Development of Methods for Studying the Image of Culture in the Digital Era

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There are a wide range of characteristics of cultural development in the digital age. One of the main features among them is the impact of modern information and communication technologies on the development of culture, which causes the new meanings and images of culture. These phenomena appear both in a real, traditional incarnation, and in a new — digital one. Moreover, both of these images are interconnected and often they are two sides of a cultural picture, process or phenomenon. The widespread use of information and communication technologies in the cultural sphere allows a person to realize his cultural potential. As a result, the cultural space is gradually saturated with works and objects of digital culture, digital art. And such objects no longer have analogues in the real world. They act as independent cultural phenomena and dominants, generating new cultural meanings. Therefore, an effective and comprehensive study of cultural images is possible only via new methods which are based on the information and communication technologies application, i.e. methods of Digital Humanities. Several new approaches to the study of culture are offered in the paper. They allow us to study the modern pervasive social and cultural space more effectively. These methods and approaches are used both in the scholarly research conducted by the authors and are effectively used for the study of culture by students of the St. Petersburg State University.

Keywords: Digital era, image of culture, methods, studying, information and communication technologies, Digital Humanities.

Introduction

One of the urgent tasks of currently dynamically developing society is maintaining continuity in culture through the transfer of the cultural code. The relevance of this task is determined by the fact that information and communication technologies are being intro-
duced into people’s lives, which are not only convenient tools for ensuring life in the information society, but also act as new cultural dominants and stimulate the development of new cultural forms. There are digital cultural phenomena, virtual cultural objects among them. On the one hand, the virtual cultural space reflects the real culture, and on the other hand, it gives rise to independent cultural forms that have no analogues in the real world.

Phenomenon of the pervasiveness of the social and cultural space is based on the fact of the interaction between real and virtual forms of culture in the digital age. Perception of the social and cultural space as pervasive is one of bases of new meanings that penetrate into the culture that arise when the real space is supplemented with digital cultural concepts and phenomena.

Pervasive cultural space is saturated with information systems, digital objects (virtual museums, augmented reality, electronic guides with GIS, laser shows, QR codes, RFID tags, and many others). It is penetrated by digital information streams between these information systems, digital objects, all kinds of sensors and actors (people) who can perceive information and interact with this space and with each other only through the use of information and communication technologies.

Pervasiveness calls a new attitude to the processes of transferring the cultural code, which should take place both in traditional forms and through the active involvement of digital forms familiar to young generations. At the same time, through the development of digital cultural forms, the younger generation is inevitably involved in the development of traditional culture. And the active activity of a person in the digital cultural space leads to his involvement in the processes of cultural development.

**Socio-cultural Information Space as a Space for the Study of Culture**

Development of civilizations has led to the emergence of different ways of the cultural code conveyed from one generation to another. They exist at the wide range of various levels of human inclusion in social and cultural interaction:

— direct: through life inside a certain socio-cultural environment (family, domestic environment, everyday life);
— purposeful: the impact of society on a person through the education system (upbringing, socio-cultural adaptation, the system of additional education);
— creative: the inclusion of a person into the processes of cultural creation (self-expression, professional activity).

One of the most effective among them is purposeful — through the inclusion of a person in the study of culture. Such study can be carried out both through scholarly or scientific research and also in the course of the educational process. We believe that in the developing information society the study of culture can be carried out most effectively in the educational process, taking into account the pervasiveness of the information socio-cultural space. Pervasiveness connects with modern ICT culture development. This affects the formation of new meanings and images of culture. Culture in the information space exists both in the real (traditional) form and in the digital one.

At the same time, the ‘digital culture’ generated by the processes of digitalization is increasingly claiming the role of an independent cultural phenomenon, forming new images (characters?). Real and virtual cultural images interact with each other, and often they shape different types of cultural image, phenomenon or process. Therefore, the study
of culture is impossible without a comprehensive study of the relationship between the real and the virtual (‘digital’) information socio-cultural space.

In fact, pervasiveness lies precisely in the peculiarity that the social and cultural space consists of real and virtual (‘digital’) space, which both complement each other and exist as independent cultural concepts and phenomena. The virtual information social and cultural space consists of various elements: Internet sites, service-oriented and information Internet portals, and social networks. Depending on the functions performed, all elements of this space can be differentiated in some levels [1].

