Nexo Revista Científica
Vol. 33, No. 02, pp. 590-596/Diciembre 2020

ISSN-E 1995-9516
Universidad Nacional de Ingeniería

http://revistas.uni.edu.ni/index.php/Nexo
https://doi.org/10.5377/nexo.v33i02.10794

Cognitive Ecology in the Age of the Internet

Ecología cognitiva en la era de Internet

Artur Ravilevich Karimov*, Mikhail Gennadievich Khort, Alexey Alexeyevich Sinyavskiy

Kazan Federal University, Kazan, Russia.

*Corresponding author email: arrkarimov@kpfu.ru

(recibido/received: 16-July-2020; aceptado/accepted: 19-September-2020)

ABSTRACT

The article deals with the problem of intellectual behavior in the era of development of the Internet and social networks. Just as geo-ecology has put the values of nature conservation at the forefront over those of economic gain, so cognitive ecology puts intellectual values at the forefront of the cognitive process. The author substantiates the idea that the Internet has its own cognitive ecology. An overabundance of information requires more complex skills in evaluating and analyzing information, as well as changing value-based intellectual attitudes. It is argued that the theoretical basis for the analysis of cognitive ecology in the Internet age can be the epistemology of virtues, in which various intellectual virtues and vices are studied. The article lists some intellectual virtues and vices that can be demanded when working on the Internet. These intellectual virtues include: open-mindedness, intellectual caution, intellectual courage, intellectual thoroughness, etc. It is shown that manifestation of intellectual virtues is necessary to navigate in epistemologically "unfriendly" environment of the Internet.
Keywords: cognitive ecology, epistemology, Internet epistemology, epistemology of virtues, intellectual values.

RESUMEN

El artículo aborda el problema del comportamiento intelectual en la era del desarrollo de Internet y las redes sociales. Así como la geoecología ha puesto los valores de la conservación de la naturaleza a la vanguardia sobre los de la ganancia económica, la ecología cognitiva coloca los valores intelectuales al frente del proceso cognitivo. El autor corrobora la idea de que Internet tiene su propia ecología cognitiva. Una sobreabundancia de información requiere habilidades más complejas para evaluar y analizar información, así como para cambiar las actitudes intelectuales basadas en valores. Se argumenta que la base teórica para el análisis de la ecología cognitiva en la era de Internet puede ser la epistemología de las virtudes, en la que se estudian diversas virtudes y vicios intelectuales. El artículo enumera algunas virtudes y vicios intelectuales que se pueden exigir a la hora de trabajar en Internet. Estas virtudes intelectuales incluyen: mente abierta, cautela intelectual, coraje intelectual, minuciosidad intelectual, etc. Se muestra que la

manifestación de virtudes intelectuales es necesaria para navegar en el entorno epistemológicamente "hostil" de Internet.
Palabras clave: ecología cognitiva, epistemología, epistemología de Internet, epistemología de virtudes, valores intelectuales.

1. INTRODUCTION

The concept of cognitive ecology is becoming more and more relevant in the context of the development of modern epistemology and cognitive sciences. Cognitive ecology is defined as "multidimensional contexts in which we remember, feel, think, feel, communicate, imagine and act, often together with others, on the fly, in rich ongoing interaction with our environment" (Tribble & Sutton, 2011). In our opinion, this definition contains several important points. First, cognition is always "here" and "now", i.e. situationally ("on the fly"). Cognition takes place in multiple contexts and in a specific environment. Each environment and context has its own specifics. The second point is that we generally consider cognition in terms of "ecology", which presupposes a normative aspect of the discussion of the problem. Ecology is not just a descriptive science like biology or geography. Ecology involves reasoning in terms of "pollution", "garbage", etc. with value-loaded terms. Together, cognition and ecology create a new trend in the development of modern epistemology. This trend manifests itself in two main ways. Modern epistemology should be more value-loaded and considered primarily as a normative discipline, and secondly, it should be more context-dependent, i.e. these normative attitudes should be individualized in different contexts. Both of these postulates need to be clarified. The purpose of this article is to provide a theoretical justification for these postulates and its clarification on the example of one of the contexts in which modern man realizes his knowledge – the Internet.

