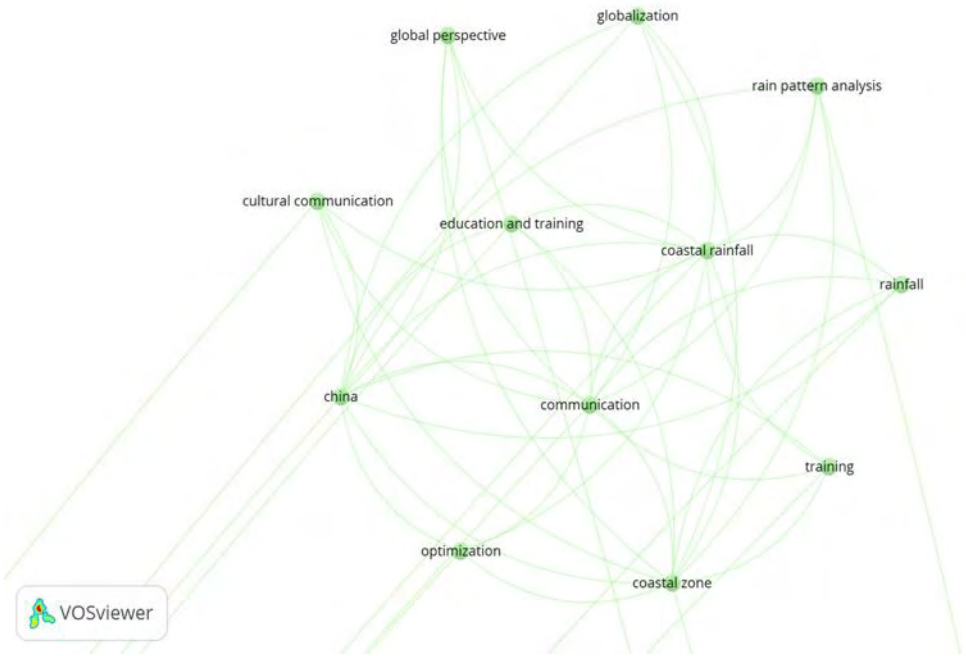

Figure 12. Eleventh light green cluster visualisation.

The twelfth light blue cluster consists of 11 items (Figure 13). In the cluster, keyword application examples are linked with other keywords.

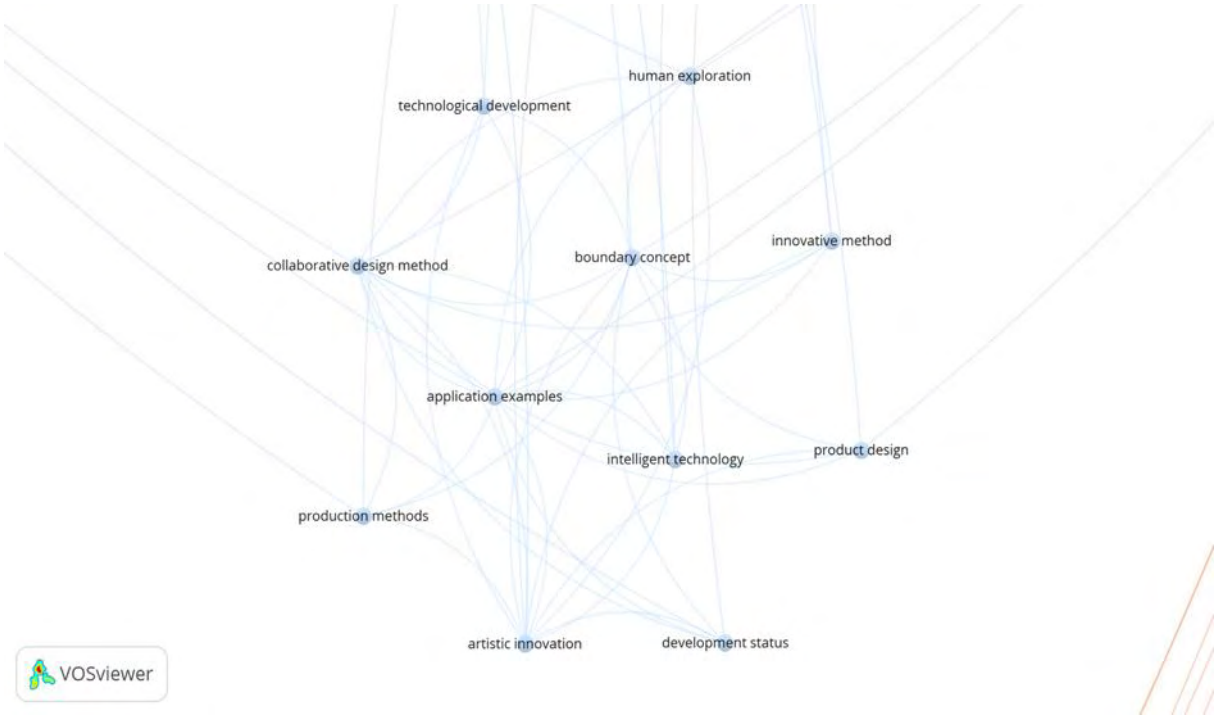

Figure 13. Eleventh light blue cluster visualisation.

If the criteria for the minimum number of occurrences of a keyword is changed from 1 to 2 the result retrieved with the VOSviewer visualiser gains another view. Keywords network visualisation on the base of query search (1) with the minimum number of occurrences of a keyword: 2 is shown in Figure 14. Only 22 items respond to this requirement and are divided into 4 clusters. It is found that the keyword AI technology is linked to keywords such as AI application, continuous development, intelligent robots, computer network, engineering education, action recognition, learning systems, algorithm, machine learning, deep learning, deep neural network, and personalised medicine.

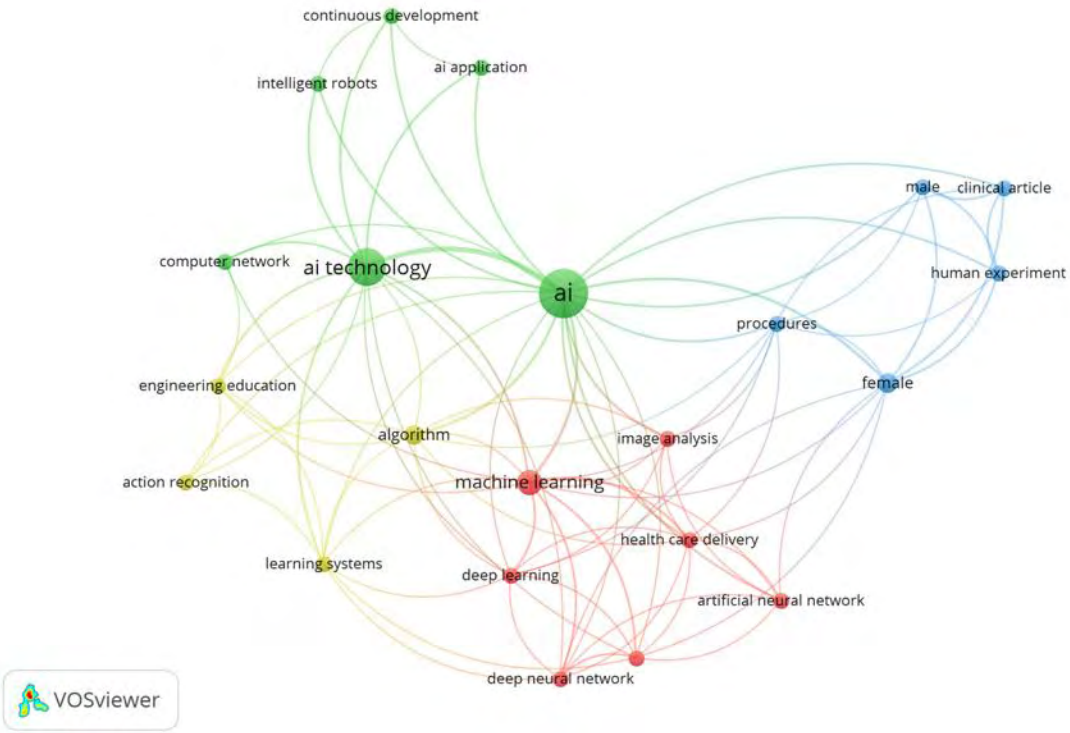

Figure 14. Keywords network visualisation on the base of query search (1) with the minimum number of occurrences of a keyword: 2.

The results by phrases "artificial intelligence" and “business management" revealed 37 documents. This relevant literature review was conducted to investigate research connected to the area of business management. The text below represents articles that represent the relationship between artificial intelligence and business management.

The computer science subject area includes documents as follows. Stadnicka et al. (2022) conducted a questionnaire-based survey to identify industrial companies' data/business management systems. The questions were related to the challenges companies face today, the technologies they implement to solve them, and their needs related to the digitization of the manufacturing ecosystem. The work of Maitre et al. (2022) resulted from cross-pollination between business management, information technology and computer science relying on expert analysis and advanced AI engines. Li H. (2022) focused on the application path of artificial intelligence technology in business management, and finally elaborate on the future development direction of artificial intelligence technology in business management. The author concluded that the application of an enterprise business management system based on cloud computing architecture is worth promoting and applying the system in enterprise business management. Zhu (2022) examined the business management system by identifying and studying the changes in some financial indicators and establishing an effective financial early warning model for enterprises. His research is developed from the perspective of the rapid development of artificial intelligence, blockchain, and big data technology as well as the importance of enterprise financial early warning. In the context of cognitive technologies and artificial intelligence, many articles are devoted to blockchain technology (Kuzior, Sira, 2022).

Zhao (2022) designed an artificial intelligence-based decision support system for the economic management of large enterprises to improve the economic management effect of large enterprises. The business management module is considered a part of the system hardware. Jian (2022) considered human resources business management as a part of business management. The article designed an enterprise human resource decision support system based on data mining and proved its effectiveness. Ma et al. (2021) aimed to realize the financial risk analysis of listed companies through wireless network communication and the optimal artificial intelligence fuzzy SVM model. This model will help small and medium-sized listed companies to anticipate and deal with anomalies in their business management activities and market risks promptly. The research of Qin and Qin (2021) aimed to help improve the company's overall budget management level as a part of business management. Basri (2020) examined the impact of artificial intelligence-assisted social media marketing on the performance of small and medium enterprises to increase effective business management. Yang et al. (2019) emphasized the importance to unify the understanding of lean management in a multisectoral company to improve and innovate the business management of the company. Suehiro et al. (2019) constructed a system that provides business knowledge to users by using work report data as a knowledge source as a possibility to solve the problem of knowledge transfer in business management. Šperka and Spišák (2014) proposed an experimental business approach to cover price negotiation between seller and customer in agent-based simulations. The obtained results showed that the demand functions can be used effectively to simulate trading processes. The work of Garcia and Fernandez (2012) examined business management as one of the complex tasks, the authors evaluated the proposed PI-SRL algorithm in, to reduce the amount of damage incurred.

The engineering area involves the following documents. The articles of Stadnicka et al. (2022), Maitre et al. (2022), Li H. (2022), Zhu (2022), Šperka and Spišák (2014) and Garcia and Fernandez (2012) are included in this area as well.

Physics and astronomy subject area include articles as follows. Xuanbei (2021) stated that the effective use of big data and artificial intelligence can better optimize business management, namely human resources management, and improve market core competitiveness. Zhang (2021 b) aimed to design a business management computer system by using web services. Therefore, the test results showed that the business management computer system based on the clustering analysis algorithm can be used. Qi (2020b) proposed the definition of an intelligent steward, a personal intelligent technology assistant that can improve business management and quality of life through the first use of AI technology. Liu (2020) analysed and studied how to innovate the management mode of a family business to meet the needs of social development against the backdrop of artificial intelligence and big data. Qi (2020a) believed that in the future the intelligent business steward in terms of business management would improve work efficiency and promote the development of science, technology and culture. Such an application can have a great impact on the business economy of the country and the world.

The mathematics subject area includes the following articles. Wang (2022) explored the potential application of deep learning technology to industrial and commercial resource planning management and developed a real-time optimized industrial and commercial resource-scheduling model. The research Jian (2022) is also included in this subject area. Zhang (2021a) concluded that the use of Internet-related technologies strongly promoted the development of supply chain finance and has far-reaching importance in solving the financing of small and medium-sized companies.

The work of Maitre et al. (2022) is also included in the business, management and accounting subject area.

The social sciences subject area is represented by the article by Chen and Biswas (2021). The authors provided valuable insights into contemporary social science research and business management with AI and big data applications as an entrepreneurial response to any crisis in the future.

Bringing AI into management involves successfully delegating management decisions to AI. Three organizational and technical barriers, such as (1) the managerial role, (2) the decision-making process, and its relationship with (3) the organization are discussed in terms of facing AI in a delegation of management decisions (Feuerriegel et al., 2022).

With the use of the VOSviewer visualiser represents keywords network visualisation on the base of query search (2) with the minimum number of occurrences of a keyword: 1 is received (Figure 15). 390 items are divided between 17 clusters. 339 keywords have occurred once.

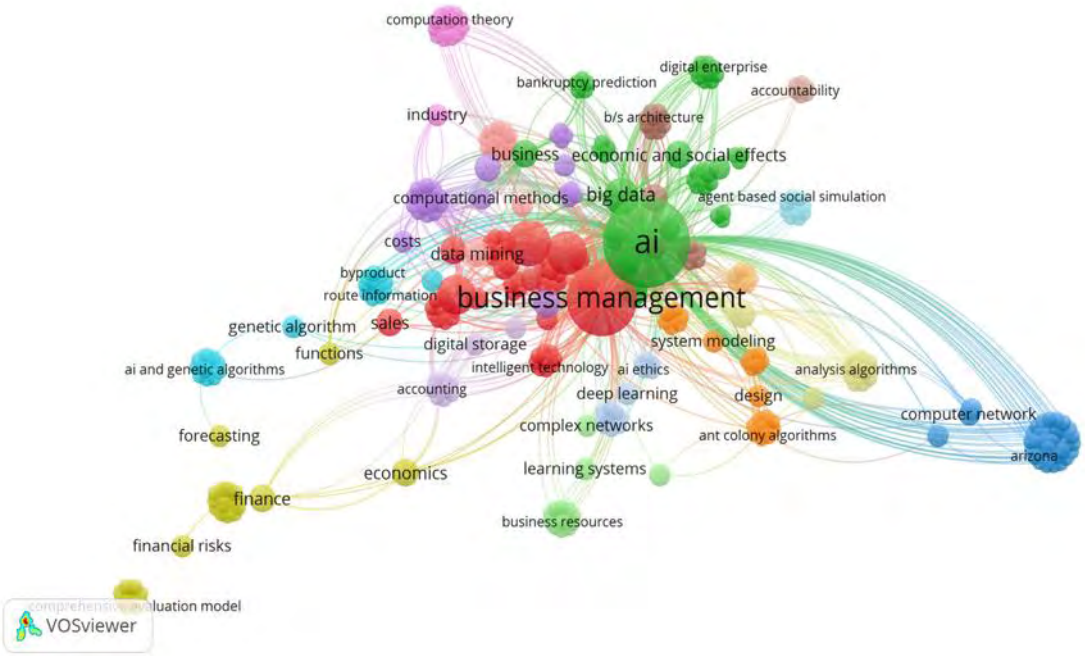

Figure 15. Keywords network visualisation on the base of query search (2) with the minimum number of occurrences of a keyword: 1.

The top, most occurred keywords are AI with 31 occurrences, business management with 20 occurrences, information management with 8 occurrences, human resource management with 7 occurrences and decision making with 6 occurrences. If keywords are analysed in terms of total link strength, the order of keywords differs – AI with total link strength of 402, business management with total link strength of 140, information management with total link strength of 105, decision making with total link strength of 105 and human resource management with total link strength of 103. Within the timeframe of publishing years, in the 2008s – management information system, and knowledge based systems; in the 2010s – computer network, computer system; in 2016s – computational methods, mathematical methods, design; in 2017s – costs, system modelling; in 2018s – AI, business, commerce, in 2019s – decision support system, search engines, deep learning, and design and implementation; in 2020s – business management, information management, human resource management, decision making, intelligent machine, natural resource management, personnel training, resource allocation, sales, service industry, AI technologies, data mining, scheduling, and business administration; in 2021s – welfare management, work efficiency, big data, data technologies, economic and social effects, enterprise development, supply chain, economics, financial risks, forecasting, competition, genetic algorithms, continuous development, complex networks, leaning systems, cloud platforms, and digital storage have been used.

The first red cluster includes 4 out of 5 keywords with the highest rate of occurrences and total link strength (Figure 16).

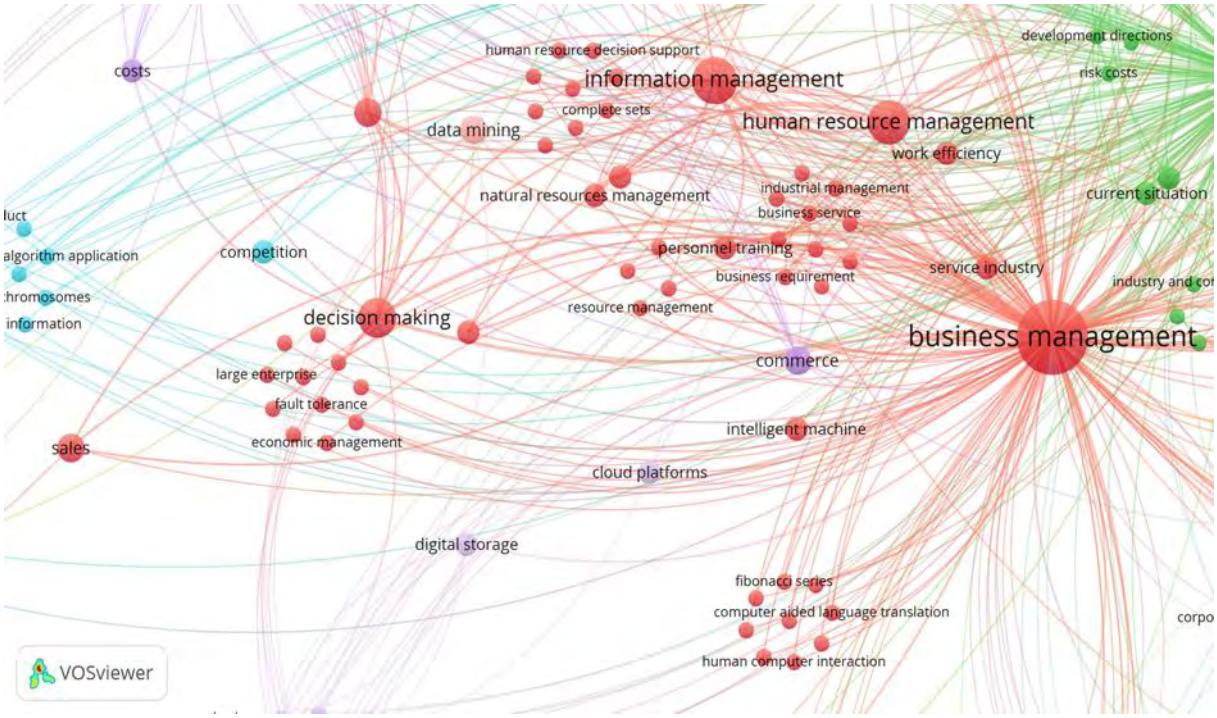

Figure 16. First red cluster visualisation.

The main keyword AI is included in the second green cluster among 48 other items (Figure 17). Among other keywords, we see keywords enterprise development and development directions situated close to AI that proves a strong link among these words.

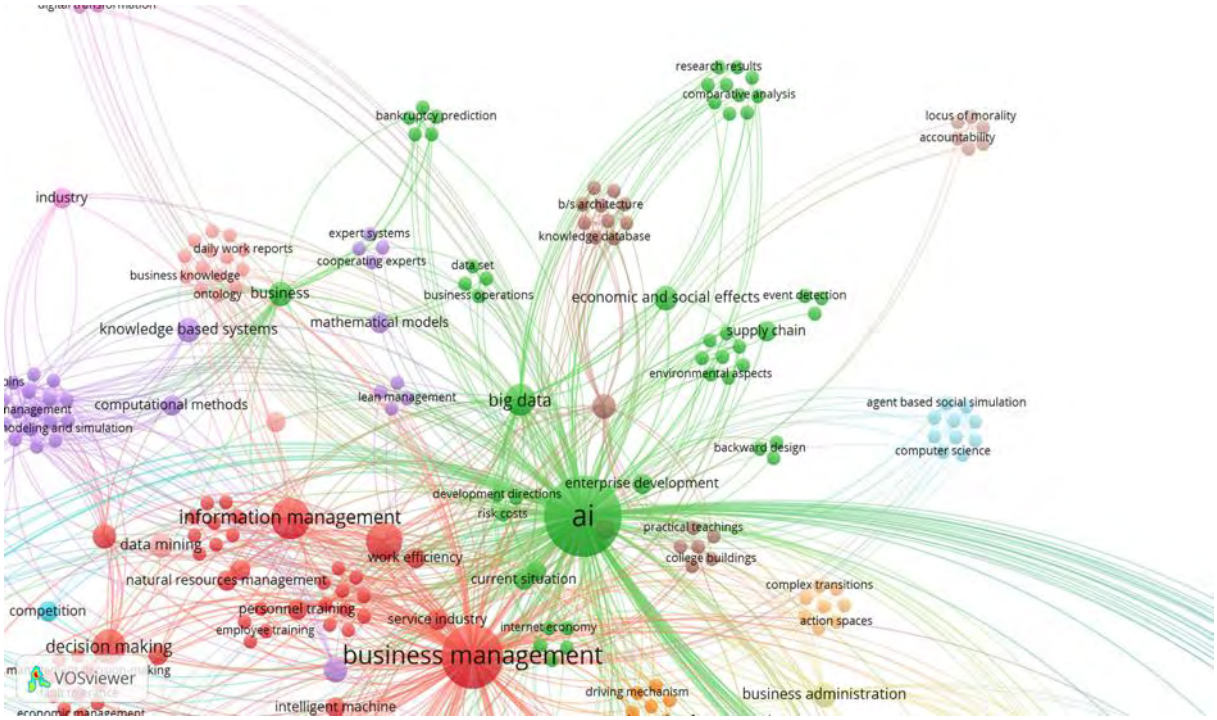

Figure 17. Second green cluster visualisation.

The third blue cluster includes 41 items (Figure 18). The keywords computer system and computer network are linked to the keyword Arizona whereas it is connected to the group of other items that can be considered as examples of technology applications.

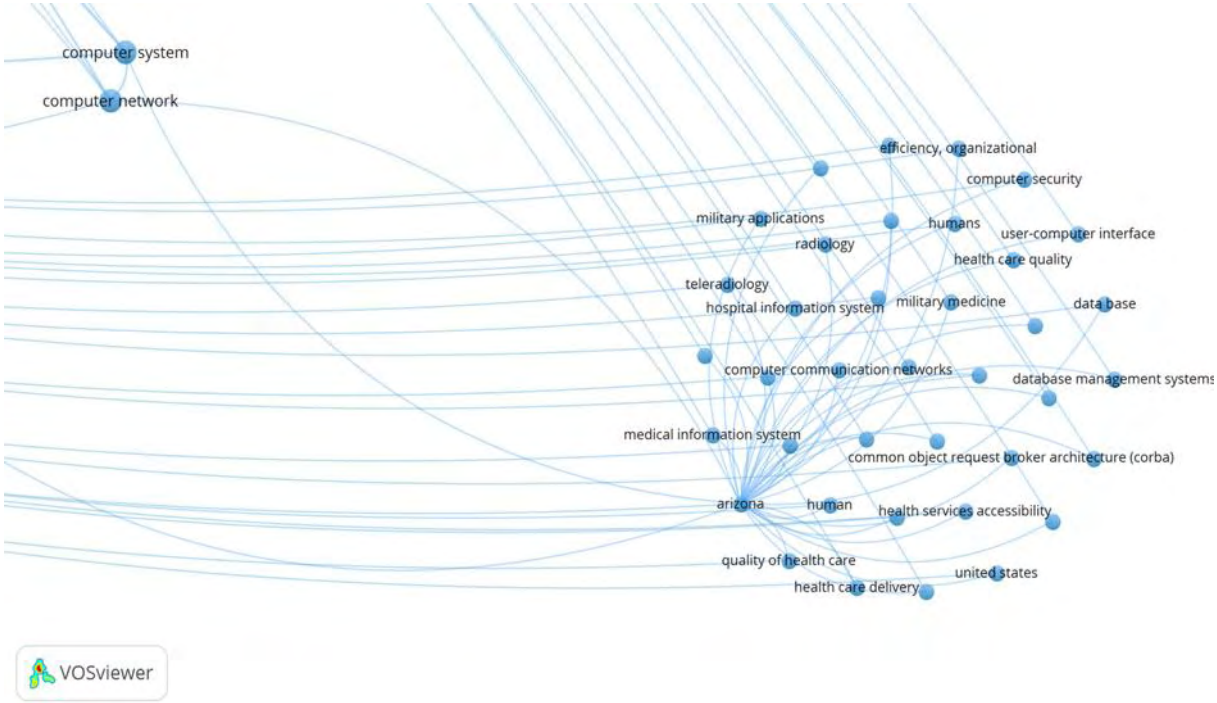

Figure 18. Third blue cluster visualisation.