Interrelations between the elements of the socio-cultural information space can be presented with the scheme which includes horizontal and vertical links (figure):

At the level of information there are flows both at the same level (horizontal links) and between levels (vertical links). The analysis of this complex information system allows us to establish the main functions that the socio-cultural information space implements:

— implementation of cultural policy;
— getting feedback from citizens, on the basis of which the development of the socio-cultural space takes place (from the side of society);
— formation of cultural needs and their satisfaction;
— preservation of culture and cultural heritage;
— transmission of the cultural code to new generations;
— involvement of the younger generation into the development of real (traditional) culture;
— involvement of a person into the creation of cultural (development of culture).

In this connection it is proposed to use approaches based on the application of the Digital Humanities methods. Without obtaining them, it is impossible to discover ac-
Incidentally the social and cultural space presented in digital form. In the frame of this paradigm, the methods of studying culture must necessarily be based on the application of information and communication technologies (ITC).

**Research of Culture via ICT: Methods and Approaches**

The information society development is accompanied by a constant and steady increase of information generated by the human society, including information that reflects its culture. Penetration into the culture of digital technologies generates both the processes of digitization of cultural information and the emergence of new digital cultural forms and objects (multimedia installations, virtual reconstructions, digital corrections, etc.). Aforementioned circumstances determine the need of studying both traditional and digital forms of culture. The effectiveness of the study of culture directly depends on the application of methods based on the use of information and communication technologies.

Such methods have traditionally been combined into the applied interdisciplinary direction ‘Digital Humanities’. It is the application of information and communication technologies for the search and processing of digital information in various humanitarian studies [2–5]. The main areas of ‘Digital Humanities’ traditionally include the following areas [6]:

1) the analysis of text as text (for example, literary studies, editorial philology, computational linguistics, corpus linguistics);

2) information processing extracted from many sources: texts, descriptions of images, spatial relationships (for example, history, anthropology, archaeology, history of art);

3) non-textual resources processing: managing large collections of images in such fields as archaeology or the history of art; the usage of three-dimensional models of artifacts in these ‘visual’ disciplines (for example, visualization results of literary studies, linguistics, database queries or statistical analysis);

4) research on the impact of the digital environment, software on the humanities in general (Humanities Computer Science).

‘Digital Humanities’, for instance, find their application in the study of literature and culture (comparative literary and cultural studies) [7–9], art in the study of films [10], religious studies [11], studies of cultural memory using the biographical method [12; 13]. The applied application of the methods of ‘Digital Humanities’ is aimed at meeting the needs for access to cultural heritage [14]; search, analysis and processing of digital content related to cultural heritage from a set of heterogeneous and distributed storages [15].

The ‘Digital Humanities’ methods are used in the study of culture in education, for example, in the study of foreign languages [16], literature [17], museum studies etc. Note-worthy, in a digital society, when studying culture using the methods of ‘Digital Humanities’, digital competencies are formed, which involve the use of information and communication technologies in further professional or research activities related to the preservation, development and study of culture.

**Development of the Digital Humanities Methods in the Study of Culture at Classical Universities**

Based on the authors’ experience in teaching various academic disciplines as part of the training of Bachelors and Masters, it offered several effective ‘Digital Humanities’ methods of the study of culture. They have been tested for several years at the Saint Pe-
 Petersburg University in the study of culture by Bachelors and Masters in the following Programs of 'Cultural Studies', 'Museology and the Protection of Cultural Monuments', 'Applied Informatics in Art and Humanities'.

**Synthetic Method**

The synthetic method is an integrated approach to the application of information and communication technologies for searching, extracting, explicating and intellectual analysis of contextual knowledge presented in digital form [18]. The method application is aimed at searching and analyzing new images of culture, and new cultural meanings. Also, the synthetic method involves getting the following research task in the course of the study of culture:

— identification of new cultural meanings, images and phenomena;
— formation of a terminological cultural landscape;
— conducting a comparative analysis of Russian and world trends in the development of culture;
— identification of trends in the development of various areas of culture;
— construction and interpretation of trends in the identified new directions in the development of culture.

In addition, the synthetic method allows the analysis of non-textual objects through the automated analysis of their textual descriptions. For example, to extract metadata of contextual knowledge of non-textual objects using QR codes; RFID tags; using scanning systems and intelligent recognition of visual objects, neural networks, artificial intelligence systems, etc. It is proposed to use a unified specification to describe metadata (for example, Dublin Core Scheme). This will allow to create and integrate various databases of non-textual object contexts:

— museum collections;
— street sculptures;
— memorial plaques;
— monuments and memorials;
— architectural structures and other cultural objects.