What is meant by making epistemology more value-laden? Modern epistemology has many variations, but many of them have the belief that epistemology is a normative discipline. Epistemologists use such concepts as "epistemic responsibility", "epistemic blame", and "epistemic virtue"." The emphasis is placed on the concepts of epistemic norm and epistemic value. The role of internal values for modern science is noted, in particular, by L. V. Shipovalova. As such an intrinsic value of science she considers the objective position of the researcher and even calls this quality "virtue" (Shipovalova, 2015). Researchers note an increasing spread of the belief that epistemology is an axiological field of research, the central tasks of which are determined by considerations of epistemic value. Knowledge and justification are important categories, but equally important are intellectual humility, intellectual courage, openness of mind, and other qualities of intelligence that are responsible for excellent epistemic practices.

Thus, more and more attention is being paid to what the literature calls "intellectual value" or "intellectual good". We prefer the term "intellectual good" because the value aspect is more explicit here. There is no single list of what is considered an intellectual good, but in modern intellectual ethics two groups of goods are considered intellectual goods: 1) cognitive achievements – significant results of intellectual activity; 2) cognitive perfections – qualities of the subject that help obtain cognitive achievements. Cognitive achievements include the following: true belief, justification, knowledge (true justified belief), understanding (knowledge with explanation), wisdom (deep understanding of epistemically significant subjects). In the modern epistemology of virtues, epistemic perfections (virtues) include: 1) intellectual abilities (innate talents), such as speed of thought processes, photographic memory, attentiveness, learning ability, etc. (see, e.g. attention disorders in children); 2) intellectual skills (acquired skills): the

ability to clearly articulate thoughts, the ability to recognize argument in the text, the ability to detect the sophistries and intellectual fallacies, ability of finding information on the Internet, the skills of writing scientific papers (for students, scientists), the ability to write texts of public speeches (for the writers), the ability to recognize the qualities of other people (for HR), etc.; 3) traits of intellectual character – stable intellectual habits, intellectual dispositions: the desire to seek grounds for their beliefs, not to give in to wishful thinking, openness of mind, intellectual courage, intellectual autonomy, etc. In this article, we will focus on the qualities of intellectual character, or intellectual virtues, since this issue is less studied in modern literature. The modern direction in epistemology, which studies various intellectual virtues, is called "virtue epistemology" (Zagzebski, 1996; Karimov).

It is obvious that all the listed intellectual values, or intellectual goods, should be formed taking into account a certain intellectual environment. The Internet has become the medium in which the main process of cognitive enrichment and interaction of people takes place.

2. RESULTS AND DISCUSSION

The main idea of Marshall McLuhan, which he expressed in his work "Understanding the media" and which is most often quoted: "the medium is the message." McLuhan expressed this idea in relation to the growing popularity of electronic media at that time, and above all, television. According to McLuhan, telephone, radio, film, and television are breaking the tyranny of the text over our minds, and gradually the Guttenberg Galaxy is coming to an end. However, it is not important that the means of transmitting information has changed. It is important that this means itself replaced the message and is that message. A person reading a book and a person watching TV are already two different people, with different attitudes to the world and different cognitive habits. McLuhan writes: "The effects of technology are not manifested at the level of opinions and concepts... rather, they gradually and without resistance change the patterns of perception" (McLuhan, 2003). As N. Carr observes in this regard: "Any intelligent technology presupposes a certain intellectual ethic, a set of assumptions about how the human mind works and how it should work… Intellectual ethics is the message that a medium transmits to the minds and culture of its users" (Carr, 2010).

