HUMANITIES IN THE DIGITAL AGE:
FROM BRANCH INFORMATICS TO DIGITAL HUMANITIES

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The paper reviews current trends in the humanities who actively use the potential of information technology to research problems whose solution will be crucial to determine the potential scope and impact of digital technologies.

"Digital humanities" are considered as an interdisciplinary field of research that combines methods and practice of humanitarian, social and computational sciences to explore the possibilities of the application and interpretation of new digital information and communications technology in the humanities and education.

Key words: Digital humanities, branch informatics, humanitarian informatics, digital technology.

The rapid development of digital technologies and their integration in almost all spheres of human life determined approach of a turning point in the development of modern society due to the almost endless possibilities for creating, analyzing and disseminating knowledge. In this regard the role of the humanities, which are actively using potential of information technologies for the solution of such fundamental questions as cultural memory and identity, confidentiality and data security, communications and creativity during a digital era, etc., which are crucial for determination of potential, scales, restrictions and consequences of development of digital technologies, increases.

"Digital humanities", which represent the interdisciplinary area of researches uniting techniques and practices of humanitarian, social and computing sciences for the purpose of studying of opportunities of application and interpretation of new digital and information-communicational technologies in the humanities and education, become one of the key innovative directions of development of the humanities in the modern world.

"Digital humanities" are characterized by application of computer methods and systematic use of digital resources in humanitarian and sociocultural researches. This interdisciplinary direction in the development of the humanities, which participants represent new generation of researchers in the social-humanitarian sphere, which unites experts in the field of the humanitarian and social sciences, at the same time capable to apply methods, concepts and technologies of informatics.

On the crossing of information-communicative technologies, research practices and the humanities the "humanitarian calculations", "digital humanities", "electronic humanities" are appearing, which, in their turn, have their own classifications by analogy to the traditional humanities. In general, they "meet the requirements of modern models of the humanities in the

digital environment, they are in search of an institutional role and epistemic commitments and develop as the areas of research which are mutually supplementing each other" [1].

Along with the term "Digital humanities" a number of the terms was widely spread, which are also reflecting the current stage of development of the humanities: e-Humanities, e-Science, e-History, humanitarian informatics, etc. In these new meanings the increasing value has the humanitarian content of knowledge, and not just computer technologies, which were reflected earlier in the terms "Computing in the Humanities", "Humanities Computing" and made a basis of development so-called "branch informatics", within which the experience of application of computer technologies in various branches of humanitarian knowledge was acquired.

Digital humanities is a research of features of a new era, sociocultural consequences of digital technologies, the critical analysis of their opportunities and restrictions, work with a cultural heritage, a format of art creativity, enlightenment: new media, creation of digital libraries, archives, databases of a cultural heritage and museum collections, the digital reconstructions demanding joint efforts of specialists in the humanities and experts in digital technologies. The most widespread researches in the field of Digital humanities are works in such areas as the quantitative analysis of the text, the visualization of data, geospatial modeling, etc.

Essentially, today we are talking about expanding the humanities by attracting new tools, research methods and technologies, focusing on humanitarian methodology as the ground of digital humanities researches. Digital tools and methods are becoming increasingly important in the humanities, but they stop being self-sufficient, they expand tools of the researcher, leaving in the forefront research tasks. At the same time, the border between the humanists who do not notice the world of digital culture, and those who accustom to it, is becoming clearer. According to E.U. Zhuravleva's fair statement, activity of scientists who "expand use and research of information-communicative technologies both as the scientific tool, and as the sociocultural object that needs the analysis", is an important aspect of modern transformations of the humanities [2].

Informatization process affects deeper both the area of humanitarian education: its techniques, technologies and controlling device, and the sphere of basic and applied researches where information technologies are applied not only at a stage of processing, storage and the codified analysis of a traditional material, but also become independent object of humanitarian research.