The fourth yellow cluster includes 31 items (Figure 19). The keyword finance is linked to keywords economics and financial risks though is not connected to two collections of keywords. Potentially there is a gap for further research as, for instance, fuzzy support vector machines can be used to solve bankruptcy prediction problems or for business forecasting. But as it is revealed by VOSviewer there are no links between a group of keywords with keywords financial risks and forecasting.

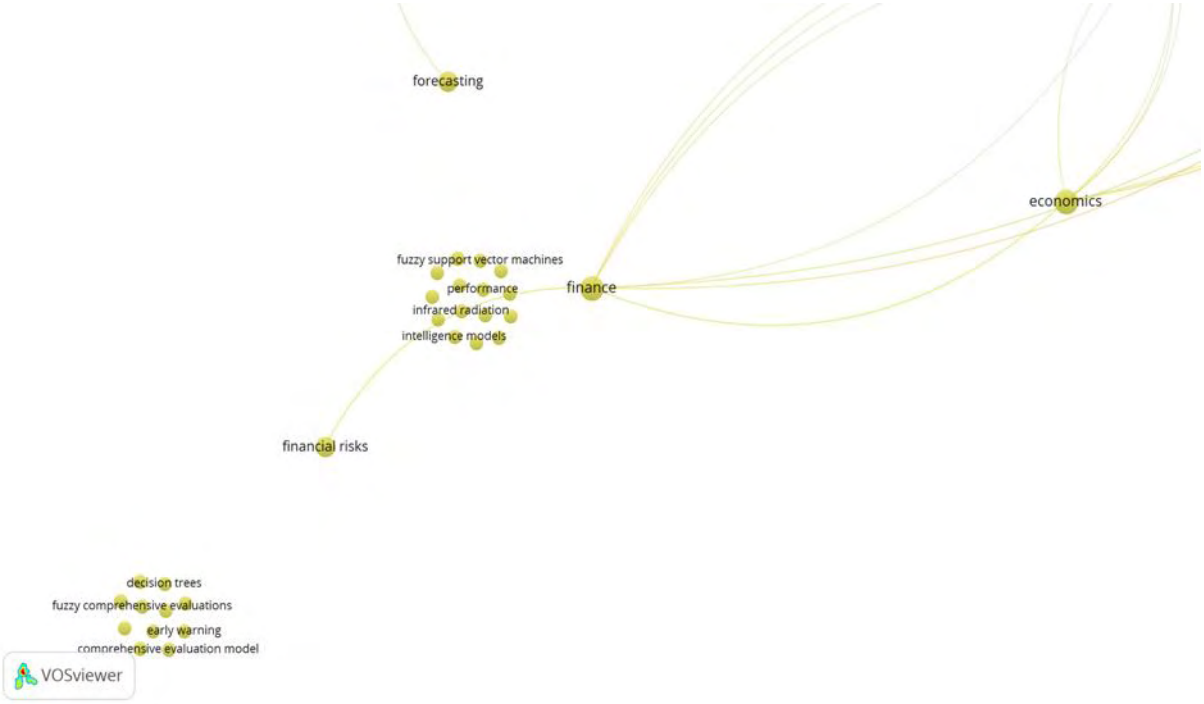

Figure 19. Fourth yellow cluster visualisation.

The fifth violet cluster includes 29 items (Figure 20). Keywords included in the cluster are quite spread out. Keyword knowledge based systems occur 3 times and have total link strength of 50. It is noted that this keyword is linked with keywords AI and business management.

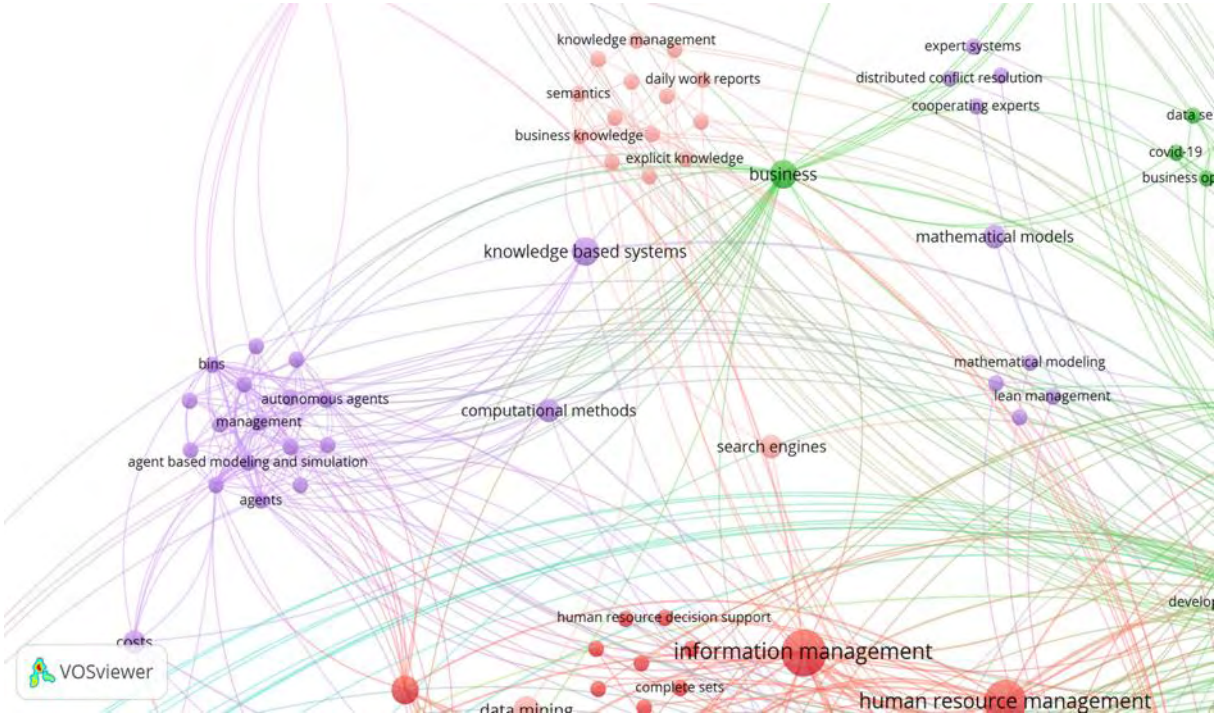

Figure 20. Fifth violet cluster visualisation.

The sixth turquoise cluster includes 29 items (Figure 21). The keyword genetic algorithm occurs 3 times and has total link strength of 31. This keyword as well as a group of keywords with total link strength of 17 situated on the right side of Figure 21 is linked with the core keywords AI and business management.

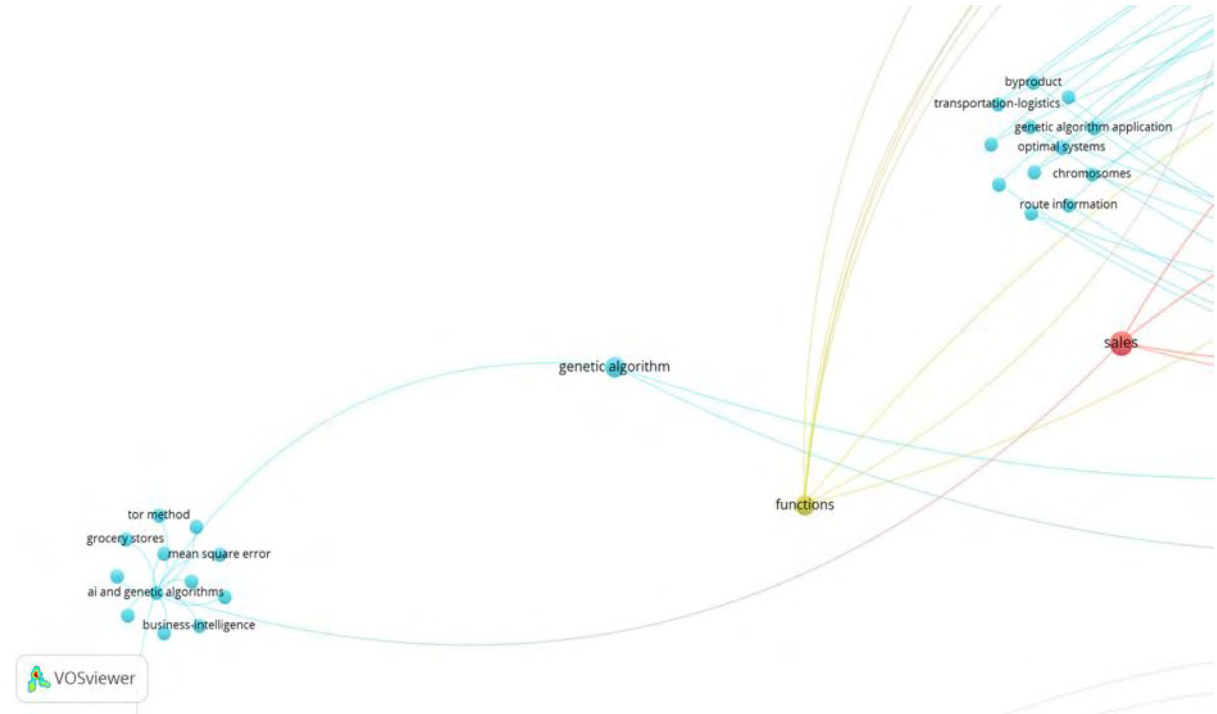

Figure 21. Sixth turquoise cluster visualisation.

The seventh orange cluster includes 25 items (Figure 22). Keywords system modelling and design can be singled out in the cluster. They both have 2 occurrences of each other and are linked with the keywords AI and business management.

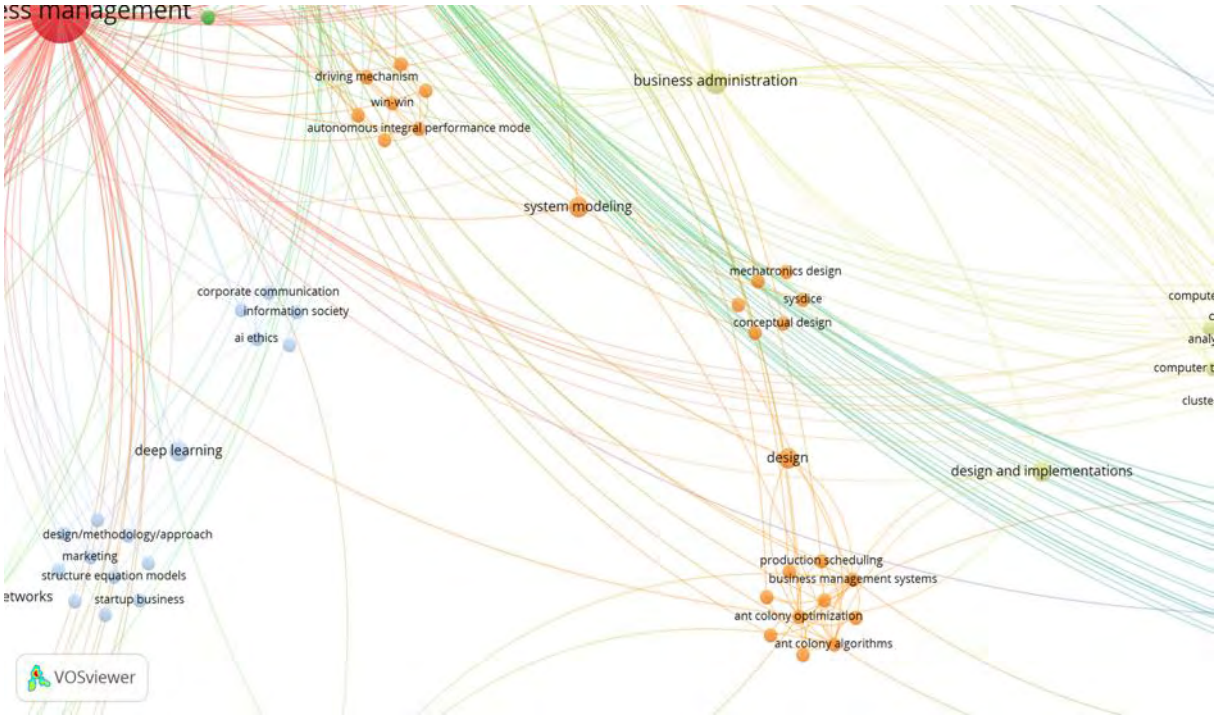

Figure 22. Seventh orange cluster visualisation.

The eighth brown cluster includes 18 items (Figure 23). Keywords AI technologies and continuous development relate to both AI and business management. Keyword AI technologies occurs 3 times and has total link strength of 36 while continuous development has 2 occurrences and total link strength of 24.

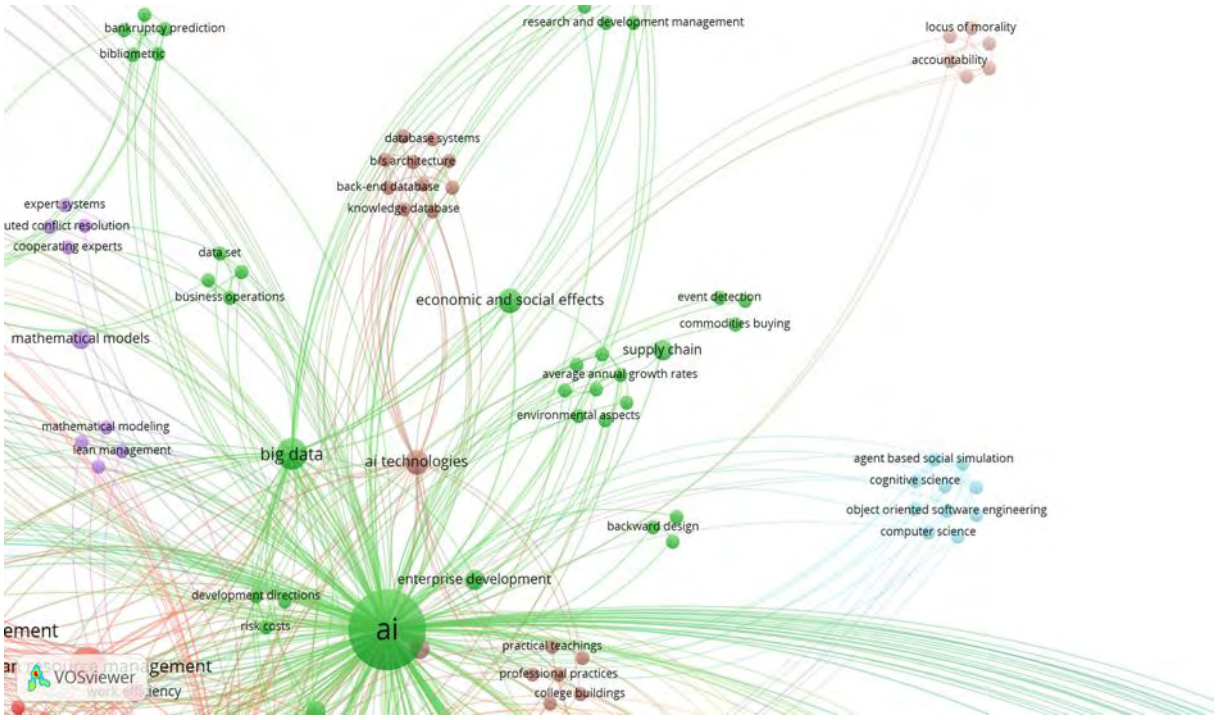

Figure 23. Eighth brown cluster visualisation.

The ninth pink cluster includes 17 items (Figure 24). The keyword industry has 2 occurrences and total link strength of 44. It relates to keywords AI and information management.

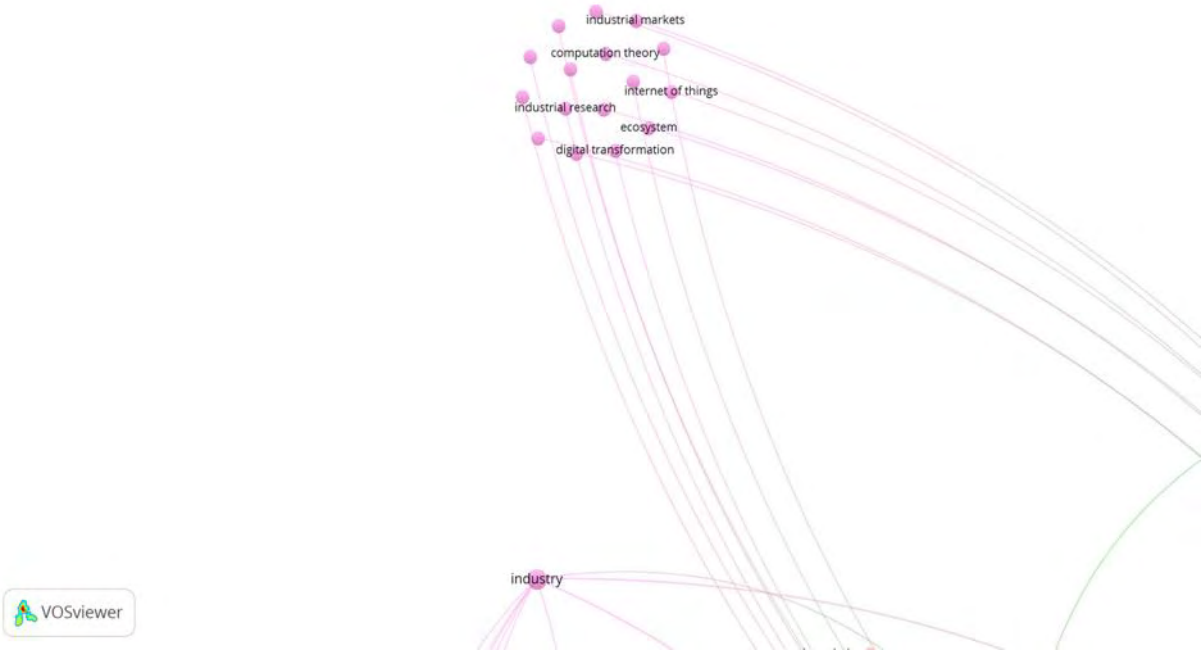

Figure 24. Ninth pink cluster visualisation.

The tenth light red cluster includes 16 items (Figure 25). Keyword business knowledge is a core word in the cluster as it is linked with all other words from the cluster. Above connections with keywords AI and business management, it has links with knowledge based systems from the violet cluster and search engines and data mining.

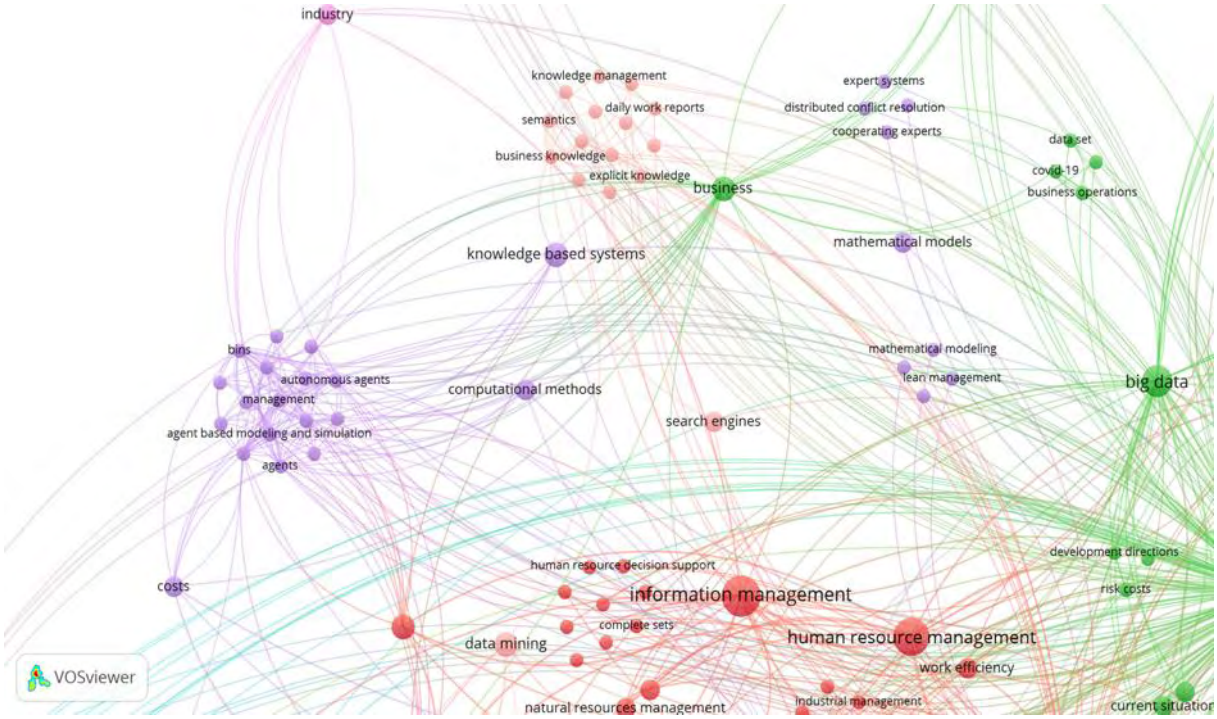

Figure 25. Tenth light red cluster visualisation.

The eleventh light green cluster includes 16 items (Figure 26). Three keywords in the cluster have more than 1 occurrence: scheduling (2 occurrences, total link strength – 32), complex networks (2 occurrences, total link strength – 31) and learning systems (2 occurrences, total link strength – 31).

