Chapter 13

Social Responsibility and Ethical Approaches in the Management of Artificial Intelligence

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Abstract

Artificial intelligence, whose technological foundations were laid by the end of the 20th century, is on the one hand progressing towards taking away the intellectual competence of human beings, and on the other hand, it is redesigning our lives from production to marketing, from health to our cultural acquisitions. Unlike the traditional, the restructuring process is most felt in the field of culture and values. While the economic and commercial success that artificial intelligence has demonstrated in the field of production and marketing satisfies our desire to earn and produce more, on the other hand, ignoring human-centered ethics in societies, institutions or communities that do not use technology or do not have advanced artificial intelligence technologies can cause a number of ethical problems. Regardless of its purpose or field, the use of artificial intelligence in line with ethical responsibility and ethical principles in a way that will contribute to the ethical development and progress of humanity is not only a matter of a society or community, but of all humanity. It is an unethical situation known to everyone that marketing activities or technology producing companies manipulate the actions and activities of the end user. On the other hand, the unethical sharing of user information by social media companies with other organizations or companies regarding the special vulnerabilities or needs of individuals, and the violation of data privacy have made the use of ethical artificial intelligence one of the most important issues in the world of informatics. Every private or legal entity in the production-distribution segment of companies must assume ethical responsibility in their actions. This study first presents a historical perspective with the aspects that brought artificial intelligence, the strongest argument of the informatics revolution, to the present day. Secondly; ethical concepts and methods that can help in coping with social and ethical difficulties caused by non-human factors such

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as robots, softbots and artificial intelligence devices in the informatics society are explained. All economic activities, including local or global marketing, of artificial intelligence, which has the potential to shape the development of the world, should be shaped according to ethical needs by focusing on humans. Finally, the study draws attention to the importance of human-centered trustworthy artificial intelligence in the context of social responsibility.

1. An Overview at Artificial Intelligence from the Information Revolution

The information revolution refers to the period in which technology was designed with information, cybernetics and technology studies after the Industrial Revolution, and at the same time information was designed and produced with technology. Norbert Wiener's Cybernetics (1948), Claude Shannon's Information Theory (1949), and developments in computer technologies in the late 19th and early 20th centuries are the characteristic disciplines of the information revolution.

In the beginning, electronic computers were large and cumbersome because they used many vacuum tubes. The development of valves (valves that provide electronic flow) in the 1960s and transistors supported by integrated circuits and microprocessors in the 1970s brought computers to an ergonomic structure. Improvements in integrated circuits and silicon chip technologies have made it easier to use computers almost everywhere.

The impact of the information revolution has been realized on the widest scale worldwide with the hypertext transfer protocol http (*Hyper Text Transfer Protocol*), which is designed to receive, transmit and display data. The World Wide Web (WWW) was developed in 1989 and became official with the protocol signed at CERN (Kizza, 2017: 8). The effect of the information revolution has deepened by eliminating the space constraints of access to information resources such as online music, digital health, internet television, digital telephone, digital communication systems, e-shopping, and e-government through the internet, which allows the creation of a virtual atmosphere parallel to physical reality by connecting to each other via internet protocols (TCP/IP). Our world has become increasingly globalized with the Internet, the World Wide Web, which represents the infrastructure where all devices and servers are connected to each other, and the social, cultural and economic impact of the information revolution.

Norbert Wiener, one of the founders of ***cybernetics***, and his colleagues developed a computerized calculation method that tracked fighter planes in the air and predicted the trajectory of enemy aircraft during World War

II. (Bynum , 2000). The opportunities provided by cybernetic studies that enable communication between human-machine and machine-machine have initiated the "automatic age", as the term used to refer to unmanned systems (Bynum, 2009: 25-48). The ethical discussions of automata and intelligent systems were also initiated by Wiener during the rise of cybernetic studies (Wiener, 1960).

Cybernetics is undoubtedly one of the most important developments of the information revolution. Cybernetics is the branch of science that establishes the law of communication that is equally valid for living beings and machines (Porush, 1987: 54). Cybernetics is a discipline that enables interaction between humans, machines and society through control and communication theories. (Ashby, 1956: 1). As seen in Figure 1, thanks to Cybernetics, data and information from different branches of science such as biology, physics, mathematics, social sciences and engineering are integrated to produce a new output. In addition to the interaction of living and non-living systems, cybernetics, as a surveillance and control system, is an important actor in the scientific information revolution and an important milestone in the point where artificial intelligence technologies have reached.

