

# **SCIENTIFIC INFORMATION IN THE DIDACTICS OF THE NATIONAL DEFENCE UNIVERSITY**

**Jerzy KOZIOŁ, PhD.**  
Director of National Defence University's Library

## **Abstract**

*Recently we have been witnesses to the creation of information society. Knowledge is becoming the most important value of the contemporary civilization. Scientific Information Centres and libraries equip their collections with new carriers of information. The changes observed in libraries in recent years have resulted in the development of information search skills of library users. The advancement of IT gave the users new possibilities of information gaining. The most important task of NDU's Library – beyond the traditional duties connected with gathering, preparation and providing sources of information – is the assurance of direct network access to information through systems and computer networks. The development of Information Technology is still giving new information retrieval possibilities which allow fast searching of the library computer catalogues gathering information about the collection. It also results in easier access to the resources of the Internet as well as access to source and factual information at the great speed.*

**Key words:** information society, didactics, scientific information, bibliography

## **Information society**

Global informatisation is becoming one of the factors used to describe the development of 21<sup>st</sup> century civilization. It is expected that information will become the main impellent of societies in their endeavour to satisfy basic material and spiritual needs, similarly to steam energy and electricity in the 19<sup>th</sup> century as

well as atomic energy in the 20<sup>th</sup> century<sup>1</sup>. The phenomenon generates changes in broadly defined security education, mainly related to the nature and character of challenges which contemporary civilisation must face and tackle. It seems that information as the ‘basic asset of humankind’ should be treated as the key imperative of transformation in the activity and thinking of a human being of the 21st century<sup>2</sup>. Information revolution being observed in the world nowadays, creates totally new environment for the process of communication and cooperation between people in different areas of their social-professional activity, *inter alia* educational, scientific, economic, political, cultural, and military<sup>3</sup>.

The changes observed and anticipated in various spheres of social life are connected with the increasing role of information and the development of Information Technology as well as new ways of communication. All this can be seen as a prerequisite for an argument voiced by many experts that we observe a creation of a new type of society, i.e. information society<sup>4</sup>. Information society with the prevailing services sector is at the same time the society of knowledge<sup>5</sup>. In the pre-industrial age people focused on winning with nature. In the industrial society individuals put all the effort to tame the nature with the use of machines. Whereas, the post-industrial age has been dominated by the struggle with information chaos, since the nature have already been subordinated. In this struggle information is one of the key assets. ‘Information’ work is done in the society not only by clerks but most of all by specialists – professionals with broad theoretical knowledge. We have become information society where information is a kind of commodity treated as a special non-material good, equal to or even more valuable than the

1 L.W. Zacher, Transformacja społeczeństw od informacji do wiedzy, C. H. Beck, Warszawa 2007, p.12.

2 M. Furmanek, Społeczne aspekty oddziaływań technologii informacyjnych, w: S. Juszczyk (ed.), Edukacja medialna w społeczeństwie informacyjnym, Toruń 2002, p. 46. L.W. Zacher, Transformacja społeczeństw od informacji do wiedzy, C. H. Beck, Warszawa 2007, p.77.

3 M. Castells, Władza komunikacji, PWN, Warszawa 2013, p. 30.

4 The concept was introduced in 1963 by a Japanese T. Umesao (original name „jōhōka shakai”) in an article on the theory of the evolution of society based on information technology, and popularized by K. Koyama in 1968 in a work entitled *Introduction to Information Theory*.

5 L.W. Zacher, Transformacja społeczeństw od informacji do wiedzy, C. H. Beck, Warszawa 2007, p..207.

material ones. It is predicted that the services connected with information storing, transferring and processing will still develop in the future<sup>6</sup>.