Exactly this position we find in modern understanding of Digital humanities where the technological tools are subordinated to the solution of content tasks, to the formation of the modern research subject, developing representation of the humanities. Thus, Digital humanities

eliminates a distortion towards the applied researches based on practical application of information technologies in the social humanities, towards preference of logic of means before logic of the content of humanitarian researches that was necessary at the initial stage of informatization in the humanities and promoted the development of the humanities and was observed in the development of any "branch" informatics.

In the same direction the humanitarian informatics develops, which aimed at studying of regularities and consequences of information processes, understanding of the reasons and nature of social behavior and social communications in the information society, bearing in itself an ideological role, which is manifested in the formation of a complete system-information picture of the world, understanding of a community of information management processes in wildlife, society and technics.

Covering various subjects from creation of databases before reconstruction of historical interiors, 3D-modeling of large cultural objects, visualization of spatiotemporal data and etc., Digital humanities include:

1) use of digital technologies in humanitarian researches, first of all, for processing of big data files: from the analysis of ancient manuscripts ("digital paleography") till studying of literary works and documents of various historical eras ("distant reading" or "digital reading");

2) "research of features of a new era, sociocultural consequences of digital technologies, critical analysis of their opportunities and restrictions". And here Digital humanities are closely crossed with the humanitarian informatics which is not simply applying methods and means of informatics in humanitarian researches, but studying the regularities of occurrence and development of information in society, philosophy and methodology of information society, informatization as the social phenomenon;

3) work with "cultural heritage: "digital art", new media, creation of digital libraries, archives, databases of cultural heritage and museum collections, digital reconstructions, requiring joint efforts of specialists in the humanities and experts in digital technologies". [3]

Today it is possible to meet Digital humanities practically at all leading universities of the USA, Canada, Australia, Netherlands, Great Britain, etc. Let's give only some examples.

In the University of California in Los Angeles (UCLA) operates: six key centers and institutes of Digital humanities support: Center for Digital Humanities, Academic Technology Services, the Experiential Technologies Center, the Institute for Digital Research and Education, the UCLA Library, the Ahamanson Laboratory for Digital Cultural Heritage [4].

One of the international leaders of technologies application in art, humanitarian and social sciences is the Department of Digital Humanities at the School of Arts and Humanities at King's

College London [5]. The faculty is included into the Centre for e-Research and is focused on studying of opportunities of computational methods for art and the humanities for the purpose of design and creation of specialized applications (for example, for search and collection of information from Internet editions) and carries out the preparation according to various master programs in the field of digital culture and society, and also according to the PhD program which is considered as the first in its own way program in the world in the field of Digital humanities.

The Cambridge Digital Humanities Network was created in May 2011 as an association of the researchers interested not only in use of digital tools, but also in studying of the results of their application, influence on transformation of processes of knowledge of area of humanitarian and social sciences. Participants of a network believe that distribution of digital technologies opens new areas of research and generates such questions which break traditional disciplinary borders [6]. The network is approved as strategic by Committee on research policy of university.

The largest world center of the digital humanities is the Australasian Association for Digital Humanities Inc (aaDH) uniting the organizations of Great Britain, Japan, Europe, the USA and Canada and organized on the basis of the Australian National University. Main goal of the association is a creation of platform for collaboration of like-minded persons in the field of Digital humanities, for strengthening and development of this direction. The association organizes various events (conferences, symposiums, schools in the field of Digital humanities), gives financial support to students and young scientists and supervises the release of specialized editions at regional, national and international level [7].

Today in the Internet it is possible to find hundreds specialized web pages, accounts in social networks and social media dedicated to Digital humanities, a number of special articles, books, periodicals (for example, the electronic magazine "Journal of Digital Humanities" [8]). In the largest world research centers the days of the digital humanities, the international conferences and the symposiums devoted to the discussion of the problems of Digital humanities (for example, Digital Resources in the Humanities and Arts (DRHA) – a series of annual conferences in which developers, distributors, users of electronic resources of social humanitarian character participate) pass.