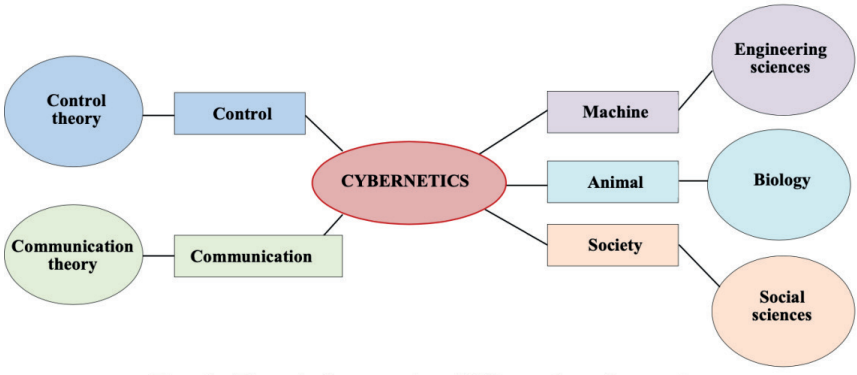

Figure1. Fundamentals of Cybernetics. (Novikov, 2016: 10)

Claude Shannon's "**Information Theory**" constitutes the architectural structure of the information revolution technically, where data transmission is carried out as a portable type between the message receiver and transmitter via telephone wires, TV cables, radio signals and digital computers (Shannon, 1948: 2).

Quinn defines all devices that enable the creation, storage, processing, exchange and distribution of data, audio or images through information

technologies as the actors of the information revolution (Quinn, 2006: 39). A strong reflection of this revolution today is artificial intelligence technologies.

Artificial intelligence is one of the popular technologies that the technologies developing with the information revolution have brought to our agenda. Although artificial intelligence is defined in different ways, it is possible to define artificial intelligence in its most well-known form as the integration of the ability to learn and solve problems related to all kinds of acquisitions specific to the human species into information technologies and systems. Artificial intelligence refers to the ability of intelligent computational machines with algorithms and mathematical calculations to perform tasks of human intelligence in a human-like manner.

AI technologies simulate cognitive functions such as solving problems, learning for expected output, understanding language that enables communication between human-machine and machine-machine, and creative thinking with data and data sets. Techniques such as machine learning, deep learning, and natural language processing constitute the basic elements of artificial intelligence. Figure 2 shows the basic working logic of AI.

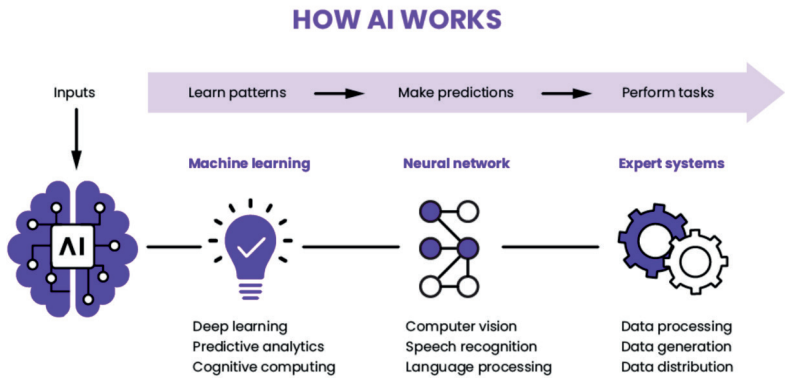

Figure 2. How AI Work. (Weka.io, 2024)

Although artificial intelligence refers to a technical field, it has a complex structure that cannot be attributed to a single branch of science. In fact, the main purpose of artificial intelligence is to solve problems without focusing on a specific field. AI, which is a mental activity that distinguishes

humans from other beings in terms of being a thinking being, focuses on the problem itself with algorithms and mathematical models and carries out different optimizations for the solution of this problem with human-like experience acquisitions. It is closely related to different branches of science and disciplines, from philosophy to biology, from mathematics to marketing and business. Because the central concept in artificial intelligence is knowledge. As in other positive sciences and social disciplines. In its most primitive definition, the data is modeled with different methods such as machine learning, natural language processing, expert systems in the stages it passes through as input-process and output.