The critical approach being the result of a new quality of socio-economic needs evoked unprecedented demand for scientific information elaborated and distributed by a professional sector of information services<sup>7</sup>. In order to meet the increasing requirements of a competent, effective, and efficient information attendance of users, still newer and more advanced tools and technology are being introduced for the automatization of the processes connected with gathering, development and distribution of information<sup>8</sup>. The analysis of the subject literature<sup>9</sup> indicates that the present development of Information Technology is mostly based on computer technique. Still, it should be noticed that the problem is much deeper than solely the intensive development of IT tools. New social phenomena shape the image of information society<sup>10</sup>:

- predomination of service sector in the economy;
- increasing role of experts and scientists in the professional structure;
- central meaning of theoretical knowledge as a source of innovation and politics;
- orientation on a steered development of technology;
- high rate of information usage in everyday life by the majority of citizens and organizations;
- using uniform or compatible Information Technology for individual, educational, social, professional needs;
- ability of sending and receiving, as well as fast exchange of digital data regardless of the distance;

**6** Y. Benkler, Bogactwo sieci jak produkcja społeczna zmienia rynki i wolność, Wydawnictwa akademickie i profesjonalne, Warszawa 2008.

**7** Ł. Sułkowski, Kulturowe procesy zarządzania, Difin, Warszawa 2012, p. 227.

**8** H. Hollender, Rozwiązań światowe w zakresie platform informacyjnych. in: J. Kisielnicki, M. Gałazka-Sobotka, (ed.) Rozwiązań organizacyjnych zapewniające trwałość systemu informacji naukowo-technicznej. Warszawa: Uczelnia Łazarskiego, 2012.

**9** See.: M. Castells, Władza komunikacji, PWN, Warszawa 2013; R. Kozielski, Biznes nowych możliwości, Wolters Kulwer business, Warszawa 2013, Y. Benkler, Bogactwo sieci jak produkcja społeczna zmienia rynki i wolność, Wydawnictwa akademickie i profesjonalne, Warszawa 2008.

**10** Y. Benkler, Bogactwo sieci jak produkcja społeczna zmienia rynki i wolność, Wydawnictwa akademickie i profesjonalne, Warszawa 2008.

- creation of new ‘intellectual technology’ as the basis for political and social decision taking process.

Recently, the problem has attracted a lot of attention due to the benefits stemming from the new solutions incorporated in the information society. Modern technology, services and the application of telecommunication, ICT, and multimedia services can become a catalyst for the development of the economy, the increasing competitiveness of the economy, creation of new work places, the development of democracy, regions, education, health care, access to cultural property. They are also necessary for defence and national security of the country and its citizens as well as keeping public order<sup>11</sup>.

The role of centres gathering, storing and distributing information is becoming more and more important. As a result, society can reach higher level of knowledge owing to the effective use of the Internet or other means of gathering, processing, storing, and distribution of different forms of information. There are new demands addressed to all organizations dealing with social communication, including scientific libraries which actively use IT means for the distribution of information. In the age of computerization and automation it necessary to have a different look at the five laws of library science, proposed by a remarkable theoretician S.R. Ranganathan<sup>12</sup> (books are for use, every reader his (or her) book, every book its reader, save the time of the reader, the library is a growing organism), where ‘book’ stands for proper, useful information, ‘reader’ for the user of information, and ‘library’ for the system of source and reference information.

**11** L.W. Zacher, Transformacja społeczeństw od informacji do wiedzy, C. H. Beck, Warszawa 2007; Y.Benkler, Bogactwo sieci jak produkcja społeczna zmienia rynki i wolność, Wydawnictwa akademickie i profesjonalne, Warszawa 2008.

**12** Professor of library science in Benares Hindu University (1945/47) and University in Delhi (1947/55). Director of the first Indian school of librarianship, the president of the Indian Library Association 1944/53. In 1957 he was elected a honorary member of the International Federation for Information and Documentation (FID), was made a vice president for life of the Library Association of Great Britain.

## **Scientific information in the didactics of security**

The development of scientific information as an organized activity focused on the provision of particular services (scientific-informative) for the benefit of recipients (users of information), is both stimulated and limited by a panel of factors, which can be generally assigned to two groups:

- external conditions,
- internal conditions.