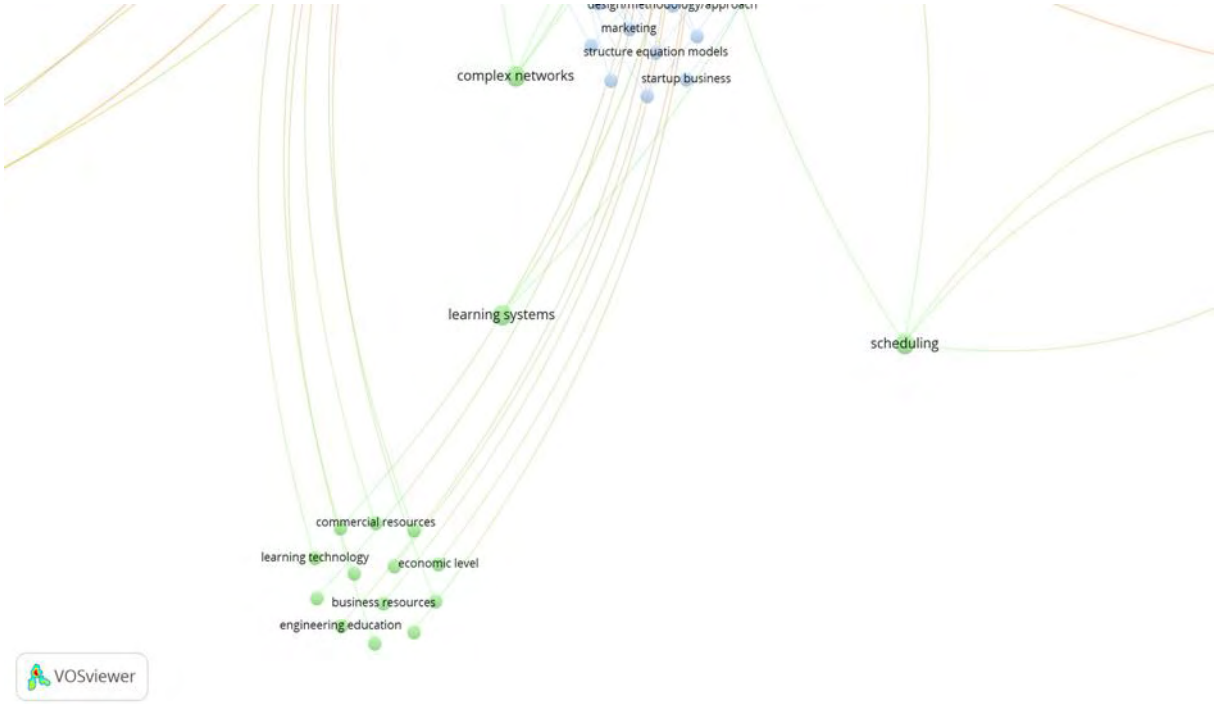

Figure 26. Eleventh light green cluster visualisation.

The twelfth light blue cluster includes 16 items (Figure 27). This cluster includes AI technology deep learning that occurs twice. The keyword AI ethics is also revealed in this cluster.

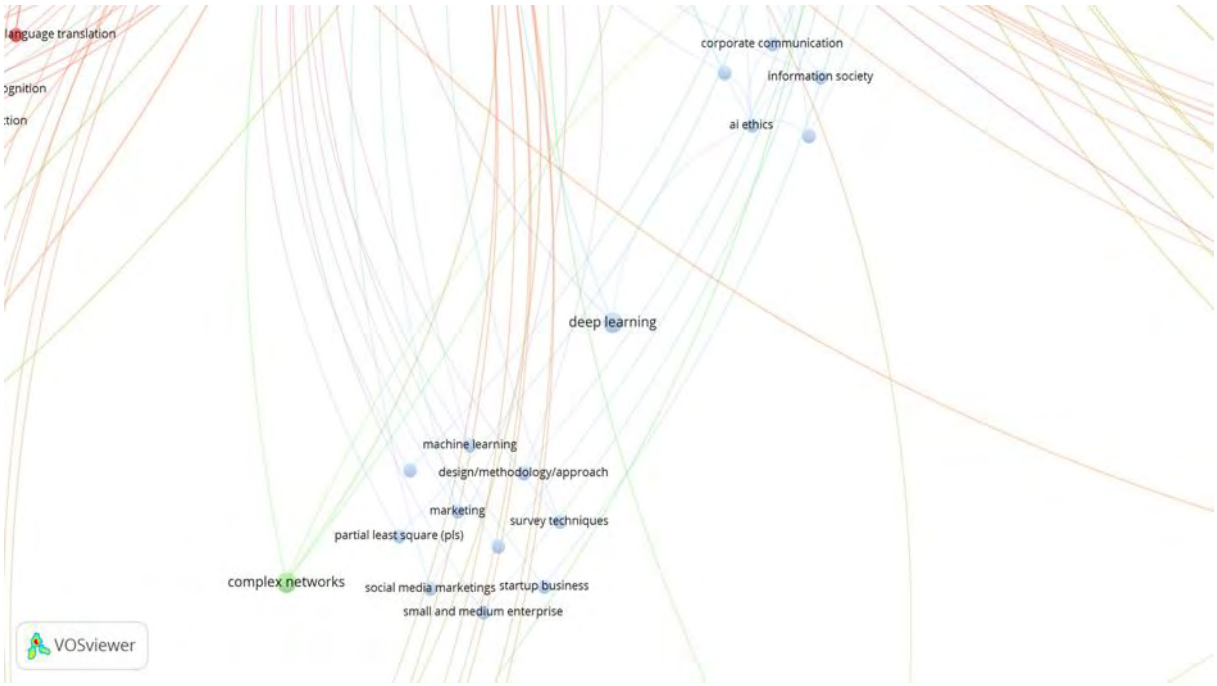

Figure 27. Twelfth light blue cluster visualisation.

The thirteenth yellow-green cluster includes 15 items (Figure 28). Keyword business administration has 3 occurrences and total link strength of 42. Among links with the keywords AI and business management and all other keywords in the cluster it is connected with keywords complex networks from the light green cluster, commerce from the violet one, service industry from the red one, current situation, data technologies, internet economy, industry and commerce department, service markets, network technologies, and data information from green one.

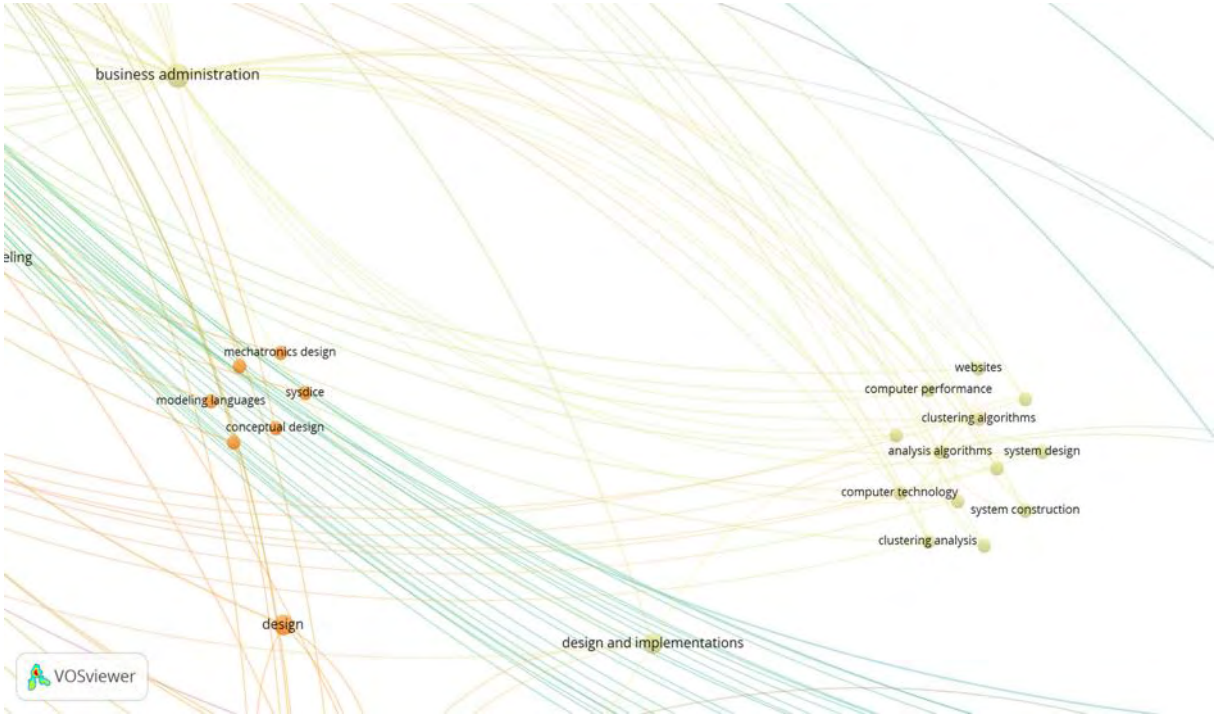

Figure 28. Thirteenth yellow-green cluster visualisation.

The fourteenth light blue-magenta cluster includes 11 items (Figure 29). Keyword business activities is essential in the group with the same total link strength of 16. It is connected with digital storage, cloud platforms from the same cluster and decision making and data mining from the red one above from AI and business management.

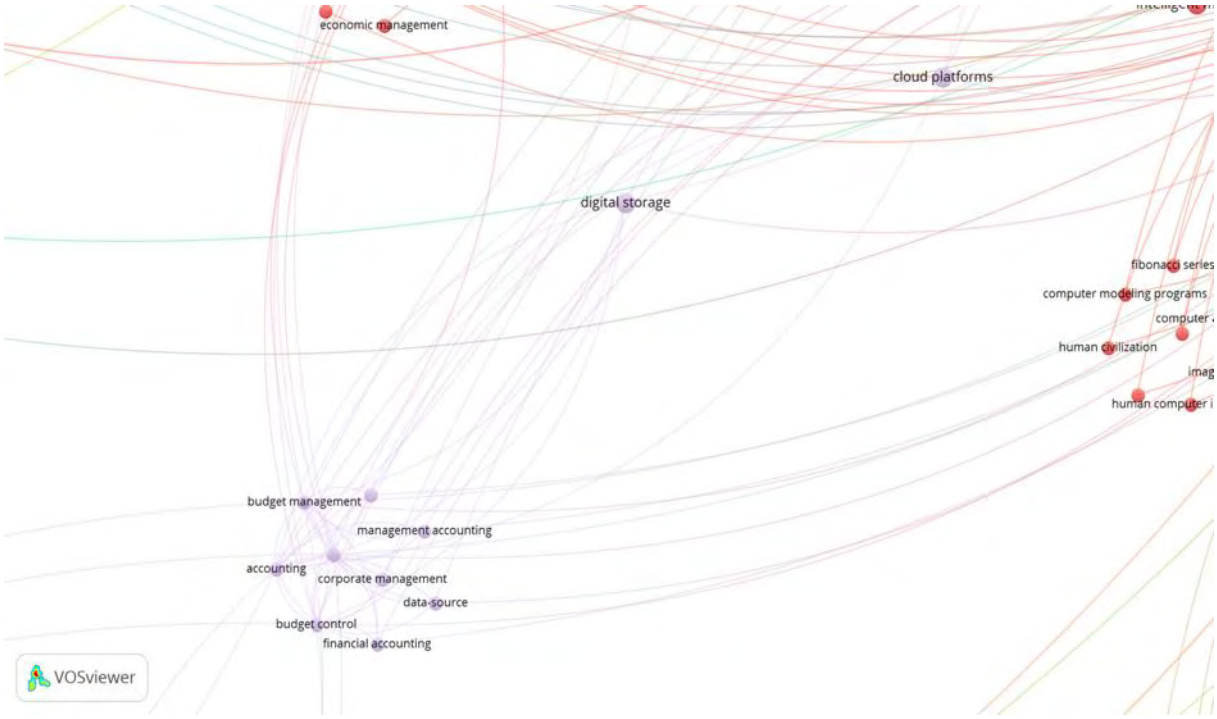

Figure 29. Fourteenth light blue-magenta cluster visualisation.

The fifteenth light cyan cluster includes 10 items (Figure 30). Agent based social simulation is an essential keyword in this cluster that is linked with all the keywords in the light cyan cluster, AI and business management.

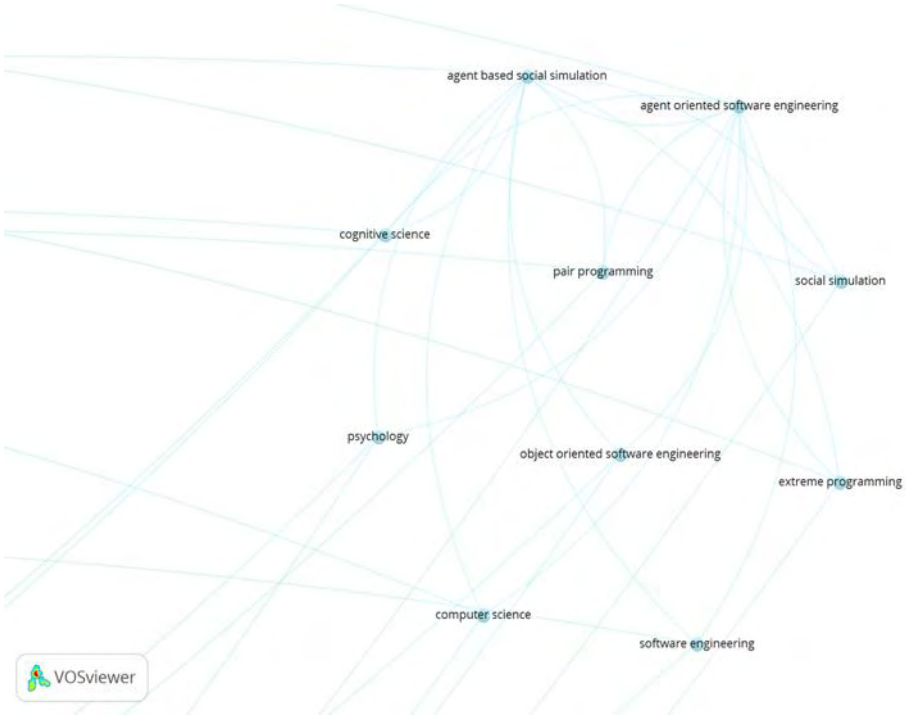

Figure 30. Fifteenth light cyan cluster visualisation.

The sixteenth light brown cluster includes 8 items (Figure 31). Keyword action spaces is the keyword that links all the keywords in the cluster, AI and business management.

Figure 31. Sixteenth light brown cluster visualisation.

The seventeenth medium light red cluster includes 6 items (Figure 32). Keyword AI robots is the core keyword that connects other keywords from the cluster and AI. It should be noted that people can get help out of robots as they can work in difficult conditions and optimise production processes. The use of intelligent robots can be focused on in various areas of professional and private life in case principles are observed (Kuzior, 2017, 2021,2022).

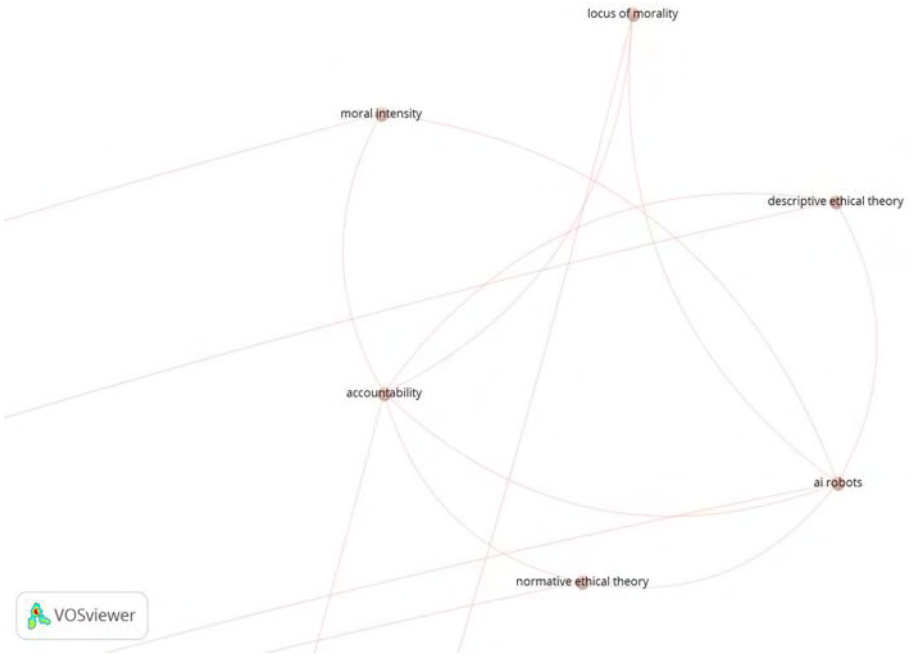

Figure 32. Seventeenth medium light red cluster visualisation.

When the criteria for the minimum number of occurrences of a keyword is changed from 1 to 2, we achieve the result retrieved with the VOSviewer visualizer (Figure 33). According to Figure 33 keywords are divided into 5 clusters. We conclude that the themes that unite keywords in each cluster are as follows. Big data, learning systems and supply chain can be singled out. Except for search query words AI and business management, keyword big data has the biggest rate of occurrences and total link strength in the red cluster. It has also a connection with other keywords from the red cluster besides learning systems, deep learning and supply chain. Information management, human resources management and decision making are keywords that represent the green cluster. Management information systems and system modelling are core in the blue cluster while forecasting is an essential keyword for the yellow one and knowledge based systems for the violet one.

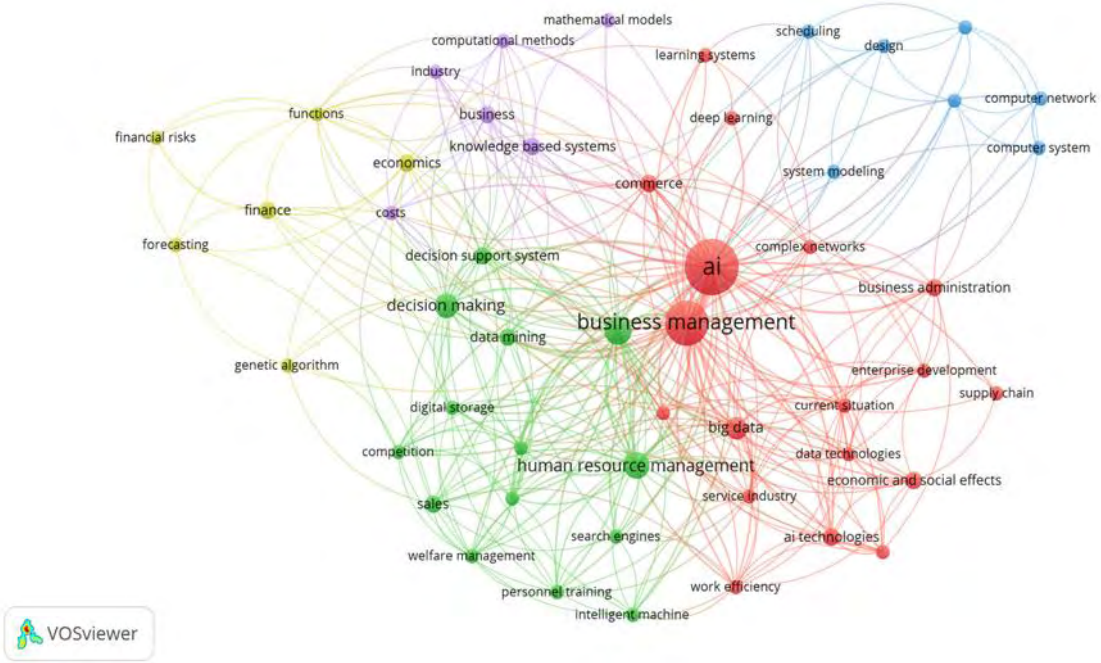

Figure 33. Keywords network visualisation on the base of query search (2) with the minimum number of occurrences of a keyword: 2.

Alkan (2022) considered that the integration of artificial intelligence and blockchain will enable automatic and rapid verification of data asset value transfers between different stakeholders, where business management is one of them.

The result received with the VOSviewer visualiser presents keywords network visualisation on the base of query search (3) with the minimum number of occurrences of a keyword: 1 (Figure 34). Keyword artificial intelligence occurs 3 times while other keywords occur once. The blue cluster exposes blockchain, cloud accounting and accounting information systems as the keywords. The red and green clusters summarise two functional applications as natural language processing systems and decision making processes.

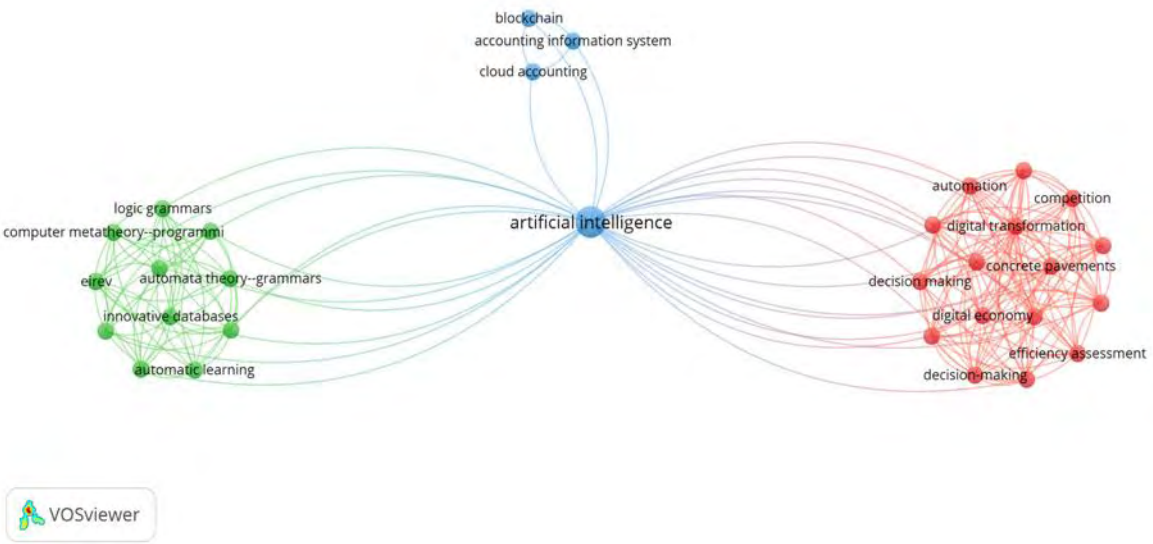

Figure 34. Keywords network visualisation on the base of query search (3) with the minimum number of occurrences of a keyword: 1.

Within the timeframe of published articles, it has been found that keywords from the green cluster appeared in the 1990s, the keyword artificial intelligence from the blue cluster while – in the 2010s while the rest of the keywords from the blue cluster and keywords from the red cluster – in 2020s.

Discussion

The evolution of artificial intelligence has had a profound effect on many industries, changing their outlook for the future. AI has had a significant impact on various businesses. There are a variety of benefits to businesses in terms of performance enhancement as well. Artificial intelligence technologies are very good at driving, sometimes taking over the low-level, tedious logistics tasks, but organisations typically achieve the best performance when people and machines work together enhancing human abilities, rather than replacing them.

Most executives will agree that optimizing business processes is hectic. The growing role of artificial intelligence in optimizing business management is having a significant impact on how businesses operate. The success of your business depends on how well the different departments function individually and how well they work together. With the help of artificial intelligence, we can improve the functioning of different departments, which will then help to optimise business management. Such areas as human resources, customer support, accounting and finance, and sales and marketing are singled out.

Table 3.
AI in business management

Business management area	Possible AI functional application	Description of application	Achieved result
Human resources			
Job automation	Robotics	Optimisation of a job posting, resume screening, resume analysis, salary processing, responding to employee inquiries, performance evaluation, scheduling meetings based on attendee availability	Reduction of the amount of time required to complete tasks that are repetitious or time-consuming
Job interviews	Information extraction, computer vision, natural language processing (NLP), speech processing	Easily shortlist resumes from a large database of resumes. Video interviews with AI-powered analytics can monitor the candidate's facial expressions while they answer to calculate their confidence level. Automate the initial few rounds of employee interviews	Simplifying the interview process, taking up a significant portion of the HR manager's workload
Responding to applications and queries	Robotics, speech processing	AI chatbots can help speed up performing tasks and reduce the burden on the human resources department. Notifying candidates about updates will help ensure that they are kept up to date on what is happening with their application. The organization will actively seek feedback from employees	Quick response to candidates on questions about their candidacy and other relevant information to avoid losing a candidate to competitors
Screening resumes	Knowledge representation and reasoning	AI can screen thousands of resumes across third-party candidate providers that the company uses in order to find the best candidates. They can even be programmed to add only the most suitable filter to their applicant tracking systems	Reduction of the burden on the admissions process
Customer support	NLP	Chatbots can be used to interact with customers using NLP and understand what the customer is trying to communicate and offer them the right solution	Enhancement of customer support to ensure that customers have an excellent experience every time they contact the support team

Cont. table 3.