In practice, the synthetic method involves the sequential implementation of the following steps:

1) selection of digital information resources representing information relevant to the subject area under study in the most complete form;
2) search for text documents (descriptions of non-textual objects) in digital information resources using built-in search engines;
3) explication of contextual knowledge (contexts) from selected text arrays — expert evaluation of materials — and, on its basis, a qualitative selection of documents that are most relevant to the research topic.

After selecting the required array of text documents, an automated analysis of contextual knowledge takes place either using analytical tools of digital information resources (for example, the scientific electronic library Elibrary or the abstract and analytical base of scientific information Scopus), or using software tools and information systems designed to extract and analyze contextual knowledge (for example, Voyant-tools, Sketch Engine, VOSviewer) [19].
As a result of the contextual knowledge analysis, collections of text fragments (contextual knowledge) are compiled, which contain descriptions of the studied cultural phenomena, and objects.

**Massive open online course**

One of the most controversial phenomenon of the digital society culture is Massive Open Online Courses (MOOCs). Designers of such resources get very positive feedback from students and extremely negative feedback from teachers. At the same time, numerous claims of the expert community usually boil down to the fact that the MOOC cannot replace the university, since it can not provide a quality education. Arguments of varying degrees of persuasiveness are given in favor of this assertion [20; 21].

The concept of dividing these electronic resources into x-moos and s-moos seems to us closest to the truth. [21]. Wherein the former represent a mechanistic transfer of the traditional offline course to the electronic environment. They are characterized with a specific goal associated with the completion of the course and obtaining confirmation of certain knowledge in the subject. While s-moos are aimed at such an organization of the educational process, when the material is aggregated by the network community of students, and not pre-selected by the course authors, accordingly, the pedagogical design of the resource is based on the organization of network interaction of students with each other based on dialogue and accumulation of knowledge.

In our opinion, one of the most successful examples of such courses are the resources developed by the Museum of Modern Art (MoMA) in conjunction with the Coursera portal, which are based on the "method of learning through inquiry" (Inquiry Based Learning), which meets the expectations of students. Surveys conducted by us show that Bachelors and Masters consider MOOC as a platform for expanding the circle of professional communication and information opportunities.

This contradiction can be resolved, in our opinion, by changing the survey horizon. From the point of view of digital humanities, MOOC is not a ‘pedagogical’ resource, but a ‘media’ one, aimed at the presentation of knowledge, and not at assessing the work of a student. In the web2.0 space ‘no student, no teacher’, everyone is equal in the matter of knowledge presentation. Obviously, the aggregation of educational content is an extremely dangerous business, fraught with the degradation of the academically verified component of this content. It is where the huge potential of previous experience of university education comes to the rescue and the teacher is an expert in his field and an indisputable authority in the audience.

Meanwhile, the development of online learning does not negate the achievements of offline trainings, just complements them. Just as the book in the fifteenth century supplemented the lectures of the professors of European universities, whose indignation at the fact that their disciples had access to books is somewhat reminiscent of the woeful remarks of the modern opponents of MOOC. We believe that in the web 2.0 paradigm, MOOCs are an electronic platform that does not in any way replace the classroom, and are included in the traditional didactics of higher education based on teaching methods that are adequate to the new realities.

The analysis of the Coursera materials and many years of experience allow the authors to assert that the classical methods of testing student knowledge, based on the student’s
answers to the teacher’s questions in the virtual space, do not work. Also, the effectiveness of tests raises many questions. Meanwhile, the game methods are of interest to students and allow obtaining results that convincingly testify to the level of development of the competencies of a professional activity in a digital society.

Application of MOOC’s elements within such blended courses as Museum Information Systems, Digital Heritage, Virtual Museums, and Innovative Technologies in the Museum competencies aimed at studying culture are developed in students:

— possession of the skills of a systematic approach to formalize the solution of applied problems in the field of museum business;
— possession of skills in studying modern trends in the development of information technologies in the context of museology;
— knowledge of modern information technologies and software, including domestic production, to solve a set of tasks related to the development and preservation of digital heritage;
— possession of skills in the application of modern information technologies and software, including domestic production, to solve problems in the field of digital heritage;
— ability to use modern technologies for creating multimedia information;
— ability to place multimedia content in information systems.