The external conditions include factors which directly do not depend on the bodies providing scientific information, e.g.:

- openness to scientific-cultural exchange,
- economic situation,
- objective social demand for scientific information,
- awareness level of directive factors related to scientific information,
- level of preparation and richness of the users of scientific information,
- availability of modern IT solutions.

Internal conditions include, on the other hand, factors strictly connected with the state of developments and the manner of operation performed by bodies dealing with scientific information, such as:

- the number and state of equipment of the internal resources of scientific information,
- legal status, structure and organization of scientific information entities,
- the level of availability of information resources related to the cooperation of scientific information entities,
- availability of foreign scientific information resources, both with the framework of cooperation between centres as well as the realization of individual demands,
- qualifications of the staff of scientific information centres,
- the state of technical equipment of scientific information centres.

Traditional educational systems mainly focused on the extension of students' knowledge and passing information. Whereas presently, when we witness the abundance of information and unprecedentedly easy access to information, education must face new challenges. The basic goal of higher education is presently

the preparation of the graduates to fast and effective, single-handed functioning in adult life and particularly work in the conditions created by information society. Thus, the curriculum should integrate the contents of particular subjects and reflect connections between the curriculum and in-hand experience. The presented trends and phenomena, adequate for the concept of information society, support the belief that future education, commonly dubbed education of information civilization, should be characterized by the following points<sup>13</sup>:

- progressive essence of education should be based on the paradigms of cognitive theory<sup>14</sup> and basic assumptions of constructivism<sup>15</sup>; cognitive approach to the process of security education is subordinated to the education of advanced cognitive abilities, necessary in the process of creative solution of problems and taking rational, effective decisions; while the theory of constructivism, typical for the idea of interactive education, provides active participation of students in the process of education through dialog and cooperation,
- ultra-modernity in technological meaning, understood as the ability of using innovative, as opposed to traditional, means and didactic tools, based on cutting-edge electronic and multimedia technology for the use of education process,
- openness to new forms of education, and in particular continuing education, including the parallel one, as well as distance learning with the virtual dimension of education,
- anticipation of education expressed in the contents of curriculum focused on the future,
- flexibility and ability to adjust to changes taking place in broadly understood social-professional reality, ascribed by the top trends which are characteristic to the creation of learning society,

<sup>13</sup> L.W. Zacher, Transformacja społeczeństw od informacji do wiedzy, C. H. Beck, Warszawa 2007; T.Białołocki, J. Moroz, M. Nowina Konopka, L.W. Zacher (ed.), Społeczeństwo informacyjne. Istota, rozwój, wyzwania, Wydawnictwa Akademickie i Profesjonalne, Warszawa 2006.

<sup>14</sup> Cognitive Science – branch of science dealing with the observation and analysis of the operation of senses, brain, and mind, and in particular with their modeling.

<sup>15</sup> If the world cannot be studied directly but only through logical operation, our knowledge is a construction, a construction that must be examined in action – both by the effectiveness of activities as well as the comprehension of the world, Jerome Bruner (Geneva, 1996).

- interdisciplinary attitude, based on the idea of multilateral comprehensive education, providing the graduates with creative participation in social life and effective professional mobility based on the so called surplus competences, being a guarantee for free, independent functioning in new professional situations,
- focusing educational activity on the development and perfection of information awareness of the participants of didactic process; in this situation, shaping the process of thinking and effective information obtaining, rational selection, and operability of information as well as effective creation of operative knowledge based on the gathered information and used in practical way should be seen as the main goal of education.

Functioning in information society, with network as the immanent element, establishing significant number of relations and generating still new pieces of information and knowledge requires special abilities in the scope of adaptation to the pace and scale of changes. In order to survive in such a turbulent world, people should cooperate with others much more than they do now<sup>16</sup>. Nowadays, graduates of universities should be equipped with competences typical for the worker of knowledge, which except knowledge, involve creativity, intellectual entrepreneurship as well as ability to work in a team.