Accounting and finance			
Fraud detection	Knowledge representation and reasoning	AI models can analyse and learn business transactions to develop a threshold model. The AI program blocks the transaction if the transaction does not fit the threat score	Protection of the business from potential incidents such as fraud attacks
Risk management	Knowledge representation and reasoning	The financial analysis tool can be used to analyse the historical financial data of a prospective loan applicant. According to the analysis, it can determine a risk score. If the risk score is high, the AI system will refrain from lending to that individual	Changing the process of giving out loans to a less complex, time-consuming, and risky one.
Financial assistance	Distributed AI	Intelligent AI programs can analyse the current financial situation, market trends, and financial goals to recommend the best financial strategy for the business	Better financial planning and operational optimization
Sales and marketing			
Lead generation	NLP, robotics, distributed AI	AI tools can collect contact information quickly and automatically. They can also score more leads based on data analysis.	The data can be used to help the sales and marketing team make more informed decisions. This can help save time, money, and effort. Moreover, AI can be used to find new leads based on your current database and help grow your pipeline
Digital marketing campaigns	Planning/scheduling, predictive analytics	AI can identify which ads and marketing strategies are most effective with the target audience	More effective digital marketing campaigns
Predictive analytics	Planning/scheduling, predictive analytics	It is possible to predict at what price a customer is likely to convert or which customer is more likely to make purchases. This will help managers come up with creative strategies to market less popular products	Prediction how likely a customer is to convert based on their past behaviour
Managing customer data	NLP, information extraction, predictive analytics	Retrieving information from business documents efficiently and accurately. Business intelligence solutions can help businesses to identify new opportunities and implement effective strategies based on key insights	Increase in efficiency of data management

The use of artificial intelligence can increase the productivity of an organization because it can assist to perform proficiently, save time, increase operational efficiencies, analyse huge amounts of data in less time, offers intelligent advice and support when needed and make decisions faster. The benefits organisations can derive from using AI are endless and include automating processes, better results and increased revenue from marketing efforts, a better understanding of customers and a better experience of services delivered, fraud detection customers improved service and increased reliability. However, while the growth of AI technologies is promising, some factors could limit their use in business. Data scarcity and algorithms are among the main challenges (Business World iT, 2020). Despite the abundance of data available to companies today, the implementation of artificial intelligence in some respects remains challenging. For machine learning to be effective, a large amount of data is needed to train the model. This means that AI can only be used in areas where data is already available because it is difficult to use AI if there is no data to train it on. The difficulty of training AI systems on biased data can occur, which can lead to inaccurate and biased results. This is a major challenge as we move forward with AI adoption, but it can be addressed in the future. Other issues include limitations of current computing capabilities and data security and privacy threats (because the use of AI is associated with the collection of sensitive information about people).

The need for lots of clean data, complex algorithms, complex data types, the need for faster processing, real-time processing, multiple providers with varying strengths, the difficulty of knowledge sharing and code reuse, dependence on the niche, expert talent, developing of the products, and stakeholder involvement are other AI challenges faced by organisations (Hughes, LaBauve, 2019). To improve efficiencies and identify new revenue opportunities many challenges must be overcome, such as talent shortages, a risk-averse culture, and the inability to imagine what the finished solution will look like. Executive decision-making is necessary before considering implementation, as there must be a strong business case in place. Once this is established, the best use cases to pursue will be decided. Executives must then understand the implications of this roadmap for their industry. Only then they will have a clear understanding of how to turn data into an opportunity to gain an edge. Kwilinski and Kuzior developed a list of measures to improve procedures of decision making in the context of development and technical re-equipment of an enterprise based on the perceptron model. (2020). Furthermore, ethical issues are particularly important when it comes to the appropriate use of modern technologies while this can have certain negative consequences for society. Therefore, it is important to disseminate models of responsible behaviour using technology for the benefit of people and to increase their quality of life (Kuzior, Kwilinski, 2022).

Organisations need to address data challenges to make sure AI is successful. They should use principles to better manage, clean, and enrich data so that broader AI ambitions can be met. However, most users do not have a mature understanding of data management capabilities, and about a third of AI programs fail due to bad data (Tello, Subramanian, 2022). Nonetheless,

to integrate AI technology successfully into a business model, managers should be aware of AI implications at three levels: challenges, capabilities, and governance. These challenges can be grouped into four categories: privacy, integration, reliability, and security (Canals, Heukamp, 2020).

Summary

Artificial intelligence has the potential to help organizations with critical business operation tasks, such as strategy planning, product design, marketing, finance and accounting, and customer support. As business leaders seek to deploy more artificial intelligence within their organisations, a crucial first step is to develop a plan for using AI to meet their business goals and develop a comprehensive AI strategy. Critical components of an AI strategy include the plan for acquiring the necessary AI capabilities, whether through external sourcing or internal development, the method for assembling AI talent, and the availability and collection of the properly labelled data required to train the AI models. Executives should be knowledgeable and aware of these efforts to support the successful use of AI in their organization.

Based on the Scopus database, the research examined scientific literature according to three search queries. The study overviews keywords network visualization using VOSviewer. It reveals that many keywords have occurred once. Potentially these keywords can be considered as themes for further research. The first search query confirms machine learning is the most extensive AI technique. In addition, AI is associated with algorithms that are acquiring fundamental human-like capabilities, such as vision, speech and navigation. The second search query shows human resource management and information management as the main AI application areas while decision making and data mining are core approaches where different combinations of AI functional applications are adopted. The third search query brings out that there is still a gap in publications concerning AI application in business management to make more precise conclusions.

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SILESIAN UNIVERSITY OF TECHNOLOGYPUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIESNO. 165

THE CITY AS A BRAND. ABOUT THE IMPORTANCE OF CREATIVITY IN CITY DEVELOPMENT AND PROMOTION

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Purpose: A city can be seen as a territorial unit with its associated area, number and structure of inhabitants, infrastructure and economic resources. From a social point of view, however, a city is more than that. Associated with the city is the concept of place and the placement of human beings in a social space, which is expressed not only in the material sphere, but also in the spiritual sphere. A city has its own specificity, resulting from its function, history and traditions. All this makes a city a special socio-economic entity. City planners are increasingly recognising the potential of cities contained in its non-material sphere as well, which is what makes cities special, specific and original. Today, on the basis of both tangible and intangible heritage, strategies are being built to develop and promote the city as a specific market "product".
The aim of the article is to show the process of creating a city "brand" on the example of selected cities of the Upper Silesian area, thus showing possible ways of promoting this specific market product, which a city is.
Project/methodology/approach: The research method used in the article focuses primarily on the socio-economic analysis of the development of cities using the process of "branding" in promotion and development.
The article has an explanatory and descriptive character. The research methods adopted in this study indicate a qualitative type of research. They include both the technique of observation and the analysis of content and documents, i.e. on the basis of observed phenomena and facts occurring in urban space and the analysis of literature on the subject, the process of "branding" will be presented.
Findings: Established in 2004, the UNESCO Creative Cities Network aimed to emphasise the importance of promoting the specific cultural and historical potential of cities in their development. However, for a city to be creative, tradition and monuments are not enough. Without innovative thinking, including the need to invest in the development of "creative industries" that are particular to a city, and building a "brand" of a city on its cultural potential, it is difficult to expect a spectacular success in its development.
Originality/value: The innovativeness of the article consists in the analysis of ways to foster the promotion and development of cities, with particular emphasis on creating a "brand" as a local product and the related process of developing creative industries. The obtained results of the analysis and the formulated conclusions may allow to use and implement similar solutions in other cities in order to stimulate their future development.

Keywords: branding, creative city, creative industries, urban space, sustainable urban development.

Category of the paper: empirical research.

1. Introduction

The city as a special spatial area and urbanity as a specific way of life, have, since their beginnings, been surrounded by particular emotions and social reactions. The city as a social space offered a sense of freedom and created new opportunities. After all, it is with the city and the urban lifestyle that the development of civilisation and high culture is identified. The city has always inspired and attracted creative people in various fields, where an open and tolerant space became an arena for contacts between intellectuals and artists.

The modern city, although different in shape and functionality from the historic cities of antiquity or the Middle Ages, is still identified with and perceived through the prism of 'culture' in the broadest sense.

As Ryszard Janikowski writes: "A canonical element of late modernity has become the necessity to implement the principles of alternative development referred to as sustenance (sustainable) development. At the same time, the discovery of recent decades is that the carrier and generator of prosperity, of a high quality of life can be and is culture and knowledge as an object and means of development. The cultural and creative industries already make a significant contribution in the national product of many European countries, as does cultural tourism. They are interactively co-creating the next phase of human development towards a knowledge-based economy based on the tertiary sector" (Janikowski, 2010, p. 52).

Managing a city in the post-industrial era also requires a new perspective on the urban economy. Industry, which has hitherto been the primary driver of the economy, is being consigned to oblivion; European and global standards are 'imposing' a new view of the city.

In order to be able to develop and exist in the public consciousness, a modern city must "define" itself, or more precisely, it must determine the direction of development in line with its own potential, with what is original and characteristic for the city, with what makes it stand out, attractive and constitutes its specific "genius loci".

Cities with centuries-old traditions use their historical or cultural heritage assets to build up their image, but smaller urban centres are also increasingly resorting to these forms of promotion, promoting everything that may seem worthwhile in any way, with particular emphasis on tangible and intangible forms of cultural heritage of a city or region.

To put it differently, the attractiveness and development of the contemporary postmodern city, just as at the dawn of the development of this specific spatial formation, which was the engine of human civilisational development, is still determined by its cultural and scientific potential and scientific potential, today referred to as creative potential.

Culture can be both an aim of development of a given society and a means of that development, as well as a regulator of development. Culture must be understood in at least two dimensions. In the first, the most important one, as the subjectivity of cultural development, i.e. the development of culture as such. In the second, as a catalytic agent of development, when it is the object of development within a given socio-economic system (Janikowski, 2010, p. 52).

As Andrzej Klasik writes: In studying the level of importance of the cultural sector in a city and agglomeration, it seems useful to distinguish between 'city culture' and 'city of culture'.

In research on the development of cities and urban agglomerations, i.e. in their transition from the industrial to the post-industrial stage, the category of "city culture" is used.

In turn, exposing the "city of culture" emphasises, on the one hand, the importance of the cultural function in the development of the city and the lives of its inhabitants, while on the other hand, a much broader and promising perspective of the creative city is launched and promising perspective of a creative city and a creative agglomeration (Klasik, 2009, p. 12).

Today, the creative industries are an important core of a significant economic sector in cities, above all in large, metropolitan urban centres (Wiktor-Mach, 2022; Bagwell, 2008, pp. 31-46).

It is a sector of the creative economy as opposed to the manufacturing and service sectors - deriving fundamentally from the cultural and scientific sectors with a creative contribution from education and training (Klasik, 2009, p. 13).

Many cities and regions are also creating local or regional "brands" ("branding" of regional products) to promote their own cultural and creative potential as a significant pillar of social and economic development (Smolka-Franke, 2019, p. 542; Evans, 2015, pp.135-158; Anholt, 2005).

The research method used for the purposes of this study is a comparative case study of the cities of the Silesian-Zagłębie Metropolis selected for analysis. The aim of the research undertaken for the purposes of this article is to discuss, on the example of the selected cities, the process of branding, i.e. creating a brand of the cities using their potential and cultural heritage and cultural heritage.

Most publications on branding oscillate around city marketing strategies and the creation of a brand as a symbol. This publication also refers to a deeper, sociological understanding of urban space and the creation of the city as a unique place, which, in addition to physical space, also consists of its specific genius loci.

The research methods adopted in this study indicate the qualitative nature of the research. These include both the observation technique used in qualitative research and content analysis, which in this case involves accessing a number of sources documenting and describing the course of processes taking place in the urban areas selected for analysis.

The analysis of the development of the phenomenon of city branding was also based on professional literature, both in the fields of urban sociology and economics, e.g. by the creator of the notion of the "creative city", Charles Landry, Richard Florida - creator of the concept of the "creative class", sociology classics such as Max Weber, as well as native scholars focused on urban issues, such as Bohdan Jałowiecki, Marek S. Szczepański or Andrzej Majer, as well as a scientist who has been involved in research into the creative industries in the Silesian-Zagłębie Metropolis for many years - Andrzej Klasik.

2. Materials and Methods

2.1. The importance of creativity in urban development

The concept of the creative city was proposed in the 1980s by Charles Landry, a British urban planner and expert on sustainable urban development and the use of imagination and creativity in urban policy.

Ch. Landry was the first to expose the importance and impact of creativity on urban development. In the 1980s, he introduced the term creative city as a response to the dramatic economic and social changes taking place in many cities at the time. In addition, in 1978 he founded Comedia, a think tank consultancy organisation that drew attention to the relationship between culture, creativity and urban transformation and development (Zgłobiś, 2015, p. 7).

Charls Landry defines the creative city as a process that requires a change in the way people and institutions think and function to one that enables them to conceive of city development and problem-solving in an integrated way. He emphasises that the essence of the creative city is its sustainability, a concept that is currently one of the main ones in urban development science. Sustainability, according to Landry, is not only about environmental and ecological issues, but also about psychological, economic and cultural sustainability in the broadest sense so that the city space inspires new thinking and allows for sustainable forms of creativity (Landry, 2013, p. 36).

The author of this thesis encourages city managers and residents to look at their own history and future in order to best identify and 'brand' (create a brand) their advantages. In this approach, the process of arriving at creativity is as important as its outcomes, because its aim is to reflect on how to create meaning in a place, how to maintain and re-create it so that the place is constantly alive (Landry, 2013, p. 36).

According to Ch. Landry, institutions, organisations and individuals capable of seeing the complex urban context holistically are necessary to induce creativity in urban spaces. At the same time, leaders should understand how changes of a material nature alter the emotional and symbolic perception of space and the subtle systems of the city's social ecology. Acquiring these skills requires an attitude of innovation and is not a matter of course, as it involves moving beyond the existing spatial, social and economic context (Landry, 2013, p. 38; Kinal, 2015, p. 19).

As Dobrosława Wiktor-Mach emphasises: 'Creativity is not only the search for the new, it is also the ability to deal with the old.' In her view, cultural heritage and tradition also have a special power, because cultural heritage is the sum of past creations, and in the rush for change people find inspiration in buildings, artefacts, values and social rituals (Wiktor-Mach, 2022).

The creator of the notion of the creative class, Richard Florida, believes that it is human creativity that is the foundation of economic growth, and cities, in order to create a competitive advantage over others, must become attractive to people in order to prevent the loss of creative power, attract it from outside and retain it. Knowledge and creativity are displacing natural resources and manual labour as new sources of wealth creation and economic growth (Florida, 2010, p. 271).

Diversity and creativity drive each other and thus help to stimulate innovation and economic growth. R. Florida points out that lifestyle issues are extremely important for the creative class. The city should offer the opportunity for diverse and rich social interactions, it must be authentic, original and unique, and offer the possibility to actively build one's own identity. The key to a successful city, according to R. Florida lies not in reducing the costs of its functioning, but in increasing the quality of life of its inhabitants by creating a diverse urban space, rich in attractions and full of charm (Florida, 2010, pp. 277-278).

2.2. The city as a market product - the brand

"If we are looking for a purely economic definition", wrote Max Weber, "then a city is a settlement in which the majority of inhabitants are engaged in industry or commerce, and not in agriculture. To speak of a city, a regular trade exchange must take place in its area, so a city is characterised by the presence of a market" (Jałowiecki, Szczepański, 2006, p. 49; Majer, 2010, p. 122).

In the era of market economy, a city is treated as a special kind of enterprise, hence it becomes so important to clearly define and mark its character, what will distinguish it from other cities, i.e. its specific "brand" (branding).

In economic literature devoted to shaping the image of a city we read:

"[...] The identity of a city is the sum of the elements that identify it. It is a set of features, characteristic for the city, which distinguish it from others and are expressed in all activities undertaken in the city, creating its specific personality and character. [...] Identity is also a set of features, attributes through the prism of which the city wants to be perceived by its

surroundings and which create a specific background or context for the process of communication with the surrounding environment. [...] Only the reception of identity by the environment leads to only the reception of identity by the surroundings leads to the creation of a specific image of the city" (Stanowicka-Traczyk, 2008, p. 14).

What most often defines and characterises a city is its cultural heritage, both tangible and intangible. The tangible heritage of cities most often includes their historic architecture (also post-industrial), whereas the intangible heritage defines the entirety of cultural achievements, such as: literature, music, art, customs, tradition or culinary heritage. These are often developed in the form of creative industries.

An example of typifying the development of creative industries on the basis of the cultural potential of cities was a study on the potential of cities belonging to the area of Upper Silesia, prepared by Andrzej Klasik from the Economic University of Economics in Katowice.

On the basis of research carried out on the potential of the creative industries of the cities of the Upper Silesian conurbation, he concluded that it is possible to: "build and promote the development of:

- Katowice as a city of high culture, music and music industry.
- Bytom as a city of stage arts and cultural events in a post-industrial scenery.
- Zabrze as a city of technical monuments and post-industrial tourism.
- Chorzów as a city of entertainment and recreation" (Klasik, 2014).

The consistently implemented policy of development and promotion of the typical cultural potential of Katowice resulted in the city being awarded the title of UNESCO Creative City in 2015 precisely in the field of music.

Since then, the city has been building its brand based on the image of a city of music that characterises it. This has also consolidated the city's position as a significant and thriving urban organism, not only in the cultural sphere but also in the economic dimension. It has also given rise to efforts to create the first metropolitan area in the country - the Silesian-Zagłębiowska Metropolis, of which Katowice is the official capital.

It is also worth stressing how important the creation of the above-mentioned UNESCO Creative Cities Network Programme in 2004 was for the promotion and development of creative industries in cities.

By joining the Network, cities confirm their commitment to developing partnerships, promoting creativity, sharing best practices and strengthening citizens' participation in cultural life.

The main objective of the Creative Cities programme is to increase public awareness of the importance of culture and its pro-development potential in various segments of social life, including the economy. The title of a creative city guarantees the growth of the city's prestige in the international arena, and the globally recognisable brand of a creative city is a mark of quality that attracts tourists to the city, becoming an additional impulse for the development of the local economy (www.unesco.pl/kultura/690/, 2018).

Another spectacular example of an effective form of brand promotion under a common banner of a "regional product" in the area of Upper Silesian cities is the Industrial Monuments Route of the Silesian Voivodeship, established in 2005.

As we read on the Route website: "Route of Industrial Monuments is a thematic, automobile tourist and cultural route, connecting objects related to the industrial heritage culture of the Silesian Voivodeship" "www.zabytkitechniki.pl/Pokaz/153062/o-szlaku, 2022).

Currently it consists of 40 objects. The Route is a branded tourist product (network product of the area) presenting the most important and the most interesting industrial objects in the Silesian region in terms of tourist, historical and architectural values. Objects located on the Route are connected with mining tradition, metallurgy, power industry, railways, communications, water production and food industry. The Route of Industrial Monuments includes the existing museums and open-air museums, inhabited workers' colonies, working plants. The Route of Industrial Monuments is the most interesting route of industrial tourism in Poland. As one of the main brand tourist products of the Silesian Voivodeship it characterises the region on the tourist map of the country

An example of the effectiveness and efficiency of this type of joint action proves that joint action has a much greater chance of success and that the promotion of a similar type of product under a common banner is much more effective than individual actions, often requiring constant resistance to strong competition. It also proves that it is possible to effectively create a "cultural product", not only in the area of one commune or town not only in the area of one commune or town, but the whole region.

3. Results, discussion and conclusions

The question arises, why do we refer to the socio-cultural dimension of a city when talking about a local/regional product? The reason is that the economic success of a city is very often determined by the ability to exploit and highlight this very aspect, which constitutes the special value of the space which, in addition to its heritage and material value, consists equally of the intangible, spiritual value of the region or city.

As the economic success of a city is very often determined by the ability to exploit and highlight this aspect, which constitutes the special value of space, which, apart from its heritage and material value, also includes the intangible, spiritual value of a region or city.

The research undertaken for the purpose of this study was exploratory and descriptive in nature and concerned the characteristics of branding in a selected area of post-industrial cities which, in addition to the traditional historical potential that defines many urban centres, have a particular type of potential that for many years defined their industrial character both in material and spiritual terms, and today make up the significant cultural heritage of the region.

The hypothesis set out in the paper was therefore: Cities with significant post-industrial potential, use their heritage to build their image and create their own 'brand'.

Creating an interesting and attractive urban space undoubtedly brings tangible benefits to a city or region. In addition to increased interest and revenue from tourism, which translates into economic gain, cities also gain 'value' by attracting, through their attractiveness, so-called 'discerning' and creative residents (representatives of the creative class) who contribute to the holistic development of the city and region (Florida, 2011, p. 9).

Elizabeth Currid writes that the active use of the arts as a major component of economic development is relatively new. "A fundamental shift in economic development focuses on attracting people through the development of arts and culture" (Currid, 2009, pp. 368-382). In the article cited above, the author considers the importance of the arts in economic development through several discrete but related lenses: 1) As a recreational destination or consumer product; 2) As a tool for redevelopment and development; 3) As a means of 'branding' a place and 4) As a generator of jobs and income.

The strand of research pursued by the author, allows for a better understanding of the function of the arts and cultural potential in economic development.

The urban regeneration programmes implemented in many cities are also undoubtedly contributing to the development of attractive urban space.

This approach was sanctioned by urban development strategies, which commonly envisaged the use of historical heritage to develop the local economy. Interventions in city centres usually involve the renewal of symbols of urban and regional culture, which makes it possible to realise the principle of spatial complementarity of the revitalisation process consisting in translating its effects into other areas (Jadach-Sepioło, Kułaczkowska, Mróz, 2018, p. 175).

By definition, therefore, the implementation of this type of project is not only aimed at restoring the aesthetics and spatial order of cities and the protection of heritage and material value, but increasingly the added value in the implementation of these projects is to give them functional value, among other things as prestigious cultural facilities, stimulating the development of creativity and innovative cultural events of the city.

An excellent example of combining the revitalisation of post-industrial sites and incorporating their aesthetic and functional qualities into the city's 'brand' building strategy is the city of Zabrze in Upper Silesia. According to Andrzej Klasik's previously cited typology of promotion of Upper Silesian cities, Zabrze's potential was to be based on the use of technical monuments and the development of post-industrial tourism (Klasik, 2014).

The Guido Historic Mine, located within the city, in addition to its tourist function over time, it also began to function as a thriving cultural institution, making use of the excellent acoustic qualities of the underground halls. Suffice it to mention that, in addition to staging award-winning theatre performances and organising jazz concerts, every year the mine is the venue for the Krzysztof Penderecki International Festival, as shown in figure 1.

Figure 1. The Historical Guido Mine – Zabrze.
Source: www.kopalniaguido.pl/index.php.

In a publication on the social memory of the city, Lukasz Skoczylas writes bluntly: "The (memory) carrier can also become a source of profit as a tourist attraction. [...] Intervention in the carrier or the creation of an implant here become a factor supporting economic growth and employment. Although the commercialisation of social memory and post-tourism has been talked about for years, the prevalence of this perception of memory carriers may come as a surprise.

It is the result of treating media in a pragmatic and utilitarian way, and therefore putting their function in relation to the present to the fore. [...] Indeed, the use of profit-related arguments is extremely helpful in gaining the acceptance of memory consumers, and even the support of other leaders, such as politicians or officials" (Skoczylas, 2014, pp. 278-279).

An example of this type of activity implemented in Zabrze, shows the process of preserving and reconstruction of the memory of the post-industrial city through activities combining the 'salvage' of in the landscape of objects of a bygone era while simultaneously promoting them and attracting an audience in a commercial way that nevertheless fits in with the specificity and character of the place.

4. Summary

The strategy for the sustainable development of cities and regions does not only involve taking care of ecology and economic development, but there is also a growing awareness of the need to care for cultural heritage (tangible and intangible) on the basis of which the so-called "local/regional product" is created and promoted.