The development stages of AI systems begin with Data collection, which is the data collection phase that takes place through sensors or human-generated sources to train and evaluate the AI model. The collected data is processed, classified and cleaned by field experts in the Feature engineering stage with statistical analysis or automatic feature selection techniques to be used in the training of the artificial intelligence model in the Data preprocessing stage. The AI model architecture and algorithm for the relevant field are selected according to the problem-oriented statistical models, machine learning algorithms or deep learning architectures, and the determined model is trained using the prepared data in the Model development phase. In the model evaluation and model optimization stages, studies are carried out to develop and improve the model created (Weka, 2024).

Although the emergence of artificial intelligence in its modern form, inspired by the structure and functions of the human brain, dates back to the 1956s, the earliest research on machines being able to think was developed through the collaborative work of scientists specializing in different fields in the late 1930s, 1940s and 1950s. In fact, its foundations were laid at the Macy Conferences moderated by McCulloch, titled "Circular Causal and Feedback Mechanisms in Biological and Social Systems" between 1946 and 1948 (Pias, 2016: 12). In neuroscience research, the definition of the brain as an electrical network of neurons has brought about the artificial modeling of the human brain. Norbert Wiener's cybernetics and Claude Shannon's theory of information have made it possible to describe digital signals. Alan Turing showed with his theory of computation that any computation could be described digitally. All these ideas suggested that it might be possible to design an "electronic brain". In the process, these studies were brought to the agenda again at the Dartmouth conference and in the summer of 1956 under the leadership of scientists such as Marvin Minsky, John McCarthy and Carnegie-Mellon, Allen Newell and Herbert Simon, a new

science-technology field called artificial intelligence took its current form (McCorduck, 20024; 51-57).

In 1950, Alan Turing developed a study that tested the ability of a machine to exhibit intelligent behavior equivalent to a human with the 'imitation game theory'. Turing's study adapted natural language speech to a human-like communication model between machine and machine (Turing,1950). Turing's study, which adapted the electronic brain model to human spoken language, took artificial intelligence to a different dimension and made him one of the pioneers of today's artificial intelligence studies. The scope and foundations of artificial intelligence are composed of expert systems for solving data-related problems, robotics, natural language processing technologies based on speech and understanding that enable machine communication, optical instrument technologies that are independent of physical interaction, computer vision that includes data perception, collection and classification activities, machine learning, and deep learning models produced by artificial neural networks by creating more than one artificial neural network. Artificial intelligence, which realizes human-specific abilities such as learning and problem solving through information technologies, has played an important role in producing meaningful results through algorithms aimed at solving inputs from large data sets, as well as in the optimization of existing ones and the emergence of new inventions.

The information revolution has affected our social life, habits, and also our scientific and thought methods. The philosophy of artificial intelligence is one of these. Through new technologies, it has caused us to reconsider human life and scientific methods, the nature of intelligence and reason, which are the characteristics that distinguish us from other beings, their limits, our consciousness, moral concepts such as will, decision-making, and freedom, and to reach different philosophical conclusions with new definitions. The philosophy of artificial intelligence, which addresses the ethical, epistemological, ontological and social dimensions of artificial intelligence technology, has brought to the philosophical field the issue of whether a machine can have consciousness, the possibility of ethical decisions with machines, and the effects of developing a technical solution to technology-based ethical problems on human nature. This study, which addresses ethical problems in the ecosystem where artificial intelligence technologies, which are the subject of the current study, are created and ethical approaches to solving these ethical problems, is the result of such an impact.

2. Ethics Responsibility For The Information Society

During the Second World War, and almost immediately thereafter, several powerful information technology advancements were made. After that, during the 1950s and later decades, information technology advanced rapidly. By the mid 1990s, worldwide use of the Internet had already produced major impacts upon political, social, and economic circumstances. More and more people found themselves living in a "cyber-world" created and sustained by a vast network of interconnected digital devices. The world today has become a place with innumerable inter-cultural interactions, and the "Information Age" has arrived.