Info-sphere is usually associated with IT environment understood in a broad sense in the form of social, material and technical infrastructure, subordinated to the creation, gathering, selection, processing and distribution of information. It seems that the analysis of info-sphere connected with security education can be carried out on the basis of macro- and micro-system. According to macro-systemic approach the mentioned info-sphere is treated as a comprehensive system of information, adequate to security education, integrated within the general social information infrastructure. While, in micro-systemic approach, the subject of interest can be

**16** It is the so called *small world effect* also known as 'six degrees of separation.' The concept was introduced in 1967 by Stanley Milgram, social psychologist from the University of Harward and Yale, who discovered that any person in the world can be linked with any other person through the chain of five or six acquaintances. This type of small world is based on a bigger structure of human society, created on the basis of relations functioning between people. Small worlds are a structure of network common in the natural and social world, where the interrelated elements are connected either directly or by a short chains of intermediaries [Castells 2008, p. 83].

associated with information environment of a given scientific-didactic institution (university, research-development centre, scientific – research institute, etc.). It should be emphasized that such approaches to the analysis of info-sphere are interrelated and create organic, complementary integrity, as it is not possible that the system of scientific information can function effectively without links to the national and international information environment and autonomous systems of information of particular scientific-didactic establishments. What is more, the enumerated institutions, which are certain information subsystems, cannot function effectively without tight cooperation with the general social information infrastructure.

It is hard to imagine effective functioning of National Defence University, a contemporary body of higher education, without proper informative support. The incoming information as well as the one created and distributed by NDU itself constitute the basis for its functional and task-focuses existence. Thus, it seems obvious that the criteria for the selection of information, which are useful from the practical point of view, should be based on purposeful priorities for activities performed by certain educational institutions. Usually, the main functions and tasks of universities<sup>17</sup>, which determine the commonly needed information, include :

- scientific – research function, focused on the realization of tasks of cognitive – empirical, scientific, methodological character, etc.,
- educational function, focused on stricte didactic tasks,
- pedagogical function, emphasizing the personality-forming role of educational tasks,
- social function including socio-developing tasks focused on the future (temporal perspective), on harmonic cooperation of human beings and nature (ecological perspective), on the participation of the organization in social life (social and political perspective),
- culture-forming function, covering tasks from the field of education understood in a broad sense,
- opinion-forming function, visible in the realization of tasks related to expertise and implementation.

<sup>17</sup> J.G. Fichte, Kilka wykładów o powołaniu uczonego, Wydawnictwo Naukowe UMK, Toruń 2012.

The enumerated fields of functional and task-focuses academic activity determine on the one hand the content related scope of information which is necessary for contemporary universities, and on the other hand – point to information which is created and distributed by the universities themselves. Effective process of obtaining information, including its creation, depends most of all on the quality of information environment. It is necessary to create proper organizational, technical and social information infrastructure. As a result it should be assured that the following priority conditions are fulfilled while its creation<sup>18</sup>:

- it should be adjusted to the scientific-didactic profile of a university,
- in the subject-material aspect it should be the resultant of the personal, technical and documental potential of indigenous character,
- functional-organizational shape and size of infrastructure should assure efficient and fast process of providing dedicated and general information,
- it should also be integrated and compatible with the national network of information; it would help to obtain and combine data from a more complete data base,
- it should also be open to any IT innovations and flexible enough to meet the increasing demand for new types of information resulting from the evolution of the theory and practice of the branch of science dealing with the concept of security and defence.

The above assumptions do not provide the full picture of the complexity of procedures related to the creation of academic information infrastructure. Still, they lead to a conclusion that the NDU's info-sphere includes subject (personnel), institutional (organizational units of NDU) and documental resources (sources) of information together with appliances and information carriers, satisfying the scientific, research and pedagogical needs of NDU.