The original or even unique value of this product builds a brand that makes a city or region attractive, attracts tourists and makes a place noticeable, which clearly translates into economic gain. The creation of attractive space in cities has yet another important function, namely to attract creative, imaginative people, whose presence, as Richard Florida argues, is essential for the effective development of a city and region.

The aim of the article, therefore, was to show ways of combining the two important factors of nurturing the city's development through the use of its potential and cultural heritage and, based on this potential, creating its image and promoting its original qualities.

Future research in the field of city branding will enable the field of analysis to be broadened to include other cities, including those outside the post-industrial area of Upper Silesia discussed here.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

EVALUATING CITIZEN SCIENCE PROJECTS

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Purpose: For several years, the trend of open science and citizen science as one of its pillars has been developing rapidly in Poland. More and more research projects involving volunteer non-scientists are being carried out as part of citizen science. To know the scientific, educational and social value of these activities requires relying on the evaluation of these projects, which, however, is missing due to their novelty and difference from conventional science or commercial research. The purpose of this article is to propose evaluation criteria and methods that will meet the specifics and needs of citizen science projects.
Design/methodology/approach: The article is based on a critical analysis of the literature on the subject, as well as a systematic review of selected examples of completed citizen science projects - available on dedicated websites created by citizen science associations and other social and scientific organizations. Citizen science, as part of open science, is a relatively new and developing approach to scientific and educational activities. Evaluation research, on the other hand, is a method well-established in theory and put into practice for valuing results and enhancing the quality of projects, both of scientific and social character.
Findings: Citizen science projects require the implementation of evaluation models that take into account both the diversity of goals set for these projects, as well as the diversity and participatory nature of its stakeholders, and the study in terms of social impact. A higher level of involvement of volunteers in an ongoing citizen science project should presuppose the implementation of continuous evaluation and carried out in multiple areas of the project (organizational, scientific, social) to ensure the reliability and credibility of the results obtained, as well as to understand the mechanisms of their impact on volunteers and society.
Practical implications: The knowledge provided in the article can be used in planning and managing the evaluation of citizen science projects.
Social implications: Implementation of evaluation as a permanent practice in this type of projects can contribute to improving their quality, better management of public funds allocated to them, and greater public confidence in the knowledge produced within their framework.
Originality/value: The issue of evaluation in citizen science projects is relatively new, and appropriate evaluation models have not yet been developed. It is of interest to researchers and project managers, decision makers of public funds, scientists and the general public.

Keywords: project evaluation, citizen science, open science, democratization of science.

Category of the paper: Research paper.

1. Introduction

Citizen science is considered part of the open science movement, and at the same time represents an autonomous trend in which the public (non-scientists) is included in the implementation of scientific research. Thanks to information and communication technologies, it is developing in diverse forms of open access to databases and scientific publications, and facilitating collaboration among scientists around the world. The development of open science programs is supported by many international organizations, including the European Commission, UNESCO, as well as non-governmental associations and foundations. The open access policy has become a priority element of the EU's Framework Program for Supporting Research and Innovation 2014-2020. Within the framework of the HORIZON program as well, the 2020-24 strategy allocates special grant tracks for the implementation of projects in the areas of open science and citizen science[1].

Citizen science develops the ideas of open science (mainly in the form of free access to knowledge resources), but also goes further, pointing to the active role of society (through volunteer non-scientists) in the development and dissemination of science. It implements some of the values proclaimed within the democratization of science movement (McCormick, 2007) and prompts questions that are increasingly being asked about the science-society, science-decision-maker relationship described in the Third Wave of Science Studies (Collins, Evans, 2002). These include questions about the place of science in a pluralistic society; the monopoly and legitimacy of scientific knowledge and the status of non-academic knowledge; and the use of knowledge to legitimize public decisions (Wierzchosławski, 2021, p. 51). The values of truth and goodness that guide science are complemented in the citizen science stream by democracy, pluralism, justice and responsibility - values that underlie the concept of sustainable development (Kuzior, 2019). Citizen science can play an important role in monitoring the implementation of the Sustainable Development Goals, providing data for its evaluation from the perspective of diverse groups and communities.

Originally, the functions of citizen science referred primarily to assistance by volunteers (non-scientists) in data collection. The earliest projects were implemented mainly in the area of natural sciences (observations of specific animal and plant species, water quality studies, etc.) and astronomy (sky observations). However, over time, opportunities for a fuller and more collaborative involvement of the public in the creation of science were recognized, and more collaborative projects were undertaken, including those from more scientific fields - humanities, social sciences, health sciences and others.

[1] A description of the completed projects and a schedule of further competitions can be found on the European Commission's website: https://cordis.europa.eu/article/id/435872-citizen-science-inspiring-examples-of-societal-engagement-for-horizon-europe/pl (access: 12.08.2022).

With the development of citizen science, there were also criticisms, relating both to the certainty and reliability of the data collected and the knowledge obtained from it, as well as to the very idea of science practiced with the participation of citizen non-scientists. Among other things, it was stressed that not every type of research is equally suitable for implementation with the participation of volunteers. The lack of proper control over the data collection process and the lack of competence to interpret the data by volunteers were also pointed out. Organizational difficulties and uncertainty about the continuity of the research project, as well as difficulties in clearly defining the copyright of the results obtained from such projects, were also a matter of concern to the scientific community. The first studies of an evaluative nature compared the quality of data collected by volunteers with those collected by scientists (Gommerman, Monroe, 2012). Today, these can be described as the minimum scope of evaluation, far from being sufficient to fully understand and evaluate citizen science projects and their social outcomes.

2. Development of citizen science projects and the need for its evaluation

The dynamic development of citizen science projects can be followed, among other things, on dedicated online platforms. They allow their initiators to attract and contact volunteers, organize online research, and share databases, research results and articles. The most popular platforms include:

- zooniverse (https://www.zooniverse.org/) currently comprising more than 2,501,000 volunteers and 103 active and 79 completed projects in 11 scientific fields, which have resulted in more than 250 scientific publications;
- scistarter (https://scistarter.org) with 100,000 active volunteers and more than 3,000 projects (of which 1,600 are active);
- citizenlab (https://www.citizenlab.co) with 2,500,000 projects, over 750,000 volunteers;
- ECSA - European Citizen Science Association (https://eu-citizen.science) with 189 active and 29 completed projects from 12 European countries. It provides nearly 190 scientific publications in its resources;
- RRI Tools (https://rri-tools.eu) with more than 1,640 projects and 2,400 volunteers, active in over 30 countries.

With the exponential growth of citizen science projects, new levels of volunteer involvement in research activities have also emerged, as described by Muki Haklay (2013), among others, referring to S.R. Arnstein's typology of public participation (Arnstein, 1969):

Level 1 - Crowdsourcing - volunteers are involved in obtaining basic data, checking indicators, reading simple data.

Level 2 - Distributed Intelligence - it is up to volunteers to collect data and create databases, sometimes also simple analysis and interpretation of the results obtained. Projects provide training for participants and prepare materials to help them properly perform research, code, read or interpret results.

Level 3 - Participatory science - at this level, volunteers are involved in defining research problems, determining the research process, and collecting and analyzing data. This level is also often educational research, focused on volunteers' learning about the research methodology and process.

Level 4 - Extreme Citizen Science - creating science in partnership between scientists and volunteers. This partnership encompasses the entire project from defining the problem, determining the methodology, collecting data, analyzing it and drawing conclusions. It's also participation in the dissemination of results for use in social and political decisions (Halaky, 2013).

Despite the rapid development of citizen science projects, their impact on society may be more of a promise than a real fact. It is limited by various social and cultural factors, such as:

- Direct and institutional trust (between scientists and non-scientists) about the reliability and certainty of the knowledge produced by these projects. Citizen science projects, despite the wealth of data provided, are not taken as seriously in the scientific community as conventional science. Many prestigious journals only recognize the educational value of articles based on these data (Bonney et al., 2014).
- The willingness of non-scientists (volunteers) to commit to knowledge creation - their level of motivation to participate in citizen science programs, their willingness to learn continuously - lifelong learning, their honesty and integrity in applying certain methodological procedures.
- The confidence of decision-makers in the knowledge produced by citizen science and their willingness to use and implement its results in public decisions.
- The openness of society to new knowledge and understanding of science (the concept of PUS - Public Understanding of Science), the readiness of people to implement changes in their lives on the basis of new scientific knowledge created in citizen science projects (Bonney et al., 2015).

A natural turn in the development of citizen science is the increasingly significant inclusion of evaluation, as an answer to questions about the meaning of citizen science projects, as well as the quality of the data provided and the knowledge created through the work of volunteers. Evaluation of citizen science projects can reach out to many important issues, such as the social relevance of citizen science, the benefits/risks of participation in these projects (in terms of awareness and knowledge of the surrounding world, trust in science, knowledge of the scientific process and methodology, etc.), democratization of science, making science results public, strengthening innovation and public involvement of citizens. It is also an opportunity to further improve citizen science projects and disseminate and implement the results of scientific research in society.

3. Functions of evaluation - between impact evaluation, supporting development and building public confidence in citizen science

The largest number of citizen science projects, and at the same time evaluation studies, relate to projects carried out at levels I and II of citizen science and in the field of life sciences. Both the experience of researchers working with volunteers and the evaluation studies carried out show that the collection of quantitative data by volunteers, produces relatively good results, satisfying professionals and giving volunteers a sense of true participation in the creation of science. The importance of good preparation of information materials and training for volunteers - on which the quality of the data obtained depended to a large extent - was recognized. If these materials were properly prepared the quality of data collected by volunteers was comparable to professional scientific research. In contrast, citizen science projects focused on qualitative research are more difficult to implement and often do not produce adequate and reliable data for professionals. These studies also require more sophisticated evaluation methods to improve the quality of the research process itself and to identify the causes of problems and opportunities to achieve better research results also in the collection and analysis of qualitative data (Gommerman, Monroe, 2012).

Evaluation prepared for the development of a project should take into account all stages of the project from the study of needs and the start of implementation, through the monitoring of the process to the study of impact. For most citizen science projects, it is worthwhile to start it even before the project (ex-ante evaluation), conduct a needs analysis not only of the participants - volunteers, but also of other groups involved in the project (scientists, community, project recipients and others). Part of the questions should make it possible to compare some indicators with an adequate survey conducted also after the end of the project (ex-post evaluation). For example, the participants' awareness and knowledge of the research problems undertaken, awareness of the methodology of the research process, attitudes towards the topics addressed and behaviors associated with them, motivation to participate in the project, expectations of the project and its results. The dependence of the types of evaluation and its scope on the stage of project implementation is shown in Figure 1.

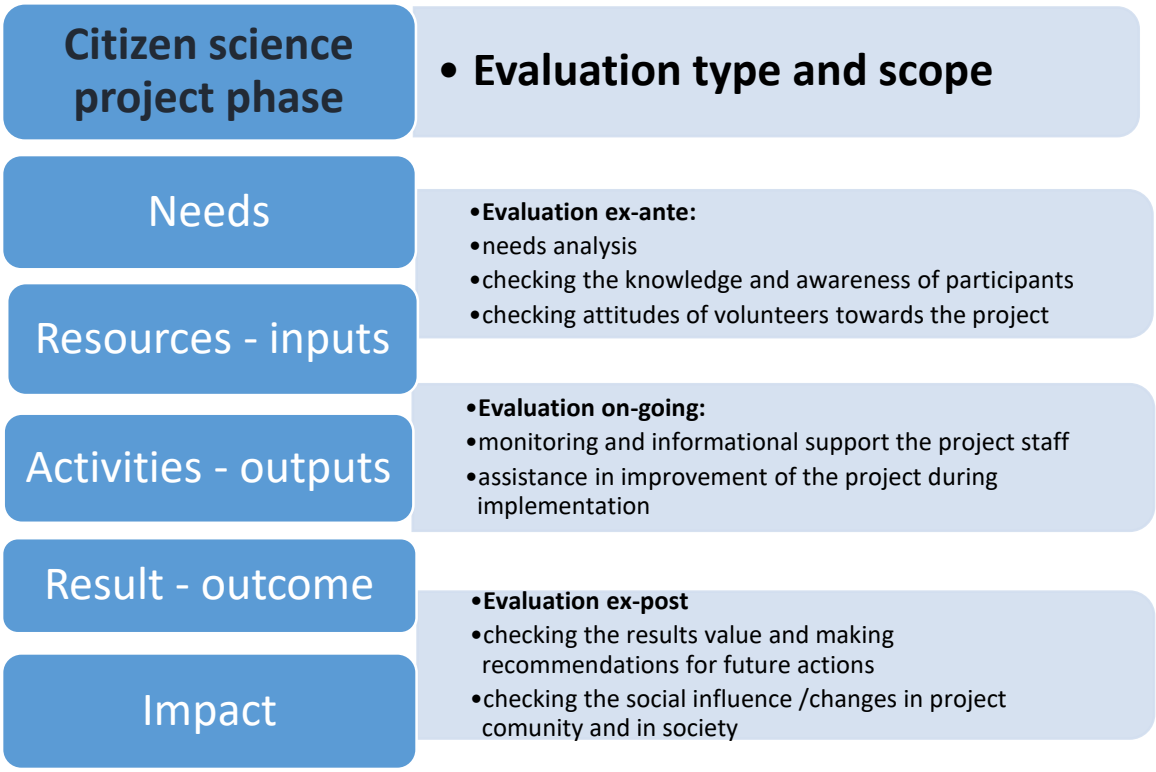

Figure 1. Dependence of types and scope of evaluation on the stage of citizen science project implementation.

Source: own study.

The authors of many publications emphasize that the evaluation of citizen science projects should be carried out, at least in three areas, because of the goals that these projects can achieve:

- in terms of scientific result,
- in terms of learning and strengthening the participation of participants (volunteers),
- in terms of social impact (Kieslinger et al., 2018).

Evaluation in terms of scientific result is usually based on the study of the quantity and quality of data collected by volunteers and the number of scientific publications and their citations published based on the data collected in the project. The first is most often carried out by project managers themselves - as a kind of self-evaluation to develop the project and/or legitimize its results. The second is carried out by external evaluators, examining the scientific process in the project, often also as a meta-evaluation - comparing the scientific impact of publications relying on different citizen science projects. Their results can be found on citizen science platforms. For example, the eBird platform (https://ebird.org/home) aggregates more than 5 million bird observations, which it makes publicly available so that they can be analyzed. It also offers access to several hundred scientific articles developed on the basis of the observations compiled within its framework. The credibility of citizen science projects is also built by subjecting its projects (databases, analyses and results) to peer-reviews on the same basis as conventional science data and analyses.

The achievement of scientific goals, with which citizen science projects are most commonly associated, will not always be positively correlated with educational goals and in terms of impact on social behavior. The evaluations of many projects have shown an increase in awareness and knowledge of the subject undertaken by the citizen science project. For example, in the increase in knowledge of invasive plant species, but the desired change in the behavior of volunteers towards invasive species has not already been achieved. The authors of this exemplary evaluation looked for reasons for this situation in several factors, primarily related to the organization of the research process: too little time after training volunteers for their personal reflection and insufficient opportunities to learn from practice and from mistakes. Important factors that can influence the achievement of the desired behavioral change among volunteers include strengthening their sense of agency and control over the phenomenon, and raising the level of motivation and personal commitment to the research topic undertaken (Bonney et al., 2015). To achieve this, volunteers must not be treated as a cog in the machine, unaware of the whole of its operation. They must understand and want to learn about the phenomenon under study (cognitive curiosity), as well as know how their individual action will translate into the final scientific result (sense of agency). Therefore, studying the motivation of volunteers can be crucial to project development.

In some citizen science projects, the learning evaluation included not only the problems (knowledge and practice) of a particular project, but also a general understanding of the research process and awareness of the scientific method. One such example is the MicroMundo@Valencia project on antibiotic resistance carried out by an international research team at the University of Valencia in 2017-19. As part of the project's evaluation, a survey was conducted with the elementary and secondary school students and university students involved. In addition to questions about knowledge of antibiotic resistance, the survey included a block of questions on interest in science, understanding of science, and volunteers' assessment of the relevance of scientific research (Maicas et al., 2020). This evaluation approach makes it possible to answer the question - to what extent do citizen science projects contribute to a better understanding of science and its principles in general? It also provides a basis for examining the level of public trust in science, which is a necessary component of citizen participation in the development of scientific knowledge and its integration into everyday social life.

Social impact is not only the most difficult goal of citizen science projects to study, but also the least present element in evaluation studies of these projects. They usually remain at the level of studying the knowledge and educational or participatory values of the projects. Even if behavioral change is shown as part of the evaluation, it refers only to volunteers, and its most common expression is talking to close people (family, friends) about the project's issues (Jordan et al., 2011). Meanwhile, the transfer of knowledge requires not only its transmission, but also the use of language that is understandable to the audience, as well as two-way, active communication about aspects of these projects that are of interest to both parties (Sobieraj, 2019). The idea is not just to adapt reports to the linguistic capabilities of the audience, but

rather to involve volunteers of citizen science projects in communicating to the public about their goals, course and achieved results in categories attractive to them. Projects with a higher level of volunteer involvement are characterized by a more practical approach to the problems studied (Jordan eat al., 2012).

4. Evaluation tailored to the needs of citizen science projects

Attempts to create evaluation models and select indicators for different levels of citizen science have already been made in practice and presented in the literature, but both the abundance of approaches to citizen science projects and the need for "tailor-made" evaluations make these only a certain theoretical and methodological framework within which evaluations of citizen science programs can be designed. Such a proposal can be found, among others, in the publication: *Evaluating citizen science, toward an open framework*, whose authors, based on an analysis of the literature and evaluation reports from citizen science projects, proposed their own set of guidelines and criteria for evaluating citizen science programs, divided into three areas of impact: scientific, participatory and socioeconomic. The most important criteria listed there include:

1. **scientific dimension:** process and feasibility of the project, data quality and compliance with standards, data protection and copyright preservation, clarity of access rights, archiving and making data public, scientific collaboration, publication strategy, generation of new research questions and areas.
2. **participatory dimension:** target group of the project, levels of participation in the project, support of volunteers in participation and involvement, feedback to volunteers, quality of volunteer participation and openness to new groups, scope and level of knowledge, skills and competencies acquired by participants, level of motivation of volunteers, their attitudes towards the project topics and their understanding of scientific procedures, satisfaction with participation in the project.
3. **socio-economic dimension:** effectiveness of communication strategies with the social environment, level of cooperation with the media, two-way communication and participation in social discourse, focus on achieving common goals for the community, level of public interest, impact on the social and ecological environment, participation in sustainable development, development of networks with institutions of the social environment (Kieslinger et al., 2018).

In proposing a framework for evaluation, however, it is inevitable to take into account the diversity of approaches to citizen science projects, as one of the factors determining the goals, methods and organization of projects, as well as the intended results. R. Bonney et al. distinguished four types of citizen science projects based on the nature of volunteers' participation in them and the goals they pursue:

- Data collection by volunteers.
- Data processing by volunteers - coding, transcription, categorization, interpretation.
- Projects based on educational programs, often national or even global in nature, carried out in schools, community organizations or other informal settings bringing together youth or interest groups.
- Community-based learning projects, most often those grounded in a local area, aimed at solving specific practical problems of that community using scientific knowledge (Bonney et al., 2015).

Based on these four types of civic projects, four different evaluation models can be proposed, corresponding to the assumptions and characteristics of these projects (Fig. 2). The evaluation models listed are based on Ernest R. House's typology of approaches (House, 1997) and complemented by participatory evaluation, which is widespread today.

System evaluation is mainly oriented to quantitative analysis, based on the study of pre-accepted performance indicators, allowing comparability of data. Its intended primary audience is project managers.

Expert model is based on the evaluation of the quality of the results produced by the project in relation to the standards accepted in science. The method used in it is an expert opinion, a scientific review whose recipients are professionals - the scientific community and the public.

Democratic evaluation is a model based on understanding diversity and taking it into account in the evaluation of project goals and results. The use of qualitative methods, interviews, case studies and others allows to gather and understand the opinions of different groups of stakeholders of the project being evaluated.

Participatory model, on the other hand, is based on dialogue and active cooperation with those being evaluated from the beginning of the project. Its best form is action research, through which the evaluation simultaneously leads to the development of the project and its results are used directly during its course.

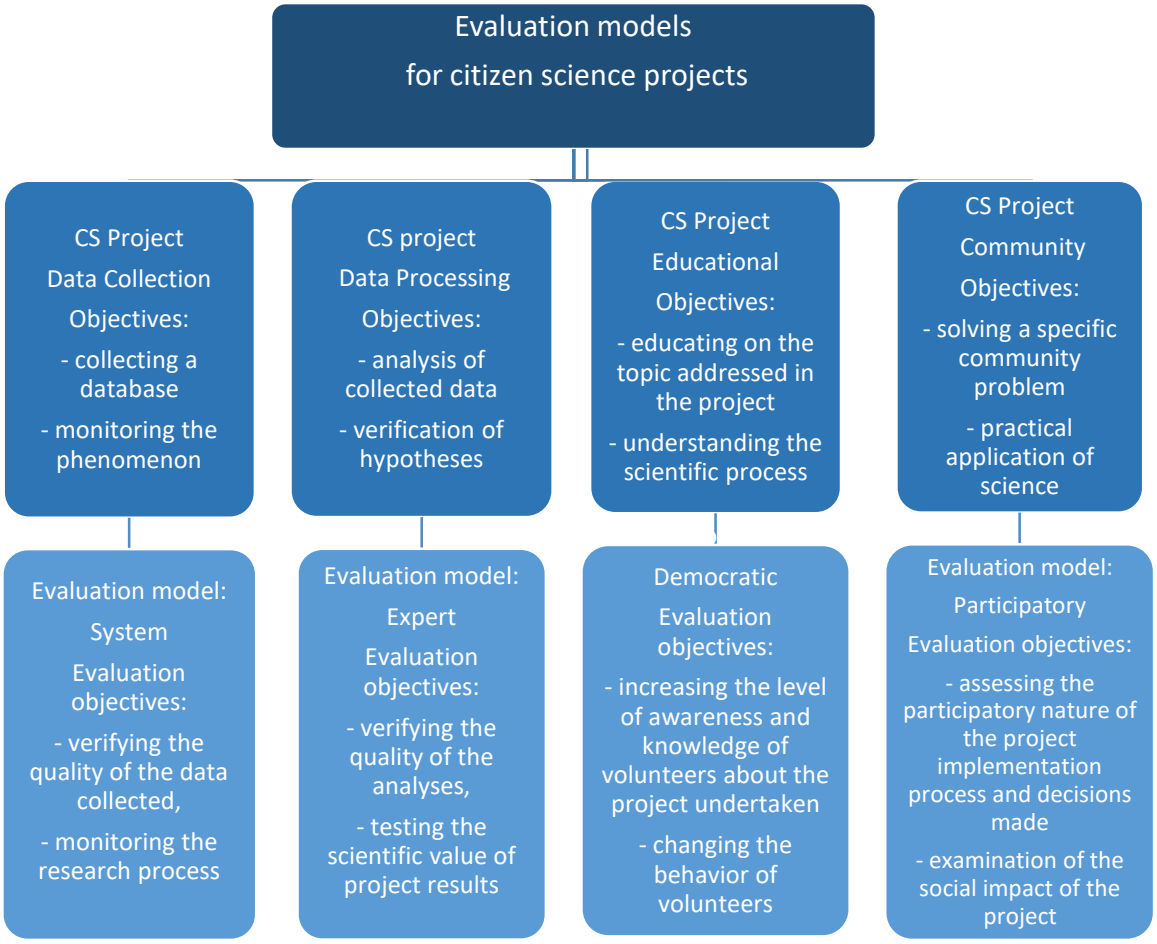

Figure 2. Dependence of the evaluation model on the type of citizen science project.

Source: types of citizen science projects based on (Bonney et al., 2015), typology of corresponding evaluation models - own study based on (House).

