

ROLE OF HUMAN KNOWLEDGE IN CONTEMPORARY INFORMATION SOCIETY AND ITS INDIVIDUAL NATURE

Zdenek Smutny
University of Economics, Czech Republic
zdenek.smutny@vse.cz

Vaclav Reznicek
University of Economics, Czech Republic
vaclav.reznicek@vse.cz

Abstract:

This paper deals with the human knowledge and its role (importance) in today's society, which is known as an information or a knowledge society because of its link with ICT. The interpretation is based on the knowledge of the information science, the system science, and current approaches in the area of the information and knowledge management. The aim is to reflect critically on current on-going processes in the society, or the consequences of the processes related to the "objectification of knowledge" when it is not appreciated by its individual character (nature). At the same time, the proclamations about the importance of the building the society based on the knowledge come more frequently. Informatization needs the substantial changes in the educational process, but unfortunately, these are not the same that we observe now. The data availability promotes our false belief about our information literacy. From the instrumental point of view, it is often confused with working with computers (new ICT). During the would-utilitarian "practically oriented" education for the acquisition (learning) knowledge without the context, ie fragmented knowledge, which doesn't provide a sufficient knowledge base to the individual for his adequate decisions. The individual is often satisfied with a passive receiving the mass media interpretation and resigns to his own (critical, systemic) thinking. The paper combines the narrative with the arguments and the basic analysis.

Keywords: Knowledge, Information, Informatization, Thinking, Education

1. INTRODUCTION

„The world of the future will be an even more demanding struggle against the limitations of our intelligence, not a comfortable hammock in which we can lie down to be waited upon by our robot slaves.“ – Norbert Wiener¹

The text is a critical reflection on the current state of today's so-called information society.² The importance of individual knowledge and its role in the process of interpretation of the meaning of information isn't fully appreciated. True understanding and interdependence of knowledge is downplayed. On the contrary, utilitarianism and instrumentalization of education is manifested. Information literacy is often belittled to the work with the tool, thus a web search engine. Globalizing society which is significantly influenced by the informatization is ironically called "information", although much of the "information-illiterate" individuals are getting into trouble, which changes into the societal implications of their inadequate decisions.

The aim of this paper is to elucidate the role of human knowledge in the process of interpretation of information, or in the process of understanding the phenomena and problems. Based on the presented fundamentals of thought, we draw attention to the fact that the current technical capabilities and the unprecedented availability of "information" that was allowed us by the development of new technologies. But it is not a guarantee of a better orientation of the individual in an increasingly complex world and does not imply a general trend towards "knowledgeable" society. On the contrary, it gives higher emphasis on developing knowledge of the individual.

The presented text tries highlighting the issue in a broader (system) context. After defining the basic theoretical bases in the introductory chapter, the next chapter critically discusses selected problems, which we face in the current practice.

2. THE MAN AND THE PROCESS OF INTERPRETATION MEANING OF INFORMATION

We often hear how the role of modern information and communication technologies in today's society is important. With the development and the practical application of ICT, the individuals, organizations and whole society become more dependent on these technologies. The enterprises have gradually shifted a significant part of "corporate information" in the computer-based information systems and the internet has become not only a platform for the enterprise information technology, but also an important medium. Informatization and promotion in the media, thus the massive penetration of information systems based on the information and communication technologies in various areas of the functioning of society and the greater role of the (interactive) media as something that mediates the information are new phenomena that fundamentally transforming processes in society. Along with the increase the amount of data, or their availability, which are provided by information systems and media as potential information, there is a crucial question about their interpretation to the full-meaning and useful information. The result of this interpretation is the determinant of the understanding of the individual, his decisions and the real action.

The meaning of information can be understood in two ways, (1) as the interpreted meaning of data and (2) as the role which the interpreter attributes (expect) to information in the considered system. Data presented by the symbols (lacking meaning) are interpreted by the individual based on his own individual knowledge to full-meaning information.³ His knowledge is in this process further (re)formed and becomes the basis for the "production of other data" or the creation of explicit models. The role of knowledge in the process of interpretation of the meaning of information is such as it simply illustrates Pic. 1 below. The extent to which the interpretation of individuals are consistent does not depend on some objective or "true" knowledge, but it depends on the extent to which knowledge of individuals mutually correspond.