Personal sources of information are the most important elements of the academic system of information. They entail professional knowledge of particular scientific, scientific-didactic, and didactic staff of NDU. In the context being the focus of

**18** K.Materska: Informacja w organizacjach społeczeństwa wiedzy. Wydawnictwo SBP, Warszawa 2007.

interest there are three types of academic experts who are especially helpful in providing knowledge and shaping the intellect of students<sup>19</sup>:

- ‘luminaries-coryphaeus’ who indicate new problems, ways and horizons or create the basis for epistemological-methodological search; most of all, they develop scientific imagination, since by their performance they present the type of ‘conceptualist-problemist’; the group includes those academics who provide information which constitutes inspiration for creative thinking and solutions of innovative cognitive problems;
- ‘masters-teachers’ who directly care on every day basis, that the adepts absorb the quantum of knowledge and skills necessary for independent academic work together with the canon of the acquired profession deontology. This is the attitude that is desired among the academics who provide information which can be used to systematize knowledge and help to organize individual academic workshops;
- ‘leaders-captains’ who show the direction of search, organize panels of experts and tools to realize the set goals and tasks, they teach how to be a group leader and prepare a plan of team-work. This type of authority is adequate for didactic staff. They prefer pragmatic information i.e. useful from the practical point of view for the research and didactic performance as well as information of ergonomic and praxeological type.

The presented experts, typical for academic environment, point to enormous information resources cumulated in the intellectual potential of any university. It can be concluded that due to scientific and didactic dimension of the activity performed by academics, the following basic types of information created and distributed by them can be enumerated<sup>20</sup> :

- descriptive information – describing the studied scientific reality,
- explanatory information – explaining why the analyzed reality is such and not different,
- diagnostic information – assessing the hitherto academic achievements in particular field of science,

<sup>19</sup> Filozofia a nauka. Zarys encykopedyczny, Wrocław-Warszawa-Kraków-Gdańsk-Łódź, Ossolineum, 1987, p. 43.

<sup>20</sup> Cisek S., Sapa R.: Komunikacja naukowa w Internecie – mity i rzeczywistość, (w:) Komputer – Człowiek – Prawo. Wydawnictwo UJ, Kraków 2007, pp. 39–49.

- prognostic information – anticipating new direction, trends, tendency of the development of particular field of science, knowledge,
- methodological information – indicating the methods, techniques, tools of research which are characteristic for a given scientific sub-discipline,
- information used to systematize the knowledge of the studied scientific reality.

Institutional sources of information entail general scientific-research and didactic achievements of particular organizational bodies of NDU. The number and type of those bodies stems from teleological, task-focused and structural nature of particular universities. The observed differences do not concern constant structure-forming elements being the basis for the functioning of each university. Due to that it is possible to distinguish in the university's infrastructure universal organizational units responsible for the generation, processing, and providing scientific and didactic information. The units include inter alia: faculties, institutes, chairs, departments with their informatorium places in the form of scientific information centres. The gathered information resources respond to the cognitive and practical needs of the units' staff.

They also include individual works reflecting the scientific-didactic achievements of a given educational body. Professional sources of information result from the scientific and educational undertakings realized by the staff. The positive aspects of the information includes: timeliness, reliability from the academic point of view, versatility, and high level of organization.

## **Gathering and distribution of scientific information**

Information resources in the form of documents include materials which are recorder graphically or audio-visually, and present intellectual achievements of people, aimed at the educational needs of a given university.

The rules set forth up to now order and discipline works, the process of publication and distribution of both domestic and international scientific information<sup>21</sup>.

**21** Ibidem, p. 46.

Academic resources in the form of documents are created and stored by dedicated service institutions in the forms of scientific libraries and academic centres of scientific and bibliographic information. Scientific libraries are one of the most innovative institutions, at least if it comes to the implementation of computer technology and information search systems<sup>22</sup>. Thus, it is not surprising that one of the first applications of computer systems was in the information searching systems. The systems could be always divided into two types: library catalogues (OPAC Online Public Access Catalogue) and bibliographic data bases which include human-made meta-data<sup>23</sup>. Later, the development of the Internet made place for the third type of resources, namely varied types of web portals used for the ordering and qualitative selection of the Internet resources. Presently, except those enumerated, there are also full-text services which enable the users to search for information according to structuralized meta-data. It mainly concerns digital libraries and repositories of varied digital objects which are a sign of digital publication process<sup>24</sup>.