Movement in this direction is observed in Russia too. So, within the Association "History and Computer" (AIK) was designated the interest of the Russian researchers to the new direction. It's not accidental because a lot of research trajectories, which are perspective for the digital humanities, have already gained development both within AIK, and in a number of the Russian universities. For example, in the National Research Tomsk State University are conducted the researches in the field of humanitarian and historical informatics, computational linguistics, electronic book publishing, sociocultural features of a digital era, creation of

databases of cultural collections and etc., results of which can make an essential contribution to the development of not only this direction, but also of many humanitarian specialties at the university.

Among the perspective directions in the development of the digital humanities – 3D-modeling of cultural objects, use of digital technologies in humanitarian researches for processing of big massifs of basic data, digital ways of visualization of the spatiotemporal data, allowing to present the most different processes (for example, architectural history of the city, movements of ethnoses, historical interiors); reading and the text analysis in the digital world, which significantly changes in connection with occurrence of the hypertext, stratification of linear structure of the text, occurrence of new lexical, stylistic, conceptual forms; new forms of accumulation and translation of knowledge, organization of the academic community, educational environment.

Certainly, the development of Digital humanities does not mean the need of refusal of researchers from traditional methods of studying of the humanities and mass transition to digital technologies. However today it is impossible to develop the humanities, ignoring the domination of information technologies in the world. The acquisition of digital tools and methods allows researchers to expand the research base in the field of the humanities. Thus, if today computer science and informatics are important for specialists in humanities, who master new tool base and information environment, then in the near future the reverse process will begin, when the specialists in humanities will make a significant contribution to the development of computer science and informatics.

The interdisciplinary position of the digital humanities assumes the association of researchers and teachers, experts in all traditional humanities, in the field of the computer analysis, visualization, modeling, an archiving of data, information search, etc. Modern researchers connect achievement of synergetic effect with Digital humanities development as a result of an integrated approach to research and application of methods of various sciences. Digital humanities provide multidisciplinary approach to research, providing constructive interaction between various research approaches which helps with the solution of complex problems.

As any new direction, Digital humanities attract attention of many contemporary researchers who are increasingly talking about the features and prospects of the development of digital humanities.

The digital humanities are a natural continuation and expansion of the traditional sphere of the humanities and not a replacement or refusal of traditional humanitarian inquiries. According to the opinion of specialists of the University of California, the digital humanities interpret

cultural and social influence of the main components of a new information era – new media and information technologies, and also create and apply these technologies in order to answer on the traditional and born by new era cultural, social, historical and philological problems. 'The role of specialists in humanities is extremely important at this historical moment as our cultural heritage migrated in digital formats and our relation to knowledge, cultural material, technology and society considerably changed" [9].

The person of the 21st century needs substantial technological, social, cultural and intellectual skills, which "include literacy in both traditional and new media, technical skills related to this literacy, development of tools for critical analysis, ... the ability to build models and visualizations for interpretation of large-scale data, the ability to design information systems and technology platforms to ensure long-term conservation and sustainability of digital data, the ability to critically assess the potential and limitations of new technologies". It is the digital humanities which "solve these problems by teaching students the creation and criticism of media content, developing the necessary skills to evaluate this content, managing and converting digital technologies, developing the necessary competence in relation to the information environment" [9].

The professor of the department "Information technologies in historical and cultural researches" of Cologne university (Germany) Manfred Taller made the analysis of a current state of the interdisciplinary area "Digital humanities" in his work "Discussions around Digital Humanities", where he saw "dangers" in development of the digital humanities: focus on the research infrastructure to the detriment of analytical methods and tools; narrowing of Digital humanities opportunities to use information technologies in some areas of the humanities; the threat proceeding from impending "mobile revolution" which can lead to "repetition of the destructive process happening during the personal computer - and Internet revolutions"; potential opportunity for Digital humanities "to play more active role not only in perception of technologies, but also in their development" [10].