Today, whether they like it or not, nearly everyone is becoming a member of the worldwide "cyber-community". So, in the comfort of their own specific culture, without traveling in a car or train or airplane, people can easily interact with other people in many different cultures. Because of this, the "Information Revolution" is changing traditional habits and generating new and profound ethical questions and challenges. For example: Are there common ethical values and principles shared by all human beings, or does each specific culture or subculture have its own ethical values? To address such questions, *an effective ethical theory for living in a massively interconnected multicultural world is needed!* One such theory is Flourishing Ethics put forward by American philosopher Terrell Ward Bynum in 2006 (Bynum, 2006). The most important feature of this theory is that humanity assumes the responsibility for the ethical development of the individual and society.

Because the first important responsibility that individuals and society should undertake in their commercial activities or daily work should be to flourish ethically. The most important mission of artificial intelligence technology manufacturers and other smart technologies should be to strengthen, support or provide opportunities for the ethical flourishing of humans. Focusing on the benefits of a technology only in terms of economic activities and evaluating it based on measurements related to this will deficient the ethical flourishing of humans and society, so the responsibility for ethical development should be at the core of technologies. Indeed, The power of any technological product, be it artificial intelligence or whatever its name, is directly proportional to the ethical responsibility it assumes.

Let's take a closer look at the theory that addresses human flourishing as a kind of ethical responsibility in societies designed with artificial intelligence and intelligent computational technologies.

Bynum's Flourishing Ethics Theory includes both Human-Centered Flourishing Ethics and General Flourishing Ethics. This theory is an "umbrella-like" overarching conception of ethics, which is broad enough to include not just traditional Western values and principles—like those of Virtue Theory, Utilitarianism, Deontology, and Social Justice Theory—but also values and principles of major Eastern traditions like Buddhism, Confucianism, and Taoism. According to this theory, social responsibility in the point of view of ethics is a significant concept in the technological societies.

In addition to providing a means of ethically evaluating human actions, Flourishing Ethics also can be used to guide and govern decisions and actions of newly-emerging nonhuman agents like robots, softbots, and AI devices that are currently being created and deployed in many different societies. If nonhuman agents contribute to human flourishing, and they do not also damage human flourishing, and if these technologies take on the responsibilities of individuals and societies for ethical development, they can be considered as appropriate or useful tools for use.

Of course, Flourishing Ethics is not a panacea that can easily answer all ethical questions in our increasingly complex interconnected world. The important point here is that it provides promising and powerful ethical concepts and methods to help with a growing number of social and ethical challenges of the Information Age.

2.1. What is Flourishing Ethics as an ethical theory with potential for ethical perspective on artificial intelligence and social responsibility?

In his article "Flourishing Ethics", Bynum said this:

I call the new theory 'Flourishing Ethics' because of its Aristotelian roots, though it also includes ideas suggestive of Taoism and Buddhism. In spite of its roots in ancient ethical theories, Flourishing Ethics is informed and grounded by recent scientific insights into the nature of living things, human nature and the fundamental nature of the universe—ideas from today's information theory, astrophysics and genetics. . . . Rather than replacing traditional 'great ethical theories,' Flourishing Ethics is likely to deepen and broaden our understanding of them (Bynum, 2006, p. 157).

Bynum's Flourishing Ethics assumes that *people in every culture share a common human nature*, and also that *human flourishing is the highest ethical value*. These assumptions, taken together, yield a set of ethical values and principles that apply to every human being in every culture. In addition,

since individual cultures and subcultures typically include *culture-specific* values and traditions, human flourishing within a given culture can depend also upon the culture-specific values of that culture. So Bynum's Flourishing Ethics accommodates culture-specific values when they do not harm human flourishing elsewhere.