Bibliography is the library-related process which is best prepared from the IT point of view for those revolutionary changes. The concept of bibliography is not clearly defined. It is understood as a branch of knowledge and skills connected with the description of documents and their registration. Bibliography is also the whole set of measures and tools which help the librarians – bibliographers prepare bibliographic description and records of documents, thus, it is bibliographic methodology<sup>25</sup>.

Finally, bibliography stands for the organization and coordination of bibliographic activities. However, the term bibliography is used with reference to an organized set of bibliographic description of documents selected according to certain criteria, with the goal to inform about their existence, generally regardless of the place of their storage<sup>26</sup>. Bibliographic record is not the only form of bibliography. Today, the laborious and difficult process of gathering information about documents

22 Ibidem, p. 46.

23 M. Nahotko, Komunikacja naukowa w środowisku cyfrowym, Warszawa 2010, p. 87.

24 Ibidem.

25 A. Bajor Z Zagadnień form Bibliografii, Wydaw. SBP Warszawa 2005.

26 S. Cisek, Nauka 2.0: nowe narzędzia komunikacji naukowej [on-line]. [Date of access 2.05.2011], [http://eprints.rclis.org/archive/00012894/01/nauka\\_2.0.pdf](http://eprints.rclis.org/archive/00012894/01/nauka_2.0.pdf);

is easier due to computerization of bibliographic work. The paper directory is replaced by bibliographic data bases constantly supplemented in accordance with the progress of collections. It is created as a workshop in the process of gathering materials for scientific solution of a problem.

Creating the directory is the initial stage of preparing the bibliographic record for printing<sup>27</sup>. The directory or data base are the initial form of bibliography. It happens, however, that this is the only form of bibliography, since not all bibliographic records are printed.

Bibliography is an indispensable element of such a social activity as scientific information. The essence of such activity is social demand for purposeful gathering, storing, proliferation and distribution of scientific information in the society. The importance of such information in academic environment is significantly increasing.

The processes of information searching can be described from different points of view. Firstly, the system of information searching can be treated as a black box assessed on the basis of the level of satisfaction of the users' needs. In this case it is often assumed that searching for information is caused by the desire to achieve the goal set by the person searching for it<sup>28</sup>. This pattern can be also described as *Information seeking* or *Information behaviour* (in other words *Information seeking behaviour*)<sup>29</sup>.

Secondly, it is possible to focus on the processes realized within the system, which results in the presentation of the search effects as the answer to the posed question. It is a traditional theory of searching oriented on the systems (*information retrieval*)<sup>30</sup>.

The future of bibliography is one of the most interesting problems for all those who are interested in its development and in particular for those who are professionally involved in this process. The librarians and documentarians hold

27 J. Wojciechowski, Biblioteka w komunikacji publicznej, Wydaw. SBP, Warszawa 2010.

28 R. Sapa, Metodologia badań obszaru pośredniczenia w komunikacji naukowej z perspektywy nauki o informacji, Wydaw. UJ, Kraków: 2009, pp. 63–67.

29 Ibidem.

30 S. Cisek, R. Sapa, Komunikacja naukowa w Internecie – mity i rzeczywistość, (w:) Komputer – Człowiek – Prawo, Wydawnictwo UJ, Kraków 2007, pp. 39–49.

an ongoing discussion to find the answer to the following question: how would the work of a bibliographer documentarians look like it the age of information?