M. Taller divided the scope of Digital humanities on key areas related, including, to 1) an analysis of the text through the use of various computer tools – starting from indexing to the formal determination of writing author style, 2) the use of texts or images for receiving new information ("facts") and further analysis of all these "facts" (databases, statistical analysis methods, geographic information systems, geospatial modeling, etc.) in history, anthropology, archeology, art history, where social phenomena or material objects are considered, 3) non-text resources including digitization of large collections of images, management of them, use of three-dimensional models of artifacts, visualization of search queries in databases. Answering the question whether Digital humanities are simply consumers of developments in technology

sphere or they are able to influence the future development of the technologies themselves, M. Taller notes the importance of that "conceptual solutions about the use of new technologies in the humanities were defined by the concepts of humanities" [10].

In parallel with the definition of subject area of Digital humanities the development of modern tools for humanities researches is gathering pace. For example, Stanford experts developed a special site "Welcome to Humanities 3.0: Tooling Up for Digital Humanities" as a launch pad for scientists who are beginning to explore the possibilities of digital tools, programs and methods for expanding the possibilities of humanities. This is the place where the results of researches in the field of digital humanities, databases, visualization tools, etc. are placed. Each material posted on the website assumes the opportunity to leave comments and suggestions for their improvement, to discuss a specific set of methods, tools and ideas, to evaluate the potential of new tools for humanities researches [11].

On the Internet you can find several sites that host the modern tools and resources to perform the digital humanities projects, the registry of digital tools for solving Digital humanities tasks, etc., which are successful attempts to systematize modern tools for digital humanities [12, 13]. For example, the project Bamboo DiRT makes it easy to find and compare a variety of resources for humanitarian researches - from music content management systems to statistical analysis packages, and to give scientist a tool for a variety of digital researches, including data analysis, text analysis, deciphering of handwritten and oral texts, creation of dynamic maps, etc. [14].

Today specialists in humanities already raise also a question about use of grid technologies that is connected with large volumes of digital materials and, therefore, more and more sharply standing questions of storage, access and the analysis of materials for humanitarian researches. It is obvious that in the humanities also can be shown the advantages of grid technologies connected with opportunity easy to process huge and constantly increasing volumes of data, which grow as a result of digitization, with network structure of scientific cooperation, allowing the researchers working over similar projects and divided by distance, to be integrated into virtual scientific networks and safely exchange data from reliable sources [15, 16].

Original attempt to present a systematic understanding of the content, problems and prospects of the development of digital humanities became "Manifest Digital Humanities", published in May 2010 by Marin Dakos, professor of history, director of the Center for Open Electronic Publishing (France). In the Manifest its emphasizes that digital methods of research are important for all the humanities and based on scientific paradigms, accumulated by each of the relevant disciplines, using the tools and prospects opened by digital technologies. "Digital humanities by definition are interdisciplinary and carry in themselves all the methods, tools and

perspectives of knowledge related to digital technologies in the humanities". According to the authors of the Manifest opinion, courses on Digital humanities have to be included in training programs on humanitarian and social specialties, literature and art [17].

The digital era affects all researchers, but from this does not follow that the scientist-humanist surely has to understand programming languages. Application of calculations is necessary for the specialist in humanities not so much for acceleration of speed of researches, as for providing new ways and new paradigms for studying of cultural artifacts. Digital humanities allows to see how new technologies influence the concept of the knowledge, how the development of the digital world expands source base of researches, creates new types of data, radically changes nature of researches. The modern researcher has to learn to work not only with traditional texts and documents, but also with multimedia materials, metadata, GIS-sources, 3D models and other types of the new sources which were born by a digital era.

Modern information environment imposes new requirements for the system of humanitarian knowledge. Development of various information and communication technologies, especially in the last decade, has had a significant impact on the humanities, expanding access to materials for research, providing to scientists much greater opportunities for cooperation, opening a whole new range of research methods, including interdisciplinary.

Digital humanities development convincingly shows that informatization promotes new synthesis of humanitarian and natural sciences, overcoming of their alienation from each other. Research and project activity in the field of Digital humanities is positioned as interdisciplinary and collective. The educational format of Digital humanities assumes the formation of new models of thinking on the basis of synthesis of information technologies and achievements of the humanities.

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