To determine what is required for humans to flourish, Bynum adopted the strategy of asking this question: *For all humans, what deficiencies would make it impossible for them to flourish?* The results were these (see Kantar and Bynum 2022):

1. **Autonomy**—the ability to make significant choices and carry them out—is a necessary condition for human flourishing. For example, if someone is in prison, or enslaved, or severely pressured and controlled by others, such a person is not flourishing.
2. To flourish, people need to be included in **a supportive community**. Knowledge and science, wisdom and ethics, justice and the law are all social achievements. Also, psychologically, humans need each other to avoid loneliness and feelings of isolation.
3. The community must provide—at least reasonably well—**security, knowledge, oppor-tunities, and resources**. Without these, a person might be able to make choices, but nearly all of the possible choices could be bad ones, and a person could not flourish under those conditions.
4. To maximize flourishing within a community, **justice must prevail**. Consider the traditional distinction between "distributive justice" and "retributive justice": if goods and benefits are unjustly distributed, some people will be unfairly deprived, and flourishing will not be maximized. Similarly, if punishment is unjustly meted out, flourishing, again, will not be maximized.
5. **Respect**—including **mutual respect between persons**—plays a significant role in creating and maintaining human flourishing. Lack of respect from one's fellow human beings can generate hate, jealousy, and other very negative emotions, causing harmful conflicts between individuals—even wars within and between countries. **Self-respect** also is important for human flourishing in order to preserve human dignity and minimize the harmful effects of shame, self-disappointment, and feelings of worthlessness.

2.2. General Flourishing Ethics, "smart" technology, and emerging global ethics

In the article Flourishing Ethics, Bynum made the following important prediction:

Flourishing Ethics has a significant potential to develop into a powerful 'global ethics'—one that is rooted in the ultimate nature of the universe and all the entities that inhabit it—one that will shed new light upon 'the great ethical theories' of the world, while providing novel insights and contributions of its own (Bynum 2006, p. 171).

A helpful contribution of Bynum himself was his recognition that Flourishing Ethics should be broadened and divided into two "types": The first type is *Human-Centered Flourishing Ethics*, which recognizes the dignity and worth of human beings as the top ethical values. The second type is *General Flourishing Ethics*, which continues to keep human worth and dignity at the top, but also acknowledges the *intrinsic ethical value* of other existing entities. Such broadening of ethical respect actually began to occur years ago with developments like the environmental ethics movement, the animal rights movement, efforts to limit global warming, and so on.

Bynum's ethical explanations and analyses are informed and grounded by recent scientific insights into the nature of living things, human nature and even the fundamental nature of the universe—ideas from today's information theory, astrophysics and genetics. As a result, his "broader view" is this:

From the point of view of Flourishing Ethics, it is not unreasonable to place a strong emphasis upon the flourishing of human beings and their societies. . . . On the other hand, besides humans and their communities, there are other intrinsically good entities in the universe. . . . Flourishing Ethics takes these into account as well. Non-human animals, plants, ecosystems, even certain machines decrease entropy in their local regions of space-time, and thereby preserve and increase the good. Even 'inert' objects like stones, mountains, planets, stars and galaxies are persisting patterns of Shannon information. [So] Flourishing Ethics fosters respect for all of these sources of the good (Bynum 2006, p. 172).

Of special interest in today's world is the growing number and complexity of information technology devices like robots, softbots, and chatbots. Such devices sometimes make decisions and carry them out without human intervention. At the present time people worldwide are especially concerned about artificially intelligent chatbots, which can learn from their "experiences" and change their behavior in unexpected ways.

3. Ethical Responsibility and Management of Artificial Intelligence

The agent factor is a very important factor in the collaboration activities that multiple artificial intelligence technologies come together to achieve a goal. For example, in the ecosystems that form artificial intelligence collaborations, who will be authorized to use the data, the unauthorized use of data by other parties, the limitations to be applied to data manipulation, etc., and who will assume the ethical responsibility of the system in solving these issues and problems are quite controversial issues.

There are views that argue that ethical responsibilities should be shared by users in a common way regarding who should assume the ethical responsibilities of artificial intelligence and what and according to what principles it should be governed. Indeed, in ecosystems created by more than one artificial intelligence, machines should make joint decisions and cooperate on actions. Being in the same ecosystem also means sharing responsibility. According to Stahl, who advocates a shared responsibility model in the artificial intelligence ecosystem, sharing responsibility among different actors such as software developers, users, and institutions (Stahl, 2023) is necessary for ethical outcomes to be undertaken.