Because of the general-scientific and pragmatic goals of information, it is especially important for the staff of the centres of scientific information and bibliography to create thematic reviews of selective, synthetic, analytical, recording and generating character. It would allow to systematize the provided knowledge in the form of dedicated and general information. Presently, there are at least three groups of thematic review, which include<sup>31</sup>:

- thematic, analytical and at the same time critical review, which combine the new scientific and technical knowledge, showing the main and vital tasks and problems which have not been solved yet; such reviews are even in the form of scientific predictions concerning the tendencies and direction of development of a given scientific and technical problem;
- bibliographic reviews which include thematic and analytical characteristics of primary documents devoted to a certain topic and for a given period of time;
- popular and scientific reviews presenting in a suitable form the most important achievements in a given field of science or scientific problem.

We should take into account the increasing tendency to liberalize the scientific – informative services. However, on the one hand it involves the intensification of pressures on the centres of scientific information by the users of information so that their needs are satisfied to a bigger extent, on the other hand – it is inescapable to involve costs for gaining scientific information as the general cost of any activity: scientific, educational, productive, etc, being the inherent element.

The issue of payment for scientific information as well as the compatibility of spreading scientific information with the rules governing the protection of intellectual property remain very controversial issues, especially with reference to the development of computer networks. In this area for many years there have been two contradictory tendencies: firstly, to gradually eliminate any economic or legal restraints which contradict the free access to scientific information and secondly, to treat both scientific information as well as information services in the

<sup>31</sup> J. Ratajewski, Wybrane problemy metodologiczne informologii nauki (informacji naukowej), Katowice 1994, p. 81.

same manner as any goods of market exchange, creating in this way economic and legal basis for their further development.

For the future shape of the intermediary role in scientific communication it is also important who and to what extent will take over the tasks connected with searching for information and controlled organization of the access to the achievements of science. Libraries lost the dominating position in this field long time ago for the benefit of e.g. Google, and in particular such search engines as Scholar.google and Books.google. According to the research carried out by OCLC - Online Computer Library Centre - 83% of students begin searching for information from search engines, 7% look for information in Wikipedia, 2% in social networks and 0% (!) in the services of internet libraries<sup>32</sup>, it does not mean, however, that libraries cannot claim at least part of their past glory or enter the market with new services and products which would correspond more to the requirements of the users of digital network environment. The same research confirms that although it is true that students first refer to the competition, about 60% of them still use library services to find information, students find the library resources more reliable in comparison to information acquired with the use of search engines, and almost 80% of people who referred for help to librarians in the process of information searching think that librarians are a surplus value<sup>33</sup>.

It seems that neither in the nearest nor far predictable future such centres can be replaced. It concerned systematic or circumstantial preparation of bibliographic statements, preparation of statistical information, theme abstracts, searching for and systematizing factual information, etc, both on the basis of a review of own information resources as well as external ones when the demand for such scientific-informative services is voiced rather by group (institutional) users of information.

These are areas in which individual fulfilment of the needs by the user of information would not be profitable or possible to achieve. There are also such fields of scientific – informative activity which can be realized by the information centres optionally, if the personnel and technical conditions allow for it or according to the needs of the users.

**32** Perceptions of libraries 2010: context and community. College students [on-line], OCLC. [dostęp 7.05.2011], <http://www.oclc.org/reports/2010perceptions/collegestudents.pdf>.

**33** Ibidem.

It is obvious that even with the most advanced technical solutions and system of ICT services it is impossible to get rid of centres gathering resources of scientific information and providing it to the users. This role will still be played by big information repositories which specialize in gathering and providing to the public documents of special formal character (e.g. patent descriptions), or documents and information related to a given branch of knowledge (e.g. security).

Such repositories of scientific information will satisfy the information needs to much extent through computer networks, on an international scale. In this situation the increasing commercialization of scientific-informative services is inescapable, but also wanted to some extent. Indeed, it is unlikely that privatization and total commercialization of all centres of scientific information would ever take place in Poland, but financial support from the national budget would be gradually limited only to libraries, archives, etc of special importance for the national culture, for the development of national higher education or for the development of science in fields which require special care of the state. The remaining centres of information, and it would be a bulk of them, would be forced to find financial support to safeguard its operation from non-budget sources. Today, we should fight with the myth that scientific information, which is the indispensable element of scientific, educational, project, production, organizational etc. activity can be obtained free of charge.