The Internet age further reinforces McLuhan's thesis that the medium is the message. The Internet has radically transformed the environment in which modern people learns. And if so, then it could not but affect the cognitive practices of modern humans – active users of PC and various mobile devices. The benefits of the spread of computers and the Internet are obvious to everyone. Today's cognizing subject (the author of the scientific text) can easily do in a few minutes what previously required several days (or even weeks): there are search engines, such as *Google*, *Yandex*, there are specialized electronic library resources, there are, finally, "people's encyclopedia" Wikipedia. There are also social networks, such as Facebook, Twitter, Vkontakte where you can find up-to-date information that is of interest to members of a particular group. All this significantly speeds up and simplifies the process of obtaining information. Hypertext is a technology that allows you to quickly click on links to search for the necessary information.

In recent decades, the Internet has become an important platform for the formation of intellectual attitudes, skills, and mental actions. In general, the Internet has become the main platform or "environment" in which human intelligence is realized. Naturally, in this connection, research has begun to appear about a new cognitive ecology that should accompany human actions on the Internet. We are talking about the fact that the Internet technology itself transforms our habitual thinking actions and forces us to think in a new way. We can talk about the "environment" that

the Internet creates. As noted by Smart and co-authors, one would simply describe the Internet as a global data repository, but it is something much bigger – a tool of social change, scientific discovery, coordination of efforts for solving global problems, in other words, the Internet, in fact, this particular *environment*, which can be quite different processes (Smart et al., 2017).

What is the main essence of the new changes associated with the advent of Internet technology in terms of the process of cognition? Usually, a huge amount of data is available. The volume of generated data by 2020 has reached the level of 40 zettabytes, which is 57 times more than the number of grains of sand on all the beaches of the planet. To date, less than 1% of all available information has been analyzed. Obviously, 1) it is impossible to obtain all the information, and 2) it is pointless to do so. However, knowing in itself is not equal to having information. Physicist is not interested in the state of all subatomic particles at a given moment. He/she is interested in questions such as: what properties do subatomic particles have, why do they interact in this way, what is a particle at all, is it a particle or a wave? etc. The economist is not interested in the price of shares of all companies at 11.00 am today. He is interested in how financial markets work, how companies generate profits, what capital is, what it consists of, why some businesses are successful, and some are not, etc. All of this is not data, but analytics, interpretation, evaluation, expertise, forecasts, etc. To say that every knowledge is just some information/data that can be easily found in Wikipedia, is like saying that 98-octane gasoline is the same as crude oil, or iPhone is the same as the iron from which it is made, or the statue of Venus is equal to the block of marble from which it is cut.

In order to be able to extract intellectual values from an array of data on the Internet, it is necessary to possess certain qualities of an intellectual nature. Usually we speak of character exclusively in relation to moral character and moral virtues. For example, qualities such as compassion, kindness, generosity, and justice. But we can also talk about the intellectual character of a person, about his intellectual habits and tendencies. The quality of an intellectual nature – our personality. Just like the moral virtues, they describe who we are as individuals. This is their main difference, on the one hand, from abilities such as mind, memory, and on the other hand, from "knowledge", "skills", "competencies". That is why the possession of intellectual virtues can be praised in a person (but not good memory or high intelligence).

R. Heersminkin in the article "Epistemology of virtues of the Internet: search engines, intellectual virtues and education" raises an important topic: how to adopt the approach of epistemology of virtues to work with the Internet to improve our cognitive skills of working on the Internet (Heersmink, 2018). Using environmental terms, we can ask: how to counter intellectual “pollution” of the Internet environment, determine what is “intellectual garbage”, what are the ways to “clean” the intellectual environment from the Internet? These questions are part of a broader trend, which can be called “cognitive ecology of Internet”. In this article, we will focus on a narrower question: what is the role of intellectual virtues when working on the Internet?