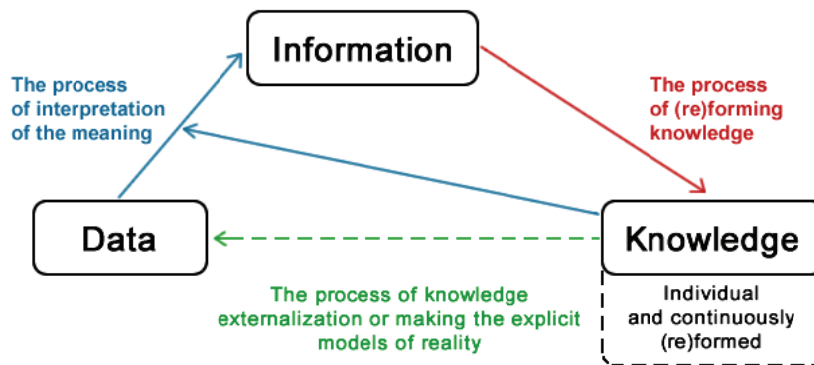
¹ As Norbert Wiener states in (Wiener, 1966, p. 69).

² By adjective - Information - we called society of post-industrial era, which is supported by the development of information technology and process unprecedented amounts of data and it is associated with the shift of employment.

³ It occurs to interpret the meaning of information in both set out understanding of this concept.

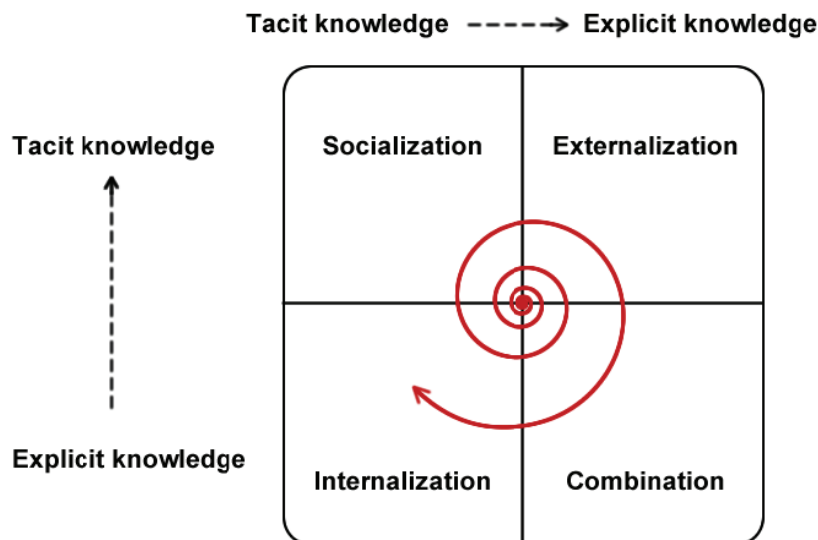
As already was mentioned above, the knowledge in the phase of the externalization from originally tacit (implicit) form is changed to explicit and formalized into the form of data (or explicit models, in Pic. 1 "The process of the knowledge externalization"). Thereafter, knowledge can be disseminated (shared) and modified in the work of a group of people (organization). Knowledge shared in this way is just potential knowledge (not knowledge) and becomes knowledge again in the process of the internalization (when it comes to its assumption, forming). There is the problem of interpretation, again. It is important to say that knowledge is a process⁴ in which many uninsulated conditions and interacting active subjects (for example influenced by cultural determination) participate. A crucial role in the forming of knowledge is the individuality of human. Nonaka and Takeuchi (1995) illustrate the dynamic understanding of knowledge (as mentioned above) as a process of the continuous crossing from the tacit knowledge into the explicit form by the knowledge spiral (see SECI model in Pic. 2 below).

Picture 1: Interpretation of meaning the information, circular process (relationship) – data, information, knowledge.



Source: Authors.

Picture 1: The knowledge spiral, SECI model.



Source: Authors according to Nonaka, Takeuchi, 1995.