To sum up the deliberation on the info-sphere of the National Defence University it can be said that it entails the broadly understood information environment together with human, technical, and financial resources focused on the creation of quantitative and qualitative collection of information, useful from the point of view of the realized goals, function and educational tasks.

The presented trends and phenomena, adequate to the emergent information civilization, constitute new challenges for the education of security. The need of constant formation and perfection of information awareness of the participants of didactic process deserves special attention.

## References

- Bajor A. Z Zagadnień form Bibliografii, Wydaw. SBP Warszawa 2005
- Benkler Y. Bogactwo sieci jak produkcja społeczna zmienia rynki i wolność, Wydawnictwa akademickie i profesjonalne, Warszawa 2008.
- Białołocki T., Moroz J., Nowina Konopka M., Zacher L.W. (ed.), Społeczeństwo informacyjne. Istota, rozwój, wyzwania, Wydawnictwa Akademickie i Profesjonalne, Warszawa 2006.
- Castells M. Władza komunikacji, PWN, Warszawa 2013.
- Cisek S., Sapa R.: Komunikacja naukowa w Internecie – mity i rzeczywistość. in: Komputer – Człowiek – Prawo. Wydawnictwo UJ, Kraków 2007.
- Fichte J.G., Kilka wykładów o powołaniu uczonego, Wydawnictwo Naukowe UMK, Toruń 2012.
- Filozofia a nauka. Zarys encykopedyczny, Wrocław-Warszawa-Kraków-Gdańsk-Łódź, Ossolineum, 1987.
- Furmanek M. Społeczne aspekty oddziaływań technologii informacyjnych, w: S. Juszczyk (ed.), Edukacja medialna w społeczeństwie informacyjnym, Toruń 2002,
- Hollender H. Rozwiązania światowe w zakresie platform informacyjnych. w: J., Kisielnicki, M.Gałązka-Sobotka, (red.) Rozwiązania organizacyjne zapewniające trwałość systemu informacji naukowo-technicznej. Warszawa: Uczelnia Łazarskiego, 2012.
- Kozielski R., Biznes nowych możliwości, Wolters Kulwer business, Warszawa 2013.
- Materska K., Informacja w organizacjach społeczeństwa wiedzy. Wydawnictwo SBP, Warszawa 2007.
- Nahotko M., Komunikacja naukowa w środowisku cyfrowym, Warszawa 2010.
- Ratajewski J., Wybrane problemy metodologiczne informologii nauki (informacji naukowej), Katowice 2004.
- Sapa R., Metodologia badań obszaru pośredniczenia w komunikacji naukowej z perspektywy nauki o informacji. Wydaw. UJ, Kraków 2009.
- Sułkowski Ł. Kulturowe procesy zarządzania, Difin, Warszawa 2012.
- Wojciechowski J., Biblioteka w komunikacji publicznej. Wydaw. SBP Warszawa 2010.
- Zacher L.W., Transformacja społeczeństw od informacji do wiedzy, C. H. Beck, Warszawa 2007.

## Internet

- Cisek S., Nauka 2.0: nowe narzędzia komunikacji naukowej [on-line]. [date of access 2.05.2011], [http://eprints.rclis.org/archive/00012894/01/nauka\\_2.0.pdf](http://eprints.rclis.org/archive/00012894/01/nauka_2.0.pdf);
- Perceptions of libraries 2010: context and community. College students [on-line], OCLC. [date of access 7.05.2011], <http://www.oclc.org/reports/2010perceptions/collegestudents.pdf>.

## Information about the author

Jerzy Koziół doctor of social science (about the security and defence), graduate of the Military Technical Academy, the Faculty of Mechatronics and Aeronautics, as well as the Faculty of Management and Command of the National Defence University, where he specialized in the field of management and control. He is the curator, the director of NDU's Library. His scientific interest revolves around information systems, innovation in didactics and optimalization of decision processes.