What are our “online” intellectual virtues and “online” intellectual vices? Of course, they are not very different from “offline” intellectual virtues. However, "online" has its own specifics. The main difference, in our opinion, is that when working in the Net in general, the level of trust should be reduced. The fact is that in the usual case a person enters into intellectually friendly environments. In general, most of the people around will not lie to you. We tend to trust our immediate environment because it is trustworthy. Therefore, a number of prominent authors in the field of virtue epistemology emphasize trust as an intellectual virtue (Zagzebski, 2012; Hardwig, 1991). It is argued that since knowledge is a collective enterprise our basic attitude towards testimonial knowledge should be – “accept if not proven otherwise”. The environment

on the Internet, by contrast, is more likely to be considered “intellectually unfriendly”, and even intellectually “hostile”. If in the usual case, when we meet the first person on the street and ask for directions to a particular street, we tend to trust the answer, then in the case of the Internet, the opposite is true. Here we must proceed from the premise that the information we receive may be incomplete, unreliable, or even "fake", i.e. specially constructed as fake information. In this case, for example, the virtue of trust, which is normally considered an intellectual virtue, cannot be applied. Thus, we should rather assume the reductive attitude to testimonial knowledge – “do not accept unless verified”. It will be important to demonstrate intellectual caution and intellectual carefulness. At the same time, when working with the Internet, it is necessary to demonstrate other intellectual virtues: intellectual autonomy, openness of mind, intellectual courage, intellectual generosity, etc.

Why do we need to manifest intellectual virtues in web search? One reason is that most search engines, including Google, personalize search results. Based on the profile, search engines rank web pages resulting in a results page. Simpson argues that personalization undermines objectivity as it creates 'filter bubbles' that result in confirmation bias (Simpson, 2012).

Here's what Heersmink writes about displaying intellectual virtues when working with search services such as Google: “an Intellectually cautious person will avoid common mistakes when working with Google. Such errors can include jumping to conclusions when we only click on the very first link and do not read other pages to compare different sources of information. An intellectually thorough person will seek deep understanding and will not be satisfied with the first result that comes his way. He will continue his research until he reaches a proper level of understanding… Intellectual courage may be required to search for information in online resources whose content is incompatible with your political, cultural, or religious beliefs... a Person with an open mind and intellectual courage will search for information from various sources and compare its reliability” (Heersmink, 2018).

Of the listed intellectual virtues, one deserves special mention is intellectual thoroughness. It is commonly regarded that Internet gives access to many different opinions, including those that oppose your own views. But the architecture of modern information currents is designed in such a way that it makes very hard for a typical person to get access to the opposing views. Most people nowadays are accustomed to get information form social networks, such as Facebook or Whatsapp. But the information that a news feed generates for a particular user is almost always one-sided, because the news feed is generated from the messages, likes, shares, etc. of a given person’s friends. Only since 2016 Facebook allowed users other reactions for a post, besides “like”, including "sad", or "angry".

Social networks were shown to be the most likely source of fake news. In 2018 a research was published in Science by Vasoughi et al. shows that false news reached more people than the truth: “When we analyzed the diffusion dynamics of true and false rumors, we found that falsehood diffused significantly farther, faster, deeper, and more broadly than the truth in all categories of information” (Vosoughi et al., 2018). In this situation trusting our friends which in normal environment would be praised and cherished, can often lead us to spread fake news in the environment of Internet, because this trust to our friends makes us form quick positive or negative judgments of the opinions that they “like” or “share”, or at least harder to resist them, since that would imply that we must put to doubt our friend’s views. Here we witness a tension between our moral and intellectual responsibilities. From a moral point of view, we are expected to uphold, support and value our friendship. From an intellectual point of view, the truth or falsehood does not depend on whoever speaks it out (our friend or foe), and we are responsible to

give fair judgement to any view, regardless of who it belongs to. Being intellectually virtuous in this case implies putting the objectivity of truth before our friendship.

3. SUMMARY

It is clear that the epistemological environment that is created in Internet during web search, web-page navigation or communication via different social networks is epistemically unfriendly. In this situation the discourse of the special cognitive ecology of Internet is quite relevant. Just as geo-ecology is aimed at protection our physical environment, cognitive ecology is aimed at protecting our virtual cognitive environment. In this article we have defended the idea that modern epistemology turns to intellectual values that are important in modern cognitive environment. The example of this value approach is virtue epistemology which talks about different intellectual virtues – stable positive traits of intellectual character. Because the modern cognitive environment is shaped mostly in the realm of the virtual by means by Internet, we paid special attention to those virtues that are necessary to navigate oneself intellectually in this cognitive environment. These intellectual virtues include (but not restricted to): open-mindedness, intellectual courage, intellectual perseverance, intellectual thoroughness.