One of the important issues here is that the agents in the AI ecosystem are designed according to the purpose of the ecosystem. The components in the AI ecosystem develop together for the same purpose and feed off each other (Ritala and Almpanopoulou, 2017: 39-40). The data that is the output of one system can be the input of another system. This can be a strength of complex AI management, but it can also be a source of social and ethical problems.

Ultimately, although artificial intelligence models are produced for economic purposes such as commercial, educational or marketing, they produce social, ethical and cultural results as individuals determine and influence society's actions. For this reason, the management of artificial intelligence systems and the ecosystem they build is extremely vital in terms of social responsibility, not just economic importance.

4. Trustworthiness in the Management of Artificial Intelligence and Human-Centered AI

Despite criticisms about the technique used by machine learning in the processing stage of data, the transparency and bias produced by the methods and producing wrong answers, Artificial Intelligence is one of the most important technical developments of the century that has the potential to shape the future of the world. This potential will produce a result depending

on whether we create AI in what degree that contributes to the development of humanity. This vital issue is still waiting as a problem waiting to be solved on the table of all humanity. For this reason, all studies investigating ethical problems and seeking solutions in artificial intelligence studies are an important effort on behalf of humanity. The issue of AI and ethics does not belong only to a single country or culture, but is the common problem of all humanity in the face of developing technology. The trustworthy of AI and the other problems it produces are a worry for all countries, making it almost imperative to develop minimum common solutions that can be valid on a local and global scale. Since we have common ethical problems with the dimensions that affect us; Why shouldn't it be possible to address issues from a common ethical perspective and seek appropriate solutions by at least meeting on minimum common principles? While this may seem difficult in practice - at least for now - it is not impossible.

There are several controversies in determining AI ethical principles and appropriate ethical statements. At the beginning of these discussions is the application of topics and concepts such as human autonomy, human agency and oversight, Diversity, non-discrimination and fairness. As the application of these principles differs between nations and countries; It is getting harder to reach a consensus on what principles and rules belong to the culture, belief and law that are expected to be integrated into AI should be. According to what and how should nations act in establishing AI ethical principles?

There are ethical declarations different from each other for the development of trustworthy AI technologies, which creates a controversial issue.

These and other questions regarding the development and management of artificial intelligence reveal the necessity of a reliable ethical declaration that is accepted by everyone and contributes to the ethical development of humans. It is clear that artificial intelligence management that is not transparent or does not promise the use of models that can be explained to the parties will lack ethical sensitivities. The correct and ethical application and management of artificial intelligence models that prioritize the ethical development of humans by focusing on humans and ensuring the reliability of data will affect the commercial, cultural and all activities of the information society (European Commission).

Conclusion

Artificial intelligence systems consist of codes and hardware designed and written by humans to achieve a purpose. They are systems that can receive

thousands of highly complex data from the external environment, redesign the data they have and change its form, collect and analyze visual, auditory and textual data. More than one artificial intelligence can come together for a similar purpose to form a system, this large environment is called the artificial intelligence ecosystem.

In the ecosystem created by artificial intelligence systems, new data can be obtained, as well as reinterpretation of structured data. These activities are important for processing data and making optimal decisions on data.

Although artificial intelligence has technical achievements such as machine learning, symbolic processing, image processing, it is an interdisciplinary field with a priority on social responsibility since it is the work of modeling human actions (Stahl and friends,2020).

In artificial intelligence systems, it is an extremely important issue that the model product should prioritize human development in an ethical context beyond its economic benefit. In artificial intelligence and ecosystem, regardless of the product output, human ethical development should be at the center. The components of the Flushing ethical theory as ethical responsibility in artificial intelligence management are therefore explained in detail in the study. It is an issue that everyone agrees on, without a doubt, that non-human-centered technologies will harm the organic structure of the individual and society. The ethical development of humans should be the main concern of state administrators and policy makers as a social responsibility. As a matter of fact, as we explained the evolution of artificial intelligence in the first section, technology is developing more and more rapidly and expanding its scope of application. This makes it difficult to manage artificial intelligence and its ecosystems.