A challenge for evaluation, but also for the management of citizen science projects, lies in their increasing number around the world, coupled with a simultaneous lack of proper coordination. This results in duplication of similar data, often incomparable, produced in similar locations. That causes confusion for volunteers, but also limits the reach and impact of competing projects. The solution is to develop global cooperation and enter into partnerships with existing programs, by expanding their bases and the subject matter undertaken. The benefit is not only the development of existing projects, but also the ability to build on proven methodological solutions, tools and training for volunteers, as well as the relevance of the bases created. Evaluation of citizen science projects should also examine the goals and results of cooperation at this highest level of cooperation, in relation not so much to individual projects, but to entire platforms and methods of managing individual projects, as well as their impact on the development of these programs. This dimension of evaluation is not yet being addressed.

5. Conclusion

The systematic development of evaluation in the area of citizen science can contribute to breaking down the barriers between conventional science and citizen science, and at the same time to strengthening the process of democratization of science. It requires scientists to be open to participating in new projects and knowledge exchange networks, and to be willing to go beyond the usual patterns of research procedures. On the other hand, it requires citizen science managers to accept external evaluation of the scientific quality of the process and results of their research on the same terms to which conventional science is subject.

Nonetheless, the success of citizen science projects should be determined by the evaluation process, with reference to all the goals it sets out to achieve. Focusing solely on scientific results, gives us only partial knowledge of the results and impact of citizen science project implementation in society. A strong and successful scientific process in these projects will, of course, strengthen the chances of obtaining reliable and credible research data, but is not the only benefit that comes from the implementation of these projects. These very goals are addressed by citizen science projects, which rely on higher levels of participant involvement and partnership throughout the scientific process. The task of evaluation is to show their effects and results in a full scale.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

BARRIERS OF CULTURAL ADAPTATION IN THE CONTEXT OF THE INFLUX OF UKRAINIAN WAR REFUGEES TO POLAND

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Purpose: The mass scale of forced migrations in the situation of war in Ukraine requires greater interest of scientists and practitioners in identifying opportunities and threats for long-term strategies of adaptation and integration of displaced persons. The objective of the paper is to discuss barriers of cultural adaptation of Ukrainian refugees in Poland.
Design/methodology/approach: To achieve the objective of this paper, the method of ethnographic study was employed. The course of study comprised of regular fieldwork observations conducted from March to June 2022 at a refugee aid point in one of the communes in the Silesian Voivodeship. During fieldwork two methods were appointed – direct observation during weekly social activities and unstructured interviews with 30 interlocutors from different regions of Ukraine.
Findings: Research show that about 30% of war refugees from Ukraine want to stay in Poland permanently, regardless of the further development of the situation in their country of origin. This fact implies the necessity to conduct an in-depth analysis regarding possibilities of cultural adaptation and integration of refugees with the host communities. The Author discusses the concept of cultural adaptation and refers to the issue of chances and threats of this process for effective performance of the Ukrainian refugees in the host communities in Poland.
Research limitations/implications: The presented study is of conceptual character and is based on preliminary ethnographic work conducted from March to June 2022 at one of temporary refugee aid point in Silesian voivodship. Further research will require the inclusion of other methods and tools, enabling to capture the issue of refugee adaptation from the perspective of various stakeholders.
Practical implications: Presented paper outlines a framework for social diagnosis of barriers of cultural adaptation of forced migrants in Polish host communities. The issue of cultural adaptation and integration of forced migrants is vital for policy makers, local communities' leaders, educators, social workers, etc.
Social implications: The influx of refugees on such an unprecedented scale has social, cultural, educational, labor market and organizational consequences (both at the level of organizing the aid system and at the level of functioning of the organization in the context of cultural diversity). Challenges arising from the influx of refugees include identification of institutional support mechanisms for displaced persons, analysis of available forms of social support (psychological assistance, integrated family support system, recognition of the forms of integration of the local community and displaced persons, etc.).

Originality/value: Exile is one of the most important social problems today, both due to the growing scale of this phenomenon, globalization of migration processes and their economic basis, as well as issues related to the adaptation of newcomers in the host countries.

Keywords: cultural adaptation, adaptation barriers, forced migration, Ukrainian war refugees.

Category of the paper: conceptual paper.

1. Introduction

According to the announcement published on April 15th 2022 by the Polish Border Service, nearly 3 million people crossed Ukrainian-Polish border as a result of the Russian invasion launched on February 24 this year. As shown in the nationwide sociological survey, 93% of refugees are women (Refugees from Ukraine in Poland, 2022). The total number of the refugees fleeing Ukraine since February 24th is estimated around five million people (unhcr.org, 17.04.2022). The forecasts of the office of the United Nations High Commissioner for Refugees predicted that up to 6.5-7.0 million Ukrainians, women, and children, will soon be living in the territory of the European Union. "The European Union has welcomed Ukrainian refugees, allowing them to enter its 27 member countries without visas and live and work there for up to three years" (The Conversation, 24.05.2022). Questions arises within the reference of the term "refugee" to the terminology of international law: whether Ukrainian citizens, who left their homes due to the Russian's invasion, plan to return home after the war is over (Kennan Institute, 19.08.2022).

The unprecedented scale of migration resulting from the armed conflict situation accompanied with the wide spectrum of problems faced by both refugees and host communities as well as effective social integration will probably constitute one of the greatest challenges of social policy in Poland.

The refugee situation is associated with two types of trauma - on the one hand, it is the experience of displacement itself, while the secondary trauma is related to stress resulting from the need to adapt to new conditions. Refugees are particularly at risk of social exclusion, which may be caused, on the one hand, from the lack of the expected fulfillment of social needs (lack of accommodation, limited access to social benefits, limited access to medical assistance, difficult situation on the labor market, communication barriers, difficulties with cultural adaptation etc.), but also due to the experienced psychological stress and the lack of acceptance from the environment.

The objective of this paper is to outline the framework for the question of cultural adaptation of Ukrainian war refugees in Poland, referring to the literature, available secondary data and preliminary ethnographic fieldwork of the author. The influx of refugees has social, cultural,

educational, labor market and organizational consequences (both at the level of organizing the aid system and at the level of functioning of the organization in the context of cultural diversity).

2. Methods

To achieve the objective of this paper, the method of ethnographic study was employed. The course of study comprised of regular fieldwork observations conducted from March to June 2022 at a refugee aid point in one of the communes in the Silesian Voivodeship.

The observation began in the first week of March 2022 - according to the data of the voivodship's administration, only between February 24th and March 7th , 2022, 5,000 refugees found accommodation in the Silesia region. In the city where the observations were conducted (a medium-sized township in the Silesian voivodeship), temporary aid points were organized at the beginning of March 2022, as the first Ukrainian refugees arrived. In the time of the observation, between 10 and 37 people were accommodated at the place prepared by local authorities.

During fieldwork two methods were appointed – direct observation during weekly social activities and unstructured interviews with thirty interlocutors from different regions of Ukraine. All of them were women with children age 1 to 15, often accompanied by elderly parents. Most of them did not have relatives or acquaintances in Poland. Interview questions involved recognizing the place of origin (whether they come from territories affected by direct war operations or not), identifying their life and professional situation, determining opportunities to start working or completing education in Poland, indicating plans for the future (whether they plan to stay in Poland or move to another country of destination). The first to arrive at the temporary aid point were people from areas bordering Poland and not from direct armed conflict zone, mainly from Rivne, Ternopil, Zhytomyr, Ivano-Frankivsk. Refugees from the areas affected by hostilities – Kyiv, Kharkiv, Dnipro - arrived in the 3rd and 4th week of March 2022. Five of the thirty interviewees stayed in Poland, in the township they arrived; the rest returned to Ukraine or left for other EU countries. The research at the place of observation corresponds to the one identified during the nationwide survey among refugees - the willingness to stay in Poland was declared by 30% of respondents (EWL Foundation for the Support of Migrants in the Labor Market, 2022).

The observation material is accompanied by the selected literature on forced migration and cultural adaptation issues. The study is preliminary and can serve as a starting point to conduct more extensive research on the adaptation and integration of refugees into the host communities.

3. Results

3.1. Research on forced migration in Polish scientific discourse

The state of research on migration in the Polish scientific reflection has changed significantly in the last 30 years. As underlined by Anna Horolets et. all, "the social importance of migration issues has increased, in line with the growing importance of migration as a complex social process and increased interest in migration as a subject of research in the social sciences and humanities. After 1989, migration studies in Poland significantly expanded their scope and became the sphere of activity of a large number of scientists" (2019, p. 8). Research on forced migration including refugee issues has been conducted since the 1990s. These studies concern the situation of foreigners applying for refugee status in Poland, mechanisms of integration processes and the changing tendencies in seeking asylum in Poland. The subject of legal, sociological, psychological or anthropological analyzes were primarily refugees staying in refugee centers in Poland and people still "in the procedure" of applying for refugee status. In this context, it is worth mentioning, inter alia, studies on psychological and sociological adaptation mechanisms of refugees from European and non-European countries (Grzymała-Moszczyńska, Nowicka, 1998), the anthropological dimension of refugee issue (Ząbek, Łodziński, 2008), the phenomenon of refugee in the 1990s as a new social problem in Poland (Stawicki, 2018). There are also works presenting a comprehensive overview of the issues of socio-cultural integration of foreigners into Polish society (Grzymała-Kazłowska, Łodziński, 2008), or the pedagogical and educational aspects of multiculturalism (Januszewska, 2010).

The situation of exile is often considered a form of forced migration (in a situation where people have no influence on the decision to migrate) or forced migration (when they can, to some extent, decide to leave their place of residence) (Czapka, 2006).

Nowadays, the phenomenon of exile is analyzed not only from the legal or economic perspective, but a broader – anthropological position has been developing. "Refugees and displaced persons are at risk of impoverishment, experience a similar type of stress of losing trust in authorities, they are forced to make a similar adaptation effort to new conditions, they want to avoid marginalization" (Ząbek, Łodziński, 2008, pp. 52-53). From this point of view, the binding criterion allowing to describe the refugee's situation is not the legal category, but the sense of common fate – the "refugee experience".

3.2. Cultural adaptation - main concept

Through the acculturation process, as a result of continuous coexistence of various groups, several adaptation strategies may evolve. Adaptation patterns were already proposed by Plato (Rudmin, 2003; Łużniak-Piecha, 2016), but propagated and developed into the most widely used concept of acculturation by John Berry (Grzymała-Moszczyńska, 2009; Parfieniuk, 2009; Łużniak-Piecha, 2016). Berry's fourfold model of acculturation has long been regarded as one

of the dominant ways of describing acculturation strategies and leading concept to study immigration and adaptation issues (Rudmin 2003; Łużniak-Piecha, 2016). Disregarding the profound discussion with John Berry's paradigm that have begun in 1997 in the "Applied Psychology" journal (Rudmin, 2003), fourfold model od acculturation is still a starting point for theoretical and methodological reflection on the issue of cultural adaptation.

The situation of encounter between newcomers and host communities may have a different course. As noticed by Małgorzata Budyta-Budzyńska in reference to Berry's cocept: "immigrants find their place in the host society differently, therefore various terms are used to describe their degree of *entering* the host community, both in everyday life and in scientific analyzes" (Budyta-Budzyńska, 2011, p. 44).

From a sociological perspective, the terms used to describe and explain the "entry" of a newcomer into the host community are complex analytical categories. These categories include the separation or marginalization of immigrants, assimilation, adaptation, or integration. It should be emphasized, that "despite the frequent occurrence and intuitive understanding of these terms, there is no consensus as to their exact meaning. The meaning of these terms depends on: the context to which they are applied, or the so-called old, historic, indigenous national and ethnic minorities; or new immigrant nationalities composed of refugees, displaced persons or economic emigrants; from the discipline describing the analyzed cases - these terms are defined differently in anthropology, they are used differently in sociology, and also differently in psychology, economics or theories of politics; from the scientific paradigm, e.g. in the structural-functionalist approach the concept of adaptation is an absolutely key category, in other approaches it does not appear at all. Finally, it depends on countries' experiences with immigrants" (Budyta-Budzyńska, 2011, p. 44). The concepts of integration and assimilation refer to different stages of the immigrant's inclusion in the host community, in some scientific models they are opposed to each other, while in everyday discourse they are very often used interchangeably (Grzymała-Kazłowska, Łodziński 2008, p. 42; Budyta-Budzyńska, 2011, p. 46). Adaptation, understood most simply in reference to Darwin's thought, is "gaining minimal survival skills" (Budyta-Budzyńska, 2011, p. 46) or "minimal adaptation to the environment enabling survival" (Budyta-Budzyńska, 2011, p. 46; Adamski 2020, p. 46).

Considering the issue of adaptation, integration, or assimilation of immigrants to the host environment, four dimensions of these processes should be distinguished: economic, cultural, socio-political and identity (Budyta-Budzyńska, 2011, p. 49). In terms of immigrants' adaptation, economic dimension, cultural dimension and socio-political dimension should be taken into account.

4. Discussion: Cultural adaptation of Ukrainian refugees in Poland – chances and threats

Conditions of stay and temporary protection status of refugees from Ukraine in Poland are regulated by the special act on assistance to Ukrainian citizens in connection with an armed conflict in the territory of that state of March 12, 2022. In the above-mentioned document, the term "refugee" was not applied; the law refers to the Ukrainian citizens, who came to the territory of the Republic of Poland directly from the territory of Ukraine in connection with hostilities conducted on the territory of that state (Dz.U. 2022, poz. 583).

Findings of the Special report on the sociological study "Refugees from Ukraine in Poland", conducted by the EWL Migration Platform, the EWL Foundation for the Support of Migrants in the Labor Market and the Centre of Eastern Europe at the University of Warsaw (2022) show, that about 30% of newcomers want to stay in Poland permanently, regardless of the further development of the situation in Ukraine. This means a need for an in-depth analysis at the two-vector process of cultural adaptation and integration of refugees with the host communities.

Referring to sociological research as well as interviews and own observations conducted at a refugee aid point in one of the communes in the Silesian Voivodeship, the following catalog of barriers to effective adaptation can be indicated:

1) Language barrier.
2) Temporality/liminality of the situation of exile.
3) Trauma and psychological stress.
4) Limited access to childcare.
5) Stereotyping.
6) Lack of networks.
7) High expectations of the host community towards refugees – features of the host society.

The lack of communicative knowledge of the Polish language is undoubtedly the most severe barrier - indicated both by the refugees themselves and the people involved in helping. Findings of the Special report "Refugees from Ukraine in Poland" (EWL Migration Platform, the EWL Foundation for the Support of Migrants in the Labor Market and the Centre of Eastern Europe at the University of Warsaw, 2022) reveal that only 26% of respondents declared communicative knowledge of Polish, 55% indicated that they can communicate in English. However personal experience in the field revises these data. None of the 30 interlocutors could speak other language than Ukrainian and/or Russian. The language barrier affects the possibility of economic adaptation - most often it means a complete withdrawal from the labor market of the host society, or work below qualifications, "not in a learned profession, often in the so-called second market, less well-paid and socially secured, usually in services and professions reluctantly undertaken by indigenous people, referred to in the literature as *3D labor* (dull, dirty, dangerous) (Budyta-Budzyńska, 2011, p. 51).

The second obstacle to successful adaptation is the difficult to define future status of the occupied territories - some of the displaced people treat the situation in which they find themselves temporary, which results in no need to establish relations in an unfamiliar environment, as they expect to return to their native regions and cultivate the myth of the lost homeland. However, the possibility of returning to life before the conflict broke out raises skepticism, also among anthropologists. As "the idea of a home is also a cultural construct and can change. In this context, research on the so-called *the myth of return* is of particular interest, (…) as an expression of a peculiar longing for the lost home, for the accompanying memory, prone to idealization of the past, which is not so much remembered as it really was, but created anew" (Ząbek, Łodziński, 2008, p. 65). The problems of socialization of forced migrants in Ukraine were analyzed regarding the occurrence of internally displaced people in 2013-2014 after Russia's aggression on the eastern Ukraine. Adaptation failure is significantly related to the complete uncertainty of the future of the territories people consider native – "such a situation forms the corresponding state of a person who does not live at home, but also does not deeply integrate into the new environment due to the expectation of the temporary nature of his stay abroad. It is difficult for to make decisions about work and, especially, about the organization of life in a new place" (nbuviap.gov.ua, 21.11.2017). The refugees leave in their country not only people, but also a number of important objects that contribute to their personal identity, photographs, certificates of education and professional status (Grzymała-Moszczyńska, Nowicka, 1998, p. 131). The question of identity of forced migrants is also relevant: whether it is disintegrating or, on the contrary, it is strengthened, fueled by a specific mythology of the "home country". This is undoubtedly an issue that requires further, in-depth analysis.

Among the war refugees there are people who have directly experienced trauma. Trauma - in Greek the word means a wound, but in its semantic development it means, "an event or cycle of events that leaves a person somatic or psychological trace. (...). A trauma can be a wound inflicted on a person with a knife, a shot, anything that leaves a mark in the form of a scar" (Orwid, 2009, p. 7). The symptoms of trauma or PTSD include emotional numbness, anger, and withdrawal that can affect adaptation process.

In case of mothers of children aged 0-3 the problem with childcare occurred. They are often unable to take part in courses, group activities or other initiatives because they cannot arrange childcare. The situation of families with grandmothers is completely different - while grandmothers take care of the children, mothers work or train (also their language skills).

Another barrier in cultural adaptation is associated with negative perception of refugees as a cause of tensions and social conflicts, recognized in the part of a public opinion. A number of stereotypes towards newcomers present in discourse include a demanding attitude and claiming a special status and privileges, the lack of willingness to work and getting advantage of Polish social policy, supporting Ukrainian nationalism.

The lack of a network is also a significant obstacle - especially when it comes to navigating the new labor markets. Deprivation of networks affects refugees' "ability to seek jobs and access recruitment channels, even when their qualifications are at least comparable to those of their native-born peers. They are at an obvious disadvantage when it comes to knowledge of the host country's labour market and hiring practices, and with respect to contacts, direct or indirect, with employers" (OECD Policy…, 27.07.2022).

Last, but not least barrier identified in course of the fieldwork these are expectations of representants of host community towards refugees. The component of "appraisement" - measuring the motivation and commitment of refugees according to the beholder's standards can be an obstacle in the process of cultural adaptation. According to Budyta-Budzyńska, it is important whether the host society has the experience of multiculturalism, because such experience shows the degree of tolerance (2011, p. 56) and empathy. In 1959 American anthropologist Edward T. Hall introduced the shortest definition of communication and culture, claiming that culture is communication and communication is culture (Hall, 1959). In this concise definition there is a deep reflection, that the culture people live in determines the way they communicate. In other words, the way of communication of a particular nation or ethnic group depends on the cultural framework - language, cultural principles, and axio-normative guidelines (Szopski, 2005). The effectiveness of the process of social integration between displaced persons and local communities depends on the development of a common level of communication. Interculturality applies to all phenomena that result from contact between diverse cultures. By intercultural communication, we understand this specific process of interaction between representatives of different national cultures.

When and under what conditions refugees can return to the place of origin? Main factors accompanying the consideration to return are as follows:

1) Relative "normality" in the place of residence, the end of direct hostilities - a frequent argument of the inhabitants of the western regions and the vicinity of Kyiv.
2) The situation of family reunification. Displaced persons – women and children have spouses and relatives who remained in Ukraine. Experience of separation both with anxiety negatively affects the mental state of refuges.
3) *The myth of return* – the emotional tie that diasporic communities keep with their home countries around which they renegotiate their identity (Cakmak, 2021).

At this point, it is necessary to return to the basic category of exile as a temporary search for a refuge in fear of persecution for distinct reasons. "According to the anthropologist Laura Hammond, the basis of repatriation solutions is the assumption that refugees are *out of place*, and therefore they should be *put back where they belong*" (Ząbek, Łodziński, 2008, p. 65). Ukrainian refugees make their decision to return to their home's conditional on the end of the armed conflict and the reconstruction of infrastructure. However, if the conflict is not resolved, they will not return "to their place" soon.

Conclusion

The humanitarian crisis caused by the Russian aggression on Ukraine requires the receiving societies to face the challenge of cultural adaptation of war refugees. This question is very important for Poland, which is by far the main destination country for Ukrainian citizens fleeing their homes. Economists already claim, that refugees from Ukraine "may be a human capital windfall for receiving countries like Poland, Romania, Moldova, and Hungary" (IMF: Finance & Development, June 2022). However, the issue of immigrants' adaptation to the host society is a complex phenomenon. "Ukrainian refugees do not fit the typical portrait of refugees: some of their characteristics are likely to improve their integration prospects, while others may, on the contrary, hinder them" (OECD Policy…, 27.07.2022). As highlighted in the OECD report on the potential contribution of Ukrainian refugees to the labour markets in host countries, integration patterns are different for refugees in relation to other migrant groups: "as they have not chosen to migrate, they generally have had no opportunity to prepare for their life in the new country, especially by starting to learn the language" (OECD Policy…, 27.07.2022).

On the ground of secondary data analysis and fieldwork conducted at a temporary refugee aid point in a township in the Silesian Voivodeship, the following catalog of barriers to effective adaptation were indicated: 1) language barrier; 2) temporality/liminality of the situation of exile; 3) trauma and psychological stress; 4) limited access to childcare; 5) stereotyping; 6) lack of networks; 7) high expectations of the host community towards refugees – features of the host society.

Regardless of the reasons and strategies for resettlement, all interviewed persons reported a deterioration in their own (and family) socio-economic status. Most of the displaced persons, regardless of age, have limited contact with the inhabitants of the city to which they traveled. The effectiveness of the process of social integration between displaced persons and local communities is also connected with the still unclear future of the territories that refugees regard as their home. Such a situation negatively affects the condition of a person who does not live at home, but does not integrate deeply into the new environment, assuming that the situation is temporary. Another aspect of the influx of the refugees is related to the processes taking place in host communities - the importance of establishing cultural dialogue, intercultural communication, overcoming psychological and communication barriers between guests and hosts.

Discussed concepts and preliminary fieldwork activities may contribute to the further in-depth analysis of the issue of cultural adaptation in various spheres of social and economic performance of refugees in the host communities.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

A MODEL TO SUPPORT THE FORMATION AND WORK OF DESIGN THINKING TEAMS

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Purpose: Design Thinking is a frequently recommended strategy used in the operation of companies and organizations. Unfortunately, in many cases the implementation of this approach ends prematurely or is a failure. The purpose of this work is to provide anyone responsible for initiating and/or leading design thinking processes in an organization with a relatively simple model/framework to increase the chances of success of implementing methodologies based on the work of self-organizing teams.
Design/methodology/approach: Design Thinking is an often recommended strategy for how companies and organizations should operate. Unfortunately, in many cases the implementation of this approach ends prematurely or is a failure. The purpose of this work is to provide anyone responsible for initiating and/or leading design thinking processes in an organization with a relatively simple model/framework to increase the chances of success of implementing methodologies based on the work of self-organizing teams.
Findings: Among the many factors that influence the failure of design thinking implementation, four key ones have been identified to initiate and practice design thinking in various organizations. The proposed model of the interacting four elements visualized as a tetrahedron, can be used by those responsible for implementing the design thinking process as an aid to building an effective team, starting from providing emotional comfort to group members. In addition, the model makes it possible to reveal information gaps at the individual, project team and organizational levels, so it is clear where to target individualized knowledge packages.
Research limitations/implications: The model outlined is intended to support the formation stage and effective work of the project team in the organization. The model does not include elements to directly influence the work of the team (e.g., stimulating creativity), however, providing emotional comfort can positively influence the design thinking process itself.
Practical implications: The work presents a proposal for a model, the use of which during group-led project processes allows to preserve the cohesion of the working team. The use of the presented tool increases the chances of achieving success in group project work, including the possibility of developing solutions from areas of radical innovation. Practicing the design thinking path requires the process facilitator to have a set of tools and skills developed through long-term practice. The proposed framework lowers the starting threshold for becoming an effective facilitator by identifying only four key elements to support in a team.