In today's complex world, knowledge of the individual is a crucial factor for successful decision making. To understand what type of knowledge is needed, it is necessary to discuss the complex nature of the society or complexity as a problem in general (in this paper, we only indicate problems, because of the nature of our contribution). A complex system is not only characterized by a large number of elements that it includes (this characteristic is not sufficient to describe a complex system), but also by a large number of links and by the amount and the nature (complexity) of realized interaction through these links. The individual as an element of a complex system is not able (its

⁴ Not a static structure.

substance) to understand this system in detail (see Hayek, 1978). He is equipped with the ability to understand the general principles of its functioning, for which he uses the abstraction. This ability requires the necessary knowledge, more precisely, a certain pensum of knowledge to provide a framework of thinking. This framework allows us to interpret the meaning of the information according to both definitions and to "evaluate" the information or the real phenomena and also a willingness to think critically about things.

If we focus on the question of knowledge creation (developing), ie learning, let us remind at this point the Bloom's taxonomy of the educational objectives usually reduced to the classification of six basic "cognitive aspects". This taxonomy characterizes levels (phases) of acquisition (formation) of the skills: memorizing facts, understanding, application, analysis, synthesis and evaluation. Complete (or extended) Bloom's taxonomy (see Tab. 1) characterizes two other areas - the psychomotor aspect and the emotional aspect, including values and attitudes. These aspects should be considered especially if we talk about question of understanding and evaluation, which human binds to emotions (feelings), respectively without it, we can't reflect about "understanding". Let's ask this question (also due to the incorrect understanding of the intelligence and confusing rationality with logicity): Are we too much focused only on the first phase(s) of the knowledge-forming process?

Table 1: Classification of three areas (aspects) of the knowledge creation.

Cognitive area	Emotional area	Psychomotor area
Memorizing facts	Receiving	Imitation
Understanding	Active cooperation	Manipulation
Application	Evaluation	Refining
Analysis	Conceptualization	Articulation
Synthesis	Organization	Adoption
Evaluation		

Source: Authors according to Bloom, 1956 and Dave, 1975.

3. CRITICAL REFLECTION

Today's "information" period is characterized by an unprecedented data availability and the easy way of gaining it and then working with it (interpret them and use them for own decision-making). Data saturation and inability of orientation (read: incomprehension of the real phenomena and processes) is determined by the individual (lack of) knowledge of each individual who is unable to interpret and evaluate them. In this context, the question of "the information literacy" is quite often discussed. The expression Information literacy represents the level of the ability of the individual to "work" with information; specifically with data which is presented to us (it is primarily the ability to interpret the meaning of data). Unfortunately, the information literacy is reduced to the knowledge of the searching, which is further reduced to the literacy in terms of working with the instrument, a search engine on the internet, or to the "computer literacy". People forget that it is not only necessary to be able to get to the information sources and to know the search techniques, but first and foremost it is essential to know (to be able to determine) what information is relevant and what their value is (validity and credibility). Once there is a proclaimed awareness of the importance of the ability to "evaluate" the potential usefulness of the piece of information, even so the role of individual knowledge and thinking in this process is forgotten. In order to develop information literacy, the education should not be (as it unfortunately often is) reduced to mere acquaintance with data, that is confused with "sufficient data saturation". The Austrian philosopher Liessmann writes about "the fragmentation of knowledge" (see Liessmann, 2006), it means learning without mutual connections and with aversion to thinking. In connection with the instrumentalization of education, it leads to the commodification of knowledge (its reduction to goods), which means capitalization of the spirit necessarily resulting in an ignorance, according to Liessmann.

Instead of the knowledge, due to today's economic thinking about best practice, the education is replaced by knowledge management, ie its effective management. Corporate or conference presentations might be an example: "On such occasions, there is a significant disparity between the technical and medial equipment and spiritual content. Not only the domination of technology overlaps words, it already does not allow real thoughts." (Liessmann, 2006)

The human ability to actively work with the available data clearly illustrates his work with the thought constructs (such as mathematics). During this mental activity the person uses acquired knowledge and applies them to the symbols (data) and concepts (mental models). It is desirable to have a "holistic insight" to the solved problem and according to the further, to use the adequate methods to solve a particular problem. The national inquiry in the context of the Czech Republic shows that there has been a negative shift in the mathematical skills among the pupils of elementary school (the last class) between 2005 and 2011 and it is the most of the four monitored areas: Czech language, English language, mathematics and general scholastic aptitude. The milder deterioration was observed in the case of the Czech language. Conversely, the general scholastic aptitude of the pupils in the years 2005 and 2011 are on the same level. It means that pupils are not less knowing but they are not motivated enough to think – to identify (interpret) and to solve the problem (they avoid the unpleasant experience, see below), which underlines the above mentioned.