Trustworthy artificial intelligence design in artificial intelligence management will contribute to the ethical flourishing of humans. In the context of social responsibility, the use of human life should not be left to machine reasoning alone, and this should be formulated with ethical principles and rules and interdisciplinary practices.

Companies that use artificial intelligence, including marketing, need to be aware of the impacts they create on society. Ecosystems designed with ethical approaches are needed to create a sustainable and fair marketing strategy.

References

Aristotle (2009). *On the Movement of Animals; On the Soul: Nicomachean Ethics;* and *Eudemian Ethics.*

Ashby, W. R. (1956). "An Introduction to Cybernetics". John Wiley and Sons. https://doi.org/10.5962/bhl.title.5851

Bynum, T. W. (2006). "Flourishing Ethics", *Ethics and Information Technology,* Vol. 8, No. 4, pp. 157-173.

Bynum, T. W. (2009). Milestones in the History of Information and Computer Ethics. In: Kenneth E. Himma and H.T. Tavani (eds). The Handbook of Information and Computer Ethics. 1st ed. New Jersey, John Wiley & Sons Ltd. 25-48.

Bynum, T.W. (2000). A Very Short History of Computer Ethics. The Research Center on Computing & Society. https://www.cs.utexas. edu/~ear/cs349/Bynum_Short_History. html. 02. 08. 2024.

European Commission-Ethics Guidelines for Trustworthy AI | Shaping Europe's Digital Future. (2019, April 8). https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai (01.05.2024)

Kantar, N. and Bynum, T. W. (2021). "Global Ethics for the Digital Age—Flourishing Ethics." *Journal of Information, Communication and Ethics in Society*, Vol. 19, No. 3, pp. 329– 44.

Kantar, N. and Bynum, T. W. (2022). "Flourishing Ethics and identifying ethical values to instill into artificially intelligent agents." *Metaphilosophy,* Vol. 53, No. 5, pp. 599-604.

Kizza, J. M. (2017). Ethical and Social Issues in the Information Age. (6th Ed.) Springer International Publishing.

McCorduck, P. (2004). Machines Who Think (2nd ed.), Natick, MA: A. K. Peters, Ltd.

Moor, J. H. (1999). "Just Consequentialism and Computing", *Ethics and Information Technology*, Vol. 1, No. 1, pp. 61-65. DOI 10.1023/A:1010078828842

Novikov D.A. (2016). Cybernetics: From Past to Future. Heidelberg: Springer.

Pias, C. (2016). Cybernetics: The Macy Conferences 1946-1953. The Complete Transactions, Diaphanes.

Porush, D. (1987). Reading in the ServoMechanical Loop. Berkeley, Calif. Discourse, 1987-04-01, 9: 53-63.

Quinn, M. J. (2006). Ethics for the Information Age. (2nd Ed.). Pearson International Edition Inc.

Shannon, C. E. (1948). A Mathematical Theory of Communication. *The Bell System Technical Journal*, 27(3): 379-423.

Stahl, B. C. (2023). Embedding Responsibility in Intelligent Systems: From AI Ethics to Responsible AI Ecosystems. *Scientific Reports*, 13(1), 7586. https://doi.org/10.1038/s41598-023-34622-w

Stahl, B., Andreou, A., Brey, P., Hatzakis, T., Kirichenko, A., Macnish, K., Shaelou, S., Patel, A., Ryan, M., and Wright, D. (2020). "Artificial Intelligence for Human Flourishing -Beyond Principles for Machine Learning". Journal of Business Research, 124. https://doi.org/10.1016/j.jbusres.2020.11.030

Turing AM (1950) Computing machinery and intelligence. *Mind* 59:433–460

Weka- https://www.weka.io/learn/guide/ai-ml/what-is-ai/ (27.01.2024)

Wiener, N. (1948). *Cybernetics: or Control and Communication in the Animal and the Machine*, Technology Press .

Wiener, N. (1950). *The Human Use of Human Beings: Cybernetics and Society*. Houghton Mifflin. (Second Edition Revised, Doubleday Anchor, 1954.)

Wiener, N. (1960). Some Moral and Technical Consequences of Automation, *Science*, 131: 1355–1358.