Social implications: The use of this model is intended to provide the project team with support for its emotional and informational needs. This kind of innovative support for design processes, the author intends, allows for the spread and expansion of design practices that take into account end users. Design Thinking methodology and its derivatives have repeatedly proven their effectiveness in designing and implementing social change.
Originality/value: Unlike most works that propose solutions constructed according to a top-down pattern (the organization's goals are primary), the proposed model uses a buttom-up strategy, placing the human being and his needs as the starting point for achieving innovation in the organization. In addition, unlike most of the available literature, which focuses on identifying all potential factors resulting in failures of implementing Design Thinking, it has reduced to four factors that need to be taken care of for easier understanding and acceptance of the process by project team members and the organizational ecosystem.

Keywords: Design Thinking, support model, support framework, Design Thinking facilitator.

Category of the paper: Conceptual paper, viewpoint.

1. Introduction

Nowadays, companies are looking (or are forced to find) ways to reach customers who have changed their approach to functioning in the modern world. In addition, companies and organizations are seeing the need for new forms of operation and acceptance of necessary changes within the company. Business literature is trying to fill this niche, and we have access to the latest proposals for solving such problems. For example, in the book *Productive Tension* (Bingham, McDonald, 2022), the authors identify eight critical tensions that innovation leaders will encounter and must overcome in order to succeed. The field of consumer product design has already developed standards describing a generalized sequence of design activities from start to finish. Each design process is based on research, problem definition, solution development and implementation. We have a number of approaches to design work - from “Double Diamond” (Banathy, 1996) as "social systems design," the “Design Thinking” process as a tool for solving "wicked problems" (Buchanan, 1992), through modifications of the example “Sprint” (Knapp et al., 2016) (now it's “Sprint 2.0”), to “Design Driven Innovation” (Verganti, 2009) as a methodology for creating new markets. A valuable overview of Design Thinking process models can be found in (Waidelich et al., 2018). All approaches are based on group work and an assumed iterative structure of activities. Modern design takes into account end users, hence the need to test solution prototypes on users. The exception to this is the radical innovation strategy, which recognizes that end-user feedback can be limiting.

The Design Thinking process popularized by Tim Brown, CEO of innovation and design firm IDEO, his book *Change by Design* (Brown, 2009), clearly indicated that design thinking techniques and strategies belong at every level of business. Moreover, design thinking approaches can enable mere mortals to generate breakthroughs. The understanding and use of

the term "wicked problems" has also changed; pioneers and leaders of the Human-Centered Design movement, such as Don Norman, now prefer the term "complex socio-technical systems." It is clear that the search for solutions must be handled by teams, and multidisciplinary teams at that. In a number of items we have presented ideas and techniques for design teamwork. *Creative Confidence: Unleashing the Creative Potential Within Us All*, a book from the founders of IDEO (Kelley, D., Kelley, T., 2015) is one of the most comprehensive works on the subject.

Also, we have suggestions on how to organize project space so as not to block creativity within the team. *Make Space* (Doorley et al., 2012) - a book by Doorley and Witthoft based on the work of the team that designed and developed the d.school space (formally Hasso Plattner Institute of Design, Stanford University) is a great example. The next steps in deciphering the practice of implementing group work are the findings in Basadur paper (Basadur et al., 2014), which signal that the creative problem-solving process is a four-stage process, with each stage involving a different type of cognitive activity. Thus, in order to increase an organization's adaptability, simplify and facilitate change management, and address important issues of organizational effectiveness at the individual, team and organizational levels, properly prepared information sets should be prepared. Similarly, work (Butler, Roberto, 2018) argues that cognitive impediments and metacognition can pose serious obstacles, yet they point out ways around them. In recent years, there has been significant work attempting to identify the conditions required in organizations seeking to integrate design processes (Dunne, 2018), (Wrigley et al., 2020). In (Liedtka, 2018), the author summarizes her seven years of research, writing that human biases and ingrained behaviors block design thinking, and at the same time points out conditions to be successful - innovation must deliver three things: superior solutions, low-risk and cost of change, employee buy-in. Also very gratifying are the in-depth studies conducted on innovation managers on mindsets and related activities (Nakata, Hwang, 2020), and paradigmatic approaches to measuring design cognitive processes - design cognition, design physiology and design neurocognition (Gero, Milovanovic, 2020). It seems particularly important to look at innovation design processes in the context of Industry 4.0. The work (Dilan, Aydin, 2021) postulates that Industry 4.0 projects using design thinking can be linked to different types of innovations, including business models, organizations and process innovations at the company and network levels through project portfolios.

This paper provides an additional perspective (model) to facilitate the implementation of design thinking methodology. We can see that in many of the above considerations, the trouble is group work and the failure to instill trust at very different levels - from trust in the methodology, to trust in the employees who are supposed to work in a group work scheme in a self-organizing system. The paper presents a framework that is worth applying so that any model of project-based group work can not so much occur in the organization, but become a source of successful innovation.

2. GMSC Model

The proposed model was constructed from the point of view of the individual (person) and not, as is usual, the organization. The model uses a bottom-up strategy, putting the human being and his needs as the starting point for achieving innovation in the organization. The strength of this approach is the obvious fact that organizations are made up of people and they need to communicate and take care of their own needs. In addition, the model is based on the assumption that communication processes are the source of most failures.

In a paper (Antony, Gupta, 2018), the authors outlined the top ten reasons for the failure of improvement projects:

- Lack of commitment and support from top management.
- Poor communication practices.
- Incompetent team.
- Inadequate training and learning.
- Faulty selection of process improvement methodology and its associated tools/ techniques.
- Inappropriate rewards and recognition system/culture.
- Scope creepiness.
- Sub-optimal team size and composition.
- Inconsistent monitoring and control (lack of expert supervision).
- Resistance to change (partial cooperation by employees).

Such summaries, while very useful, can paradoxically themselves make the decision to adopt a design thinking path in an organization more difficult, as they foreshadow the extremely complex set of steps that must be taken to initiate an innovative path. Therefore, the following model is an attempt to simplify the process.

From the employee's point of view, three layers of communication problems can be identified, which can modify each other.

The first layer is the information and communication constraints at the levels that are responsible for initiating innovation-creating teams (usually chief operating officers and senior management). The second layer is communication challenges including information deficiency between members of the project team that designs the innovation. The final, third layer is concerned with problems at the individual level.

The simplified organization scheme presented here is meant to indicate that the recipients of information in each layer will often have radically different perspectives of evaluation. What is important is that participants at separate levels of the organization should send effective messages that influence (modify) communication with other layers.

Analyzing the available literature and based on the author's experience, a minimum set of conditions necessary to initiate and sustain design thinking processes has been identified:

- established goals and readiness to revise them,
- a sense of meaning,
- a sense of security,
- a sense of community.

The listed conditions constitute the four components or pillars of the proposed model, which are treated as equivalent. Therefore, it was decided to visualize this approach in the form of a regular tetrahedron (Figure 1) named for simplicity GMSC tetrahedral by the first letters of the components. The assumption of equivalence comes from the practice of conducting Design Thinking processes - where this methodology has been implemented successfully, the four elements have always coexisted and influenced each other. For example, caring for a sense of security among team members usually opens the way to trust and deeper collaboration. As a result, a sense of community emerges, which further influences the functioning of the team by allowing for the revision of goal assumptions and meanings. The modifiers of these components are the actions of the team, which in the visualization of the model are the edges of the tetrahedron.

Figure 1. GMSC tetrahedron as a set of conditions necessary to initiate and sustain design thinking processes.

Source: own contribution.

Let's look at the meaning of each component.

Goals

From an organization's point of view, a business objective is an endpoint, achievement or goal that the organization wants to achieve in the short or long term. In the individual layer, the goals will refer to the expected realization of individual goals of team members. In the collective layer, we point to business goals, i.e. the results that the team wants or is expected to achieve. In methodologies of the Design Thinking class, it is often the case that the assumption of the main goal does not change (e.g., a profitable product should be developed), but during the process the specific goals are modified. In GMSC model, individual goals are as important

as team goals. This is, on the one hand, a response to changes in the labor market but also to the growing knowledge of motivation processes.

Meanings

People do not buy products, but meanings. This is the conclusion of research popularized by the book Drive (Pink, 2009). People use things for deep emotional, psychological and sociocultural reasons, as well as for utilitarian reasons. We know that every product and service in both the consumer and industrial markets matters. This means that designers should go beyond classic features, functions, performance, etc. but understand the real meanings that users give to things.

In this component also comes an understanding of why teams can effectively self-organize their work, without the typical supervision and constant control. This is because when we talk about meaning, we consider not only the importance of the designed solution to the organization, environment, community, etc., but at the same time personal motivations for work. Team members experiencing the results of work, seeing their proficiency realize personal basic human needs.

Security

From the point of view of team members, the model postulates guaranteeing job security, and the feeling that one can reveal one's ideas, and that the organization is organized in such a way that individual activity in the group process will be noticed and appreciated.

The group must feel secure with respect to the operating conditions, including adequate time resources. A proper system of appreciation of the work of team members, not only based on remuneration allows the release of individual and team creativity.

A separate discussion should be given to the sense of personal security in the team. In many organizations, failures are barely tolerated and not after acquiescence to wasting resources on mistakes. The design thinking methodologies described inherently assume extensive (but very fast and cheap) prototyping and testing. Thus, in a simplistic understanding of the process, employees waste resources creating, testing and discarding most prototypes. In practice, the longer an employee is stuck in a system that does not allow failure, the more it limits the possibilities for major change, including radical innovation.

Community

Looking through the prism of the collective, the community is an opportunity to achieve synergy, to use the personal experience of team members not only in creative work but in all stages of Design Thinking type processes. The entire community is responsible for the result of the team's work, and normalizing relationships in the team so that individual differences (age, position in the organization, experience, material status, etc.) do not nullify the work is a serious task. Each team member may have a personal perspective on the concept of community - from the need to belong, to negation expressed in the belief that I personally would have done the task better, my proposal was better, etc.

In practice, team building is often a serious project, especially of a multidisciplinary nature, and the actions of experienced process facilitators are essential.

It is worth considering that in many organizations that have a classical hierarchical organization, the work of the self-organizing project community may not be properly perceived, considered inefficient. Such a negative assessment takes into account the possible pejorative aspects that, according to modern knowledge, are associated with the hierarchical model of organization.

Activities

Activities are connectors that binds the various equal components together. Through activities, ideas generate facts and concrete effects. It should be noted that even a single activity can relate to all pillars.

For example, the stage of identifying the end recipient, when carried out with the above model in mind, allows not only to describe the direct beneficiary of the designed solution but also to make team members aware that the beneficiaries are themselves, at the personal, team and principal/company/organization levels.

The model presented is basically a tool for managers in innovation teams of facilitators but also project group members to facilitate the implementation of group work. Working with such a simplified set of pillars of an effective design thinking process seems to be made easier as we only check feedback on only four components.

3. Discussion

The proposed concept corresponds with recent qualitative research (Ospina, Sánchez, 2022) suggesting that before implementing an organizational initiative such as design thinking to change people's behavior, it is necessary to approach it as a cognitive process and develop strategies to mitigate passive cognitive resistance to change. Also in reports from well-known opinion polling centers, we see indications that change management is not only a basic component of leadership but is now becoming the most important requirement. For example, the Gallup Institute in its article "How Leaders Can Communicate Change to a Burned-Out Workforce" refers to recent changes in labor markets and suggests how to help employees understand and support change (McLain, 2022).

A paper (Rauth et al., 2010) proposes the creation of a design thinking education framework in an organization, with the end result being the ability for employees to learn creative confidence. The model presented focuses on a step further - facilitating the building of a cooperative team based on trust towards group members and the organization.

Of course, the tool presented will not solve all the hassles of implementing change. However, it allows to gain a quick condensed knowledge of social aspects and will make company/organization authorities aware of the need to support the team in confidence-building issues. The use of the GMSC model can be multi-faceted and is not limited only to design thinking but to all forms of group work. Hypothetical scenarios for using the tool are:

- Building, leading and supporting a project team. The above model, when presented to a project group, can be regularly used to check whether we are supporting each component in the team, examining whether each team member does not feel blockages. So the model can be a tool to help identify blockages at every level of communication in the company.
- Information action (and promotion) of design thinking at different levels of the organization. Using the model, it's easy to get precise information from team members where knowledge gaps exist about the process.
- Acceptance of design thinking at different levels of the organization. A project group usually works in an organization's ecosystem. There is a need to let employees in the company know what project method we are working with and to give meaning to this work. Customized information packages should go from employees all the way up to management.

GMSC model in the future can be easily adapted for use in hybrid work, so implemented in popular online collaboration spaces for teams work like mural, miro.

The application of the GMSC tetrahedron can be broader than just in methodologies like Design Thinking. In fact, wherever we need to form an effectively cooperative team, especially self-organizing its work, it is worth using the presented framework.

4. Summary

Design thinking methodologies may be the answer to the needs of the rapidly growing Industry 4 0, but any modern company or organization if it wants to survive or expand its market share must choose the path of continuous modernization. Introducing design thinking into a company is usually not an easy task. Incurring the cost of training according to standards, introducing any of the methodologies usually does not clear the path of design thinking. Taking a course doesn't add much beyond understanding the method and how it can be applied. Only by practicing design thinking based on the unique nature of the organization's problems does it help to adapt the process and optimize it to achieve the desired innovative outcome. However, in order to start practicing design thinking some initial conditions for the process are necessary, forming a team and putting the goal into practice is not enough.

The proposed framework, called the GMSC tetrahedron model, is designed to study and moderate any group, as the assumed end result is a team motivated to work. The identified four basic components are present, according to the author, in any effective design thinking group. Restricting only to these components facilitates the work of the facilitator of the design thinking process and aids communication both within the design group itself, as well as with contacts within the organization for which the team works.

The GMSC tetrahedron was constructed in a bottom-up strategy, because it first focuses on the person (the individual), his needs for acceptance and his sense of meaningful work. Just as in design thinking methodologies the end users are studied and according to their feedback the final solution is optimized, in the presented approach, project team members are treated as beneficiaries of the process - for them the functioning of the team is improved.

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SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2022
ORGANIZATION AND MANAGEMENT SERIES NO. 165

PUBLIC SPHERE OF SOCIAL MEDIA AND THE IDEA OF SOCIETY 4.0 AND 5.0. STUDY OF A SELECTED MEDIA DISCOURSE

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Purpose: The article attempts to answer two research questions: 1) whether the participants of the selected discourse in Polish social media express in their attitudes the ideas of society 5.0 (knowledge components, emotions, behavior); 2) whether and how is the normative canon of the republican (Hanah Arendt) and liberal (John Rowls) public spheres implemented in the context of the blurring of the boundaries of the spheres of social life in the selected area of the Polish Internet public sphere?
Design/methodology/approach: The authors analyzed the online discourse on the pension reform, namely the liquidation of open pension funds. The analyzes used selected elements of discursive research, and more precisely a critical discourse analysis (Czyżewski, 2005; Czyżewski, 2008; Kopytowska, Kumięga, 2017). The authors were inspired not by a radical version of critical discourse analysis, which leads to a comprehensive social change, but an interpretation that allows for the diagnosis of structural and cultural conditions, interactions between actors and changes in selected social practices.
Findings: Analyzes of the selected discourse showed that the Internet public sphere is conducive to the use of information manipulation in political, economic, social and cultural activities, which in turn contributes to a significant weakening of social ties; the emergence of many new formal and informal links in media "filtering bubbles" on the one hand, and new tensions and social divisions on the other. The reality in digital media strongly differs from the rules of the liberal public sphere (public reason) by John Rawls, in which the concept of the public sphere is based on the social and political acceptance of justice as impartiality (Rawls, 1994, 1998, 2001; Ciszewski, 2020). On the other hand, what the classically understood republican idea of the public sphere by Hannah Arendt (2000) is considered private is often presented in social media as an element of public discourse, a tool in the fight against opposition ideology, foreign ethnicity and a hostile view of the world. Therefore, it is difficult to notice the development of the 5.0 society in social media, the aim of which is, inter alia, achieving sustainable economic and social development, breaking social divisions.
Originality/value: Critical discourse analysis (KAD) of a specific Internet public debate has been analyzed in the context of the implementation of the assumptions of Hannah Arendt's republican idea of the public sphere and the liberal principles of public reason by John Rawls.

Keywords: Society 4.0 and 5.0, information society, information management, discourse analysis, critical discourse analysis.

Category of the paper: research paper.

1. Introduction

The digital revolution, also known as the fourth industrial revolution, is another era of changes caused by the development of computerization and modern technologies. The digital transformation caused by globalization and the development of digital technologies causes changes not only in technology, but also in economic and geopolitical terms (Tworóg, Mieczkowski, 2019). It is characterized by rapid technological progress, widespread digitization and its impact on all areas of life. Research and discussions on this topic date back to the last quarter of the 20th century. Daniel Bell, Manuel Castells, Marc Uri Porat, and Alain Touraine (Hepworth, 1990; Webster, 2014; Castells, 1989, 1994, 2001; Porat; 1978; Touraine, 1971). Due to the changes brought about by the digital revolution, a new social formation has emerged, known as the information society, for which knowledge has become a strategic resource, not capital and work (Balcewicz, 2019). Information resources, discourse content available on the Internet in a continuous and real time shape the world view not only of individual individuals, but also of entire social groups. The method of delivering content reaching users is profiled in line with their expectations. Such profiling closes the information filtering bubble and causes web users to live in a distorted, homogeneous world where everyone seems to have the same views. People often uncritically absorb the news spread in their own enclave and treat it as true, without verifying the facts. Under such conditions, disinformation is generated and disseminated (Elliott, Castells, 2011). Technical conditions and universal access to technology have also contributed to the democratization of knowledge that everyone can use without any restrictions (Dobrowolski, 2008).

2. Digital technologies and the common good

According to Manuel Castells, the rapid development of technologically advanced networks, saturated with information, caused social changes and led to the creation of a community functioning on the Internet. Interactions between people take place regardless of the boundaries of space and time (Elliott, Castells, 2011). According to Ali Pariser, Internet users operate in closed bubbles on the web – surrounded only by information that matches their beliefs and profiles. At the same time, they are almost completely devoid of controversial and

inconvenient messages that contradict their value system (Pariser, 2011). Individual filter bubbles that provide only personalized content give the impression that there is no one Internet in common, but each user has their own Internet, adapted to their needs and beliefs (Szpunar, 2018).

With so much information and a continuous flow of information, it becomes a challenge to check the facts and confront many messages on the same topic. The awareness of what is real and what is not has been disturbed and, what is more, it no longer matters to the information society. This phenomenon was first named and described by Steve Tesich in the 1990s. According to him, the media use not truth, but post-truth - a biased version of events that bends reality and influences emotions in such a way as to trigger a specific reaction (Balcewicz, 2019; Czapliński, 2017). There are no barriers in the information society that stop people from beautifying reality. This transformation changes the values that have so far been the basis of modern societies (du Vall, 2019) and brings about significant changes in these societies. Digital technologies are not so much an area as the dimension of the functioning of modern man. This change of perspective means that digital communication technologies are treated not only as a separate area of human activity, but also present in other areas, making it easier to function in them. It cannot be denied that information today is considered a distinguishing feature of our world. Today, domestic markets are becoming part of the global information economy. The ubiquitous media, the expansion and specialization of the information professions and the development of the Internet make participation and being part of the information society a destiny for all of us. The ability to deal with the search, collection and flow of information, as well as the proper creation and management of virtual relationships is a challenge for everyone.

Overall, Society 4.0 is a society in which (du Vall, 2019; Kuzior, 2022): 1) the creation, dissemination, use and manipulation of information has become essential for political, economic, social and cultural activity; 2) there was a transformation of the working class into the professional middle class; - we are dealing with the development of multiple networks of connections (formal and informal); 3) there are significant social divisions and inequalities, which results, inter alia, from the fact that new technologies change the structure of employment in society, and this leads on the one hand to a division into "safe", well-paid and skilled workers, and on the other hand into a growing mass of the unemployed (in addition, most members of society belong to the post-industrial working class, for which work is not a source of identity); 4) there is a lasting link with the phenomenon of globalization, which is one of the most visible consequences of the information revolution.

Society 5.0 is a proposal for the concept of a modern, future-oriented and human-oriented society, in which the integration of cyberspace with the real world is to be implemented using the latest technologies, such as: artificial intelligence, Internet of Things, robotics or large data sets. Its aim is to achieve economic growth and prosperity at the same time, and to overcome societal challenges, thus contributing to the well-being of the global community (Fukuyama,

2018). The Japanese define Society 5.0 as a human-centered society, balancing economic progress to solve social problems through technology, strongly integrating cyberspace and physical space. We are talking about a society characterized by integration, penetration and embedding of cyberspace in the real world, also known as super-intelligent or creative (Czapiński, 2019). Representatives of the society 5.0 are people for whom openness, cooperation and innovation are the basic values. Poles are certainly partially distinguished by the first trait - as many as 91% of Poles believe that new technologies make everyday life easier, and 74% eagerly reach for technological innovations (Czapiński, 2019). The basic tenets of Society 5.0 are: technological transformation, imagination and creativity of different people, problem solving and value creation (Keidanren, 2018). Society 5.0 will be the "Society of the Imagination". Digital technologies and data should therefore be used to create a society where people live a diverse life and pursue happiness in their own way. In the future, they will also need their imagination to change the world and their creativity and materialize their ideas. The aim is therefore to create a society where everyone can create value at any time and place, in a safe and harmonious environment where there are no barriers.

On the other hand, the model of Society 4.0, in which people share knowledge and information, seems insufficient today. It is about ensuring cooperation, and the information obtained is intended to meet human needs. The very diverse ability to use modern communication and information technologies and the still existing digital divide may be an obstacle. A super-intelligent society based on artificial intelligence and cyberspace, therefore, aims to reduce the gap between virtual space and reality and to bring new quality to economic and social relations (Science, Technology and Innovation, 2020-2021; Kuzior, 2017).

The innovations brought by the concept of Society 5.0, as intended by its creators, are to enable the creation of a society of the future that will overcome the existing stagnation. According to the assumptions, new values that will arise thanks to innovations are to eliminate disproportions between: world regions, generations, different genders or linguistic minorities. They are also to enable the provision of products and services precisely tailored to individual needs (Agenda for sustainable development, 2030). The society of the future does not mean a world controlled and monitored by artificial intelligence and robots, on the contrary – it is supposed to be focused on every human being (du Vall, 2019). In this way, in line with the idea of Society 5.0, it will be possible to create a society that will be able to both support economic development and find solutions to social problems. In line with the vision of the creators of the concept of Society 5.0. it requires awareness and, above all, the cooperation of its citizens, both at the stage of its creation and at the stage of taking advantage of the opportunities it creates.

3. The idea of the public sphere in the concepts of Hannah Arendt and John Rawls

In Arendt's work, several ideas and concepts can be selected that will be analyzed in terms of their potential operational applications (Arendt, 2000). In research on the functioning of the contemporary public sphere, it is potentially useful to distinguish empirically social phenomena and processes into "worldly" and "worldless". An attempt will be made to determine to what extent, with their participation, appropriate labels can be found for them in the realities of the Polish Internet public sphere. It may also be potentially useful to use the canon of republican virtues indicated by Arendt as a normative point of reference to characterize selected discourses in the Internet public sphere.

According to Arendt, the basic property of the public sphere is the intersubjectivity of relations between its participants. Because only what history can make public becomes reality. The public domain is defined by these phenomena and processes, the manifestations of which can be seen and heard by each potential participant. The scale of active participation in the broadly understood public sphere has expanded over the centuries. Since the emergence of mass means of social communication, the traditionally understood public sphere has changed its character from deliberative forms (appearing in elite and opinion-forming social circles, such as the Arendt salon in Berlin) to messages addressed to recipients (institutional sender - mass). audience).