A fundamental question without satisfaction answer is the question of the role of modern information technologies (especially the internet) and its application in the educational process not only at schools but also in general in the learning process.⁵ In this context, we must remember that the individual human knowledge includes not only the rational aspects, but also the irrational component (emotional) and its essential role which is sometimes (also due to computerization) forgotten. We often avoid real (and unpleasant) experience by escaping to the virtuality. It causes changes in the knowledge creation (particularly in connection with the evaluation that is strongly binded with emotion) that doesn't correspond with reality. We speak about so-called "loss of sense of reality." We can also see a parallel with the problem of "weakening the immune system of the western man". Similarly, as the loss of the immunity of person living in the isolation from the natural environment, it can be seen the loss of sense of reality as a result of this (virtual) isolation – creating inadequate knowledge.

False conceptions of reality are the results of this and a failure of a particular decision resulting from these conceptions. Instead of knowledge adequate for understanding the problems of today's world which becomes more complex, we abound in the fragmented knowledge (ie we "know" selected concreteness, but "do not understand" a whole). We get into a "vicious circle", where we are not able to orientate and understand the phenomena in the society, due to the resignation on the thinking and the need to understand, and because of the presented "information availability" we suffer by data surfeit.

4. CONCLUSION

Some recognize, that the information literacy cannot be reduced to the ability to operate with tool for searching at least to the extent that they proclaim the importance of the ability to "evaluate" the potential usefulness of the piece of information. However, the individual nature of human knowledge and its role in the process of interpretation and understanding keep being neglected. The fundamental fact, that the necessary condition for achieving the information literacy is the development (critical systems) of thinking and the development of knowledge, is in the background because of the instrumentalization of education. More observable processes (phenomena) in education are contemptuous attitude toward "the practice useless" humanities (humiliation role of philosophy and general education), learning the fragmented knowledge (facts) without context, which comports with the way of verification; the testing of knowledge, when the "output" of the educational process is a "manager", who has a set of "best practice" precepts, but paradoxically he leads practice to ruin, because he is not able to react to the new conditions and problems and (in general) who is not able to think. It can be observed a false idea of knowledge uselessness for the sufficient framework for thought, because we live in "the time of readily available information". It could happen that a large part of society will (together with huge technological development of information technology) degenerate to the level of malfunctioning machines that will imperfectly simulate the manifestations of human intelligence. The quote of Norbert Wiener, from the beginning of this paper, is in this context more than meaningful.

⁵ Let us remind: "All doing is knowing, and all knowing is doing." – Humberto R. Maturana and Francisco J. Varela (Stanley, 2008)

ACKNOWLEDGEMENTS

This article was prepared with the financial support of internal grant IG409012 solved at the Faculty of Informatics and Statistics, University of Economics Prague.

REFERENCE LIST

1. Bloom, B. S. (1956). *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay Co Inc.
2. Dave, R. H. (1975). *Developing and Writing Behavioural Objectives*. (R J Armstrong, ed.) Educational Innovators Press.
3. Hayek, F. A. (1978). *Law, Legislation and Liberty: a new statement of the liberal principles of justice and political economy. Volume 1: Rules and Order*. University of Chicago Press.
4. Liessmann, K. P. (2006). *Theorie der Unbildung: Die Irrtümer der Wissensgesellschaft*. Paul Zsolnay Verlag.
5. Nonaka, I., & Nishiguchi, T. (2001). *Knowledge Emergence: Social, Technical, and Evolutionary Dimensions of Knowledge Creation*. New York: Oxford University Press.
6. Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.
7. SCIO.CZ. (2012) *Vysvědčení českým školám: žáci nemají horší předpoklady, zhoršují se ale ve znalostech*. [cited 2013-02-12]. Retrieved from <http://www.scio.cz/media/vysvedceni2012.pdf>
8. Stanley, D. (2008). On Maturana and Varela's Aphorism of Knowing, Being and Doing: A Phenomenological-Complexity Circulation. In *Proceedings of the 2008 Complexity Science and Educational Research Conference*, 1-9.
9. Wiener, N. (1966). *God and Golem, Inc.: A Comment on Certain Points where Cybernetics Impinges on Religion*. The MIT Press, First Paperback Edition.