4. CONCLUSION

Doctors complain that a new brand of patients emerged: web-informed patients, or WIP-patients. These patients diagnose themselves, assign treatment based on their web search. Dr. Google is becoming more and more popular. Easy than ever before access to information creates the illusion that 10-minute web search replaces 10 years of expertise. In this situation, manifesting intellectual virtues is especially required. Cognitive ecology of the Internet and virtue epistemology of the Internet are not yet fully developed. Epistemological approaches to the Internet need much theoretical foundation. In our opinion, the epistemology of virtues can become such a foundation, since it applies rich and diverse conceptual apparatus to analyze intellectual behavior.

5. ACKNOWLEDGEMENTS

The article is prepared according to the Russian Government Program of Competitive Growth of Kazan Federal University.

REFERENCES

Carr, N. (2010). The shallows: How the internet is changing the way we think, read and remember. London, UK: Atlantic Books.

Hardwig, J. (1991). The Role of Trust in Knowledge. The Journal of Philosophy, *88*(12), 693–708.

Heersmink, R. (2018). A Virtue Epistemology of the Internet: Search Engines, Intellectual Virtues and Education. Social Epistemology, *32*(1), 1-12.

Karimov, A.R. Problems of deep disagreement. Dialogue and Universalism, *29*(2), 239 – 242.

McLuhan, M. (2003). Understanding Media: The extensions of man. critical ed., ed. W. Terrence Gordon (Corte Madera, CA: Gingko).

Shipovalova, L. V. (2015). Objectivity as a scientific value and virtue: conditions of possibility. Almanac "Discourses of ethics" *4*(9), 1(10), 95-110.

Simpson, T. (2012). Evaluating Google as an Epistemic Tool. Metaphilosophy. 43. 10.1111/j.1467-9973.2012.01759.x.

Smart, P., Heersmink, R., & Clowes, R. (2017). The Cognitive Ecology of the Internet. 10.1007/978-3-319-49115-8_13.

Tribble, E., & Sutton, J. (2011). Cognitive ecology as a framework for Shakespearean studies. Shakespeare Studies, *39*, 94–103.

Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online Social Science. ScienceMag, 1146-1151.

Zagzebski, L. (1996). Virtues of the Mind. Cambridge: Cambridge University Press.

Zagzebski, L. (2012). Epistemic Authority: A Theory of Trust, Authority, and Autonomy in Belief. Oxford University Press.

Artur Karimov graduated from Kazan State Pedagogical Institute in 1998, specialty – English language. He received Master degree in Philosophy from Kazan Federal University. He received his PhD degree from Chuvash State university. He received his Doctor's degree from Kazan Federal University in 2017. His areas of specialization include: epistemology, philosophy of language. His areas of scientific interest include: analytic philosophy in general, philosophy of mind, critical thinking. A. Karimov has over 50 publications, including 14 publications in Scopus and Web of Science sources.

Mikhail Khort graduated from Kazan Federal University in 2017, specialty – Philosophy. He also received Master degree in Philosophy from Kazan Federal University in 2019. His areas of specialization include: social philosophy, epistemology, philosophy of language. His areas of scientific interest include: analytic philosophy in general, metaethics, value theory. M. Khort has over 15 publications, including 3 publications in Scopus and Web of Science sources.

Alexey Sinyavskiy graduated from Kazan Federal University in 2017 with Bachelor's degree in Social Philosophy. In 2019 he received an LL.M degree from Kazan Federal University. In 2019 he enrolled in the postgraduate school to obtain a PhD degree. His areas of specialization include: International Human Rights Law, International Business and Human Rights. His areas of scientific interest include: International Public Law in general, analytic philosophy, business ethics. A. Sinyavskiy is the author of 15 publications, dedicated to the various problems in international public law and corporate responsibility for the violations of human rights.