The mentioned types of media differed and differed in the direction of their message and the role of the said audience. Until the end of the 20th century, the traditional mass media underestimated the audience's activity and relied on one-way communication. On the other hand, social media has operated in two directions from the very beginning. The current passive audience can play an active role in their framework. With the growth of the internet and social media, public opinion is potentially strengthened. Its growing importance causes greater pressure on the mass media, which, unable to cut itself off from it, allow it to enter the public sphere. This gives society previously non-existent potential opportunities to deliberate and shape reality, both in terms of public and market choices (Brol, 2015).

The blurring of boundaries between various spheres of life in modern society, already observed by Arendt, concerns every form of functioning of the public sphere. These processes are especially visible on social media. The analytical and explanatory usefulness of the concepts of "global" and "worldless" phenomena and processes is, however, limited by the contemporary world of social media. He included the sphere of private and intimate life in the mainstream of social and political discourses.

Arendt's "world" phenomena and processes ascribed to the media determine the way in which a specific public sphere functions. On the other hand, the "worldless" belong to the private sphere and do not directly influence public life. What the classically understood

republican idea of the public sphere is undoubtedly considered worldless, i.e. private, and even intimate, is often presented in social media as an element of public discourse, a tool in the fight against opposition ideology, a foreign ethnic group, and a hostile worldview environment. The instrumentally used "worldless" element of the discourse takes on a public meaning. It becomes "global" because, according to Arendt's concept, it is important for a concrete proposal for the interpretation of the common good, which is commonly presented in the public sphere (now in social media).

The above phenomena and processes take place both in the main, global online communities: Facebook, Instagram, YouTube, TikTok or Twitter, as well as in specialized, local, socially closed portals or online forums (Bartnicki, Fernandes, 2018).

The phenomenon of disruption of the actual relations between the spheres as understood by Arendt is one of the main reasons for the collapse of the republican idea of the public sphere as a place of action for the common good. Nowadays, in globalized digital media, there is a simultaneous presentation of content previously reserved for the intimate and private sphere of man, group interests as the capitalist social sphere, pluralistic ideological discourses as a public sphere, and programs and strategies in the struggle for power as a political sphere. The confusion and information noise of various messages mediated by digital media have the effect of blurring the boundaries between zones, when group and environmental goals are equated with the implementation of the common good (Bartnicki, Fernandes, 2018). Hence the question: is the canon of republican ideas and values indicated by Arendt implemented and how, in the context of the blurring of the boundaries of the spheres of social life, in selected areas of the Polish Internet public sphere?

The way to define the application possibilities of Arendt's public sphere concepts is also to indicate in which areas of public life, i.e. in politics, local government institutions, the third sector, social media, and to what extent it is possible to identify manifestations of the functioning of republican ideas and patterns of civic participation. The article proposes that the canon of republican ideas and values, characterizing Arendt's peculiar model public sphere, should constitute a normative point of reference for the characteristics of discourses in one particularly important sphere - the Polish Internet public sphere. These are discourses taking place in the context of the permanent blurring of the boundaries of intimate, private, social, public and political life.

The canon of republican virtues includes – following Arendt: respect for the law, the morality of promoting communities in public life (freedom to), imposing the obligation to have a community over individual self-realization, controlling debates, courage of opinions and their framework, the public primacy of ideas and the preference of values over individual or group self-interest, distance to homo oeconomicus, respect for tradition. Such views are published closer to substantional neo-representation as Michael Sandel, where the audience values are the same and in relation to Aristotle's constitutive values, for a reference to ethics and politics (Sandel, 1998). The analyzed analysis distanced itself from the second

contemporary nurturing – instrumenttalist republicanism (e.g. Philip Pettit) and compared valuation as instruments of preparation and protection, above all, of freedom of homelessness and improvement of the legal status and democracy (Pettit, 1997; Pietrzyk-Reeves, 2014).

To analyze the main thematic keystones, characteristic of the socio-ideological narratives present on the selected industry portal, it will also be useful to use John Rawls's liberal concept of the public sphere, an alternative to Arendt's republican concept.

He conceptualizes his model of the public sphere around the notion of a political public reason, which is expressed in one particular sphere of social life – the politically fundamental sphere. It is complemented by: non-fundamental political sphere, including legislation and management, non-public political sphere expressed in mass media, including digital media, non-public civic sphere, including non-governmental organizations, universities and churches, community sphere which concerns primary groups (families, unions). neighbors and circles of friends), private, personal and economic sphere (Buksiński, 2006).

The public sphere understood in this way consists mainly of constitutive and legal structures. In this sphere, basic solutions concerning the foundations of the functioning of social life are established, and the influence of individual interests is unacceptable in it (Sikora, 2014). There is also no place for instrumental rationality in the idea of public reason. As in the assumptions of communicative rationality, Habermas assumes the avoidance of manipulative actions: persuasion, rhetoric, sophistry. It is advisable to use the methods of logically correct argumentation, inference, justification and evidence rules (Rawls, 2012). Public reason does not create an individual morality that would regulate the whole of social life, but it creates the norms of public coexistence.

Activities in the public sphere are to be based on an element of purely procedural justice, i.e. one that is agreed in the initial situation (usually in the constitution) by the parties representing citizens. Citizens, in the course of their rational considerations, do not feel compelled to apply any predetermined principles of equity and justice, do not accept any position beyond their own point of view as rational representatives of all citizens.

According to Rawls, the normative requirement of public reason functions in societies that implement several principles in the practice of public life: (1) Every citizen recognizes and knows that others recognize the same principles of justice. (2) It is well known and accepted that the basic structure of society is the implementation of these principles. (3) Citizens have a sense of justice which lies in sticking to the basic institutions of society which they consider fair. (4) Public reason manifests itself in the existence of a "partial consensus" involving different groups and individuals who support different concepts of the good. (5) The basis of the consensus is the social and political acceptance of the concept of justice as impartiality (Rawls, 1994, 2012).

4. Methodological assumptions of the research

The above concepts of the public sphere by Arendt and Rawls will constitute an ideal typical reference point for the analysis of the main thematic threads of the analyzed discourse. An empirical analysis of the Internet public discussion on the reform, and more specifically the liquidation of OFE, in the context of the implementation of the principles of public reason and the republican idea of the public sphere will be carried out.

The open exchange of opinions of Internet users took place on the website of the industry portal https://businessinsider.com.pl, under the article: All the money from OFE will go to the private pockets of Poles? The decision was made in April and it was published on 03/04/2019. The general interest in the subject of OFEs was manifested in the relatively large number of Internet users' visits to the specialist website, or at least the portal. Reader-oriented reader with above-average knowledge of economics, finance and management as well as the labor market. By the time of the analysis, 345,882 entries were recorded on the page where the article was published. Under the article, readers posted 144 comments and 83 replies on several of the most popular threads (08/04/2020), which were the subject of the analysis. It is obvious that the presented empirical material cannot constitute a basis for any generalizations or representativeness for the entire population of the country. It is a qualitative exemplification of extreme, neo tribe social, class and ideological divisions that are reflected in social media.

Selected elements of discursive research, and more specifically a critical discourse analysis, were used for the analysis. The issue of public life and the related forms of civic activity can be analyzed as a kind of discursive thinking area (Czyżewski, 2005, 2008), in which various social actors agree to often axiologically contradictory positions. Critical discourse analysis, as a special type of discursive research, chooses, among others, public debates (van Dijk, 2006). KAD treats discourses as social forms of communication that reflect real and meaningful social activities and practices related to the sphere of cultural domination and power (van Dijk, 1993). The analyzes undertaken should take into account the social, cultural and ideological-political contexts in which the discourses take place, categories of participants, i.e. elements of subjective analysis, their social activities, rules and strategies for achieving the discourse participants' goals. Hence, attempts were made to analyze the discourse taking into account the social and cultural context in which it took place, as well as to take into account all attitudes, states of knowledge and opinions of representatives of the studied Internet community.

In analogy to the oppositional analytical categories existing in the discursive-critical approach, e.g. Ours and Strangers or We and They (Kopytowska, Kumięga, 2017), the manifestations of the existence of opposition patterns of participation in the public sphere were analyzed in the language of discourse participants and in its social and cultural context. (legitimizing ideas) and their connections with class-layer relations.

During the analysis of internet users' comments, the original state of the message was kept. This means that the statements were not taken out of their natural situational context, nor were they prepared or shortened. Their sound, style and selection of vocabulary, including profanity, were preserved. Efforts have also been made to find the goals and intentions of the commentators. Hence, the linearity and sequence of analyzes is so important, i.e. taking into account the paragraphs before and after the analyzed text and examining it based on internal consistency and dynamics, without omitting any sentences and maintaining the original graphic appearance of the texts, expressing, inter alia, emotional attitude of the participants in the analysis and presentation of the results (font selection, letter size, emoticons). All posted comments addressed to the wider group and responses to individual people have been analyzed.

The discourse study takes into account the specificity of the selected medium of the Internet industry. Particularly important is the relationship between the ownership structure and the role of the broadcaster, which, like the vast majority of broadcasters, more or less directly implements the owners' interests. The owner of the Internet portal Businessinsider.com.pl is the international media concern Ringier Axel Springer Polska, a limited liability company. The above conditions of ownership affect the selection of the content of media messages, they form the program line. However, it should be stated, in accordance with the official regulations contained in the Portal Regulations, that broadcasters declare an apolitical and ideological character and adhere to generally accepted principles "in accordance with applicable law, social and moral standards and (...) not posting content supporting radical social attitudes or promoting such views (all kinds of racial, ethnic, gender, religious discrimination, etc.). taking an open position in the current disputes between political parties fighting for power.

In the discourse analysis, the authors tried to follow a principle that closely corresponded to the sense of the methodological directive of Florian Znaniecki's humanistic coefficient and to Weber's postulate of evaluation-free social sciences, so as not to attribute to the authors of the analyzed statements their own views, methods of categorizing and diagnosing reality (internalization error). This is a necessary condition for maintaining a critical distance to a given text.

The analysis took into account the social, cultural, ideological and political context that determined the discourse on the website. Presenting the history of the establishment, main assumptions of the OFE reform and outlining the attitude of successive ruling teams to the scale of the share of capital funds in shaping the Polish pension system will allow to understand the diverse and radically different attitudes of Internet users, depending on the ideological options represented towards the government proposal by Mateusz Morawiecki, to transfer the remaining funds from OFE to inherited Individual Retirement Accounts or to ZUS.

5. Analysis of the selected internet discourse

The announced liquidation of the capital component of the pension system, i.e. Open Pension Funds (OFE), was introduced in 1999 by the government of Jerzy Buzek. They were part of a comprehensive reform of the system, which assumed that the amount of the pension would no longer depend mainly on age and length of service. The value of contributions was to gain in importance. OFE as the so-called the second pillar of the pension system, managed by private, general and operating on the financial market pension funds, were to supplement the still accumulated pension contributions in ZUS.

Radical changes in the functioning of open pension funds were introduced by the government of the PO and PSL in 2014. 50% of the accumulated funds were redeemed, mainly in the form of state treasury bonds, which were used primarily to service public debt. From this year on, the law prohibited investing funds accumulated in OFE in state bonds used to service the debt of the State Treasury. The remaining funds, in the total amount of PLN 162 billion, are invested mainly in shares of companies listed on the Warsaw Stock Exchange. By the end of June 2022, the parliamentary majority had not taken final decisions on the shape of the act on the reform of open pension funds.

The discourse on the permanent reform of the pension system in Poland has been strongly ideological and emotional from the beginning to the present. This is an element of the fundamental conflict between the neoliberal paradigm, which, at least in the declarative sphere, favors extensive investment of pension funds in financial markets and limiting the role of the Social Insurance Institution, and the interventionist paradigm supporting centralized management of pension funds. by a strong Social Insurance Institution. At the same time, it is difficult to institutionally ascribe to the former ruling coalition of the Civic Platform and the PSL, often described as the liberal, pro-market orientation of the former ruling coalition of the Civic Platform and PSL, and the interventionist tendencies of the current ruling coalition, centered around PiS.

The first topic, "We are society – they are a treacherous power": comments expressing a lack of trust in state institutions, a state far from the pattern – the implementer of the principle of justice as impartiality. This is the most articulated opinion. The discourse was dominated by the debaters, expressing distrust and distance, especially towards the executive, but also towards state institutions in general, regardless of the political or ideological option currently in power. The selected content presented above proves the lack of consensus among the participants of the spontaneous exchange of views on common, universally accepted constitutional principles.

Opinion 1: “Private property is that we have it! This money will be private once I get it into my account. Currently, the thieving state, without my consent, takes some of them for its own needs, and gives the rest to someone and gives it back to me - if it does not lose everything beforehand. Fuck such private property and the state - the thief. [...] You really want to wake

up in a state that is stealing your 25% savings. Such a state ceases to be a bastion of rights and freedoms BECOMES THEIR ENEMY! Do you want a country that will be your enemy? Who needs a state that can take what he wants? After all, such a country is no different from the invaders with whom our grandfathers have fought for hundreds of years, we live in a Polish-speaking colony?".

Opinion 2: "It will make you laugh to tears. Already in 1990, this country robbed its citizens of their life savings, believing that the accumulated savings were worth nothing. And then they had this worthless fortune".

Opinion 3: "If they transfer these funds to some IZE or KZE, I will immediately withdraw them from there to buy currency or gold. What they don't know, they won't steal it later".

Opinion 4: "Instead of enriching the thieves' open pension funds and bank accounts from which the cash register may disappear, it is better to invest this money in cryptocurrencies. Where the state has nothing to say, so do the bankers".

Opinion 5: "It is another theft of power".

Since the spread of social media, their language has made an important contribution to the language of the public sphere. Following Jerzy Bralczyk and Jacek Wasilewski, five varieties of the language of these media should be distinguished, which reflect the attitudes of Internet broadcasters: the national language, the language of success, the language of political correctness, the language of populism and the language of ease (Bralczyk, 2008). The vast majority of the authors of the above comments use the language of populism, which refers to the They category. This language is also present in tabloids, election flyers and media statements by politicians who use populist arguments. Commentators often use profanity, colloquial language and verbal aggression. There is a tendency to categorize negative ones, such as "theft of OFE", "theft of power", "hostile state", which refer to the metaphor of harm to citizens and foreign power. It is difficult to find the constituent elements of a community of citizens - the ruled and the ruling - who recognize the same principles of justice. The researched statements of Internet users did not find any axiological features characteristic of the republican idea of a state community, i.e. putting the need of the community over individual or group self-realization.

The second theme "Two hateful tribes" is characterized by the presence of glaring differences in the interpretation of the current OFE reform by the supporters of the two dominant socio-political narratives. Among the comments posted, it is easy to distinguish elements of two antagonistic, neo tribe's ideologies, integrating their own members and supporters, and rejecting not only the arguments of the opposing side, but also the possibility of any dialogue and marking the enemy. However, polarization of opinion is not the dominant topic of discussion on the Internet. The opposition between "us" and "them" is revealed most strongly in the emotional message, then in the classic form "we society" - "it is the authority, a foreign, hostile state".

Opinion 6: “First, 1/4 of this money will be used to buy voters' votes. Soon we can hear that these thieves are also returning us 75% of our bank deposits. Their electorate is so stupid that they will be delighted anyway".

Opinion 7: “I think our country treats us the same way as this human supercomputer in the Matrix. The state should serve man. Settle any ambiguities in favor of the citizen because the citizen is his sovereign!”.

Opinion 8: “When Tusk stole 150 billion from OFE and took up debt of 400 billion, he was a hero. How Kaczyński wants to get 10,000 zlotys is a thief and a fraud. I just got the reply that some people have dumber voters".

The third thematic keystone of the "Theater of Absurd" discourse, comparable to the two opinions presented earlier in terms of the number of opinions presented, concerns the topic of discussion and the very situation of the exchange of views, because it is a kind of happening, participation in a surreal performance in the theater of the absurd.

Opinion 9: "We will all get 10,000 from OFE. to be paid”.

Opinion 10: "It will be like in a Russian bank".

Opinion 11: "We will get a plot of land on the Moon or Mars for the election".

The debaters assigned to the above thematic keystone use loose language, a "parodic meta-pattern" (Bralczyk, 2008). They draw inspiration from all of the above-mentioned types of media language. It is a language of entertainment, absurdity and irony. He is characterized by the use of abbreviations, freedom in using stylistic means and distance to other language varieties.

In the analyzed debate, there were practically no elements of the language of political correctness, which was a linguistic reflection of official European democracy, usually using scientific and clerical phraseological connections. It is supposed to strive for objectivity, it refers to the slogans of public interest, reason and the category of We (Bralczyk, 2008). How do the course (dynamics) and content of the analyzed media discourse correspond to Rawls's five principles of public reason and Arendt's republican idea of the public sphere?

In the analyzed comments one could find manifestations of unrequited resentments, prejudices, group jealousies, as well as the amount of personal and group negative emotions of a resentmental nature that block the development of even a partial socio-political consensus. Among the statements of the debaters, there are no opinions proving the existence of even a majority social acceptance of the basic structure of society as the implementation of the principles of justice, so crucial to the idea of Rawls' public reason.

The analyzed statements of Internet users all the more deviated from the republican concept of the common good or the high ethical canons of the idea of civil freedom "to". There are two separate interpretations of constitutional principles and the resulting interpretations of the functioning of the judiciary, derived from various axiological systems and social ideologies. They are just one step away from two different ways of interpreting Rawls' universal ideological principles of justice.

In order for there to be universal social acceptance of the principles of justice, first of all constitutional and legal consent is necessary. In Polish socio-cultural realities, since the division of the post-Solidarity camp into two broadly understood blocks: liberal-democratic and conservative-national, such a community and agreement as to fundamental rights or the commonly understood concept of freedom "to", participation and maintenance of a normative community is seriously violated. In addition to various perceptions about the preferred economic programs, the scale of interventionism, attitude towards the European Union, the idea of political correctness, attitude towards sexual minorities, proposed social programs and the scope of the redistribution of resources or historical policy, after the Smolensk tragedy, relations between the two sides were also burdened with negative emotions group. Attempts were made to heal the social trauma, accusing each other of more or less direct responsibility for the disaster of the government Tu-154M in 2010. They express themselves by closing themselves in their own media circles, focusing their narrative and political persuasion mainly on their own electorate and potential allies.

The above processes are deepened by the crack in the social structure understood in terms of classes, which has been observed for years. Class capitalist society is the most essential element of the basic structure of society as understood by Rawls' concept of the public sphere. The presented statements show a split among Internet users as to the way of defining the basic criteria of social justice. Most of the respondents pointed to the lack of trust in the judiciary and the functioning of closed media circles of neoplemen. On the other hand, industry media, established to play the service and information role, which are to be a platform for meetings and exchange of ideas for various expert groups, become places of confrontation, verbal aggression, mockery and invective between ideological "skirmishers" or hired trolls of conflicted parties (case an identified troll of one of the parties to a political conflict).

Hatred is a problem primarily in large, publicly available discussion forums (Krejtz, 2012). The above observations are also confirmed by the international Cyberemmotions research, which also shows that this type of behavior is much less present on specialist websites devoted to a specific issue. Although, as outlined above, negative emotions, hate speech, and hateful opinions are relatively easy to spot even in the narrower and more industry-specific audience of Internet content. Most of the aggressive statements appear when dealing with worldview topics related to social trauma and politics (Krejtz, 2012), which is confirmed by the presented analysis of the Internet discourse.

The key issue is the disagreement as to the socio-political and axiological consensus observed among the participants of the Internet debate. The public reason imperative requires at least a partial consensus between the group and individuals advocating different concepts of the common good. It requires the development of a commonly accepted, specific decalogue of public life. It is to ensure cooperation and social integration in the conditions of differences of opinion. Since "there is no rational religious, philosophical or moral doctrine that all citizens

would profess, the concept of justice recognized in a well-organized society must be limited to [...] the political" (Krejtz, 2012).

In Rawls's concept of the public sphere, the basis of consensus is the social and political acceptance of the concept of justice as impartiality. This corresponds to the normative assumption of Jurgen Habermas with the statement that law, as a universal tool for implementing also the principles of justice, constitutes a bridge between the world of life and institutional politics. The law plays a key role in protecting socially significant values. It regulates the processes of integration and stabilization in diverse and divided societies, but also sets the framework and structures of political and public discourses.

Agreement as to the divisions is to be ensured, first of all, by the adoption of the constitution. In today's Poland, constitutional principles have become the subject of public debate as never before in the times of the Third Polish Republic. However, its instrumentalisation can be observed by antagonized political forces that use it to achieve short-term political goals. These principles are used in the current political game by both antagonistic sides. They differ, for example, in the interpretation of the method of electing judges of the Constitutional Tribunal, the essence of the reforms of the Supreme Court, the National Council of the Judiciary, i.e. the highest judicial organs. Socio-political tensions arising around the functioning of the judiciary, or more broadly the law-making and enforcement process, are also reflected in the presented online discourse (casus: "such a state ceases to be a bastion of rights and freedoms").

Social media allow for anonymous, unrestricted and largely unpunished expression of negative emotions, alleviating frustration and reciprocating suffering, humiliation experienced by physical and virtual aggressors, responding to real, more or less imaginary resentments towards political opponents, ideological enemies, any sexual and moral differences, ethnic and religious competitors in the market of tangible and intangible goods. Timothy Snyder, an American historian and social philosopher, aptly emphasizes the threats posed to the modern world and man by the rapid development of digital technologies focusing on the Internet.

“The Internet has caused a social change completely different than could have been expected. Overall, the network serves not only to enlighten and disseminate knowledge, but also to spread disinformation. It also acts as a catalyst and a transmitter of emotions. It examines the psychological weaknesses of society - and passes this information on to those who can pay for them” (Snydr, 2020).

6. Conclusion

The progressing IT revolution and the spread of its instruments (the case of smartphones) brings new channels of access to information and new forms of social integration, including for groups previously excluded from broadly understood public life. This process concerns a large part of the so-called a mute majority and, until recently, a passive majority. However, media empowerment also has negative social and cultural effects. Social media is an instrument of social mobilization, but also an accelerator of opinions and ideas, on the one hand extreme, polarized, on the other hand populist. Digital media, and more precisely means of Internet communication, are a medium, a technological tool that allows not only to communicate on the information level, but also to create contemporary tribal communities, including hate communities. The social and media phenomenon of Internet hatred reflects the tensions existing in society in the social structure between collective actors, usually of a class nature, and the rival normative systems, worldviews and ideologies that justify them. Manuel Castells has already mentioned this phenomenon, claiming that the Internet space is a material support for contemporary social practices (Castells, 2010). The structural and cultural contexts of resentment strengthen and legitimize individual negative emotions, prejudices, stereotypes, real and imaginary resentments. These, in turn, are now mediated by social communication in the Internet media. Polish society is facing a huge challenge today, which is the skillful use of information and communication technologies in the service of the common good, civic community, looking for connections between the real and virtual world and eliminating extreme social tensions (Harayamaa, 2017).

The presented content and related language forms of the three main thematic keystones of discourse found: 1) "We are society - They are a treacherous power", 2) "Two hateful tribes" and 3) "Theater of the absurd" are in blatant contradiction to both the assumptions of the liberal conception Rawls's public sphere (public reason) and Arendt's republican sphere.

The two concepts of the public sphere used in the ideal-typical analysis can serve as a model for comparing the extent to which the defined social reality, burdened with class, historical, ethnic, ideological conflicts, stereotypes and negative group emotions, differs from the assumptions of the previously mentioned theoretical and ideological constructions. However, they do not have diagnostic and explanatory possibilities to indicate and explain the nature of relations in the public sphere between structural or cultural determinants and the causative possibilities of individual and collective actors. The Polish public sphere on the Internet, permanently functioning in separate media "bubbles", is a pathology of both the republican and liberal idea of the public sphere. They show the features of a community that integrates not through the implementation of a program or idea, but "against" another community that is perceived as a community of unworthy, strangers and excluded. It can be said that the idea of the republican community and civic virtues, enshrined in Arendt's writings, is reflected in the

distorted mirror of the opinions of members of the Internet Neo Tribe. So it is far from the idea of a super-intelligent, social and creative Society 5.0.

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