Aimed to development these competencies, the Faculty of Arts (St. Petersburg State University) has been developing a blended learning environment from 2016 up to the present moment. This virtual solution combines corporate electronic resources of the St. Petersburg State University and open digital resources. The latter include the ‘Virtual Russian Museum’ portal, massive open online courses developed by the New York Museum of Modern Art (MoMA) together with the ‘Coursera’ MOOC portal, ‘Fundamentals of Working in a Digital Environment’ MOOC developed by a team of experts of the St. Petersburg State University under the guidance of Professor N. Borisov in pandemic time.

Training of future experts in a virtual environment is carried out on the basis of the game methods: learning through inquiry (Inquiry Based Learning) and the method of projects.

**Project Method**

Another method is related to the processes of studying culture through the organization of learning in a multicultural environment. The study of the specifics of the processes of learning implementation can be considered in the context of the ideas of cross-cultural didactics aimed at developing the approaches for the organization of cognitive activity in a multicultural environment. [22; 23].

Cross-cultural didactics explores the following aspects: the values of purpose and learning in each cultural group; cultural features of cognitive activity; application of different styles and methods of teaching; specifics of pedagogical discourse; methods of organizing feedback and control and measuring materials in relation to a multicultural environment. To build a multicultural educational environment, it seems necessary to combine various educational systems and models, because it would help to remove sharp cultural contradictions and combine the advantages of each educational system. On the example of the project method, the ways of solving this problem in the virtual space are shown.
The methodology is a system of tasks aimed at developing digital competencies through pedagogical communication. The depth of development of competencies is carried out on the basis of the systematics of B. Bloom's pedagogical goals [24]. The assignment set includes the following tasks: generalization of lecture materials (an essay done by each student once a week or once every two weeks, in total there are 8 to 16 essays per semester), implementation of an educational project, filling in individual semantic maps (the method of personal meaning maps), surveys, and tests [25].

The implementation of the educational project is included in the course program and consists in the creation by each student of an electronic resource called ‘Virtual Museum’. The project is being implemented through the following set of tasks: (1) developing a name for the museum; (2) development of the concept of the museum (including the target audience (audience) of the museum and methods of its (their) activities); (3) development of the museum’s collection; (4) rationale for the technological implementation of the museum; (5) virtual tour in the museum; (6) project presentation; (7) evaluation of the project by fellow students, faculty and external experts, if possible. Work on the project takes 16 hours provided by the Course Program in the ‘Practical Assignments’ block [26].

The results ley us indicate that the method of projects allows to include students in the educational process and organize activities related to the implementation of the functions of scholarly research, discoveries, innovations already at the stage of training future specialists [27].

As the learning tasks are completed, students shape a virtual museum as a prototype of an individual professional environment, which becomes part of the courses virtual space, and, consequently, a virtual component of the learning environment of the St. Petersburg State University. Potentially, these spaces can be transformed into expert communities in the future professional life of their authors. Tracking the process of origin and development of these hypothetical communities can lead to very promising discoveries in the field of network pedagogy in the methodological and empirical aspects [25; 26].

The methods and approaches considered in the article are used by the authors both in their own scholarly research and are effectively used for the study of culture by students of the St. Petersburg State University. Elements of the MOOC technology and the project method are practiced in the training of Bachelors of the Faculty of Arts. Elements of the synthetic method were tested in the training of the fourth grade Bachelors in the field of ‘Cultural Studies’ at the Institute of Philosophy in the framework of teaching the discipline ‘Natural Science Methods of Cultural Studies’. Methods and technologies of search, explanation and data analysis in the study of culture were discussed in the ‘Text analysis’ topic.

Conclusion

The dynamics of the development the information society, in general, and information and communication technologies, in particular, affects the steady development and methods of studying culture that exists both in real and digital space. The study of culture is increasingly based on methods that are included in the concept of ‘Digital Humanities’. These methods are constantly evolving.

The research allows identify the specific features of modern university education, the introduction of methods into the practice of studying culture using modern ICT, which also leads to the formation of new meanings and images of culture.
Applying the synthetic method allows solving actual problems in various social and cultural practices and shape scholarly reflection of the obtained results, which contributes to the development of modern humanitarian knowledge.

The implementation of MOOC elements makes it possible to organize the study of culture in blended forms of education, and the project method is aimed at an active and creative study of culture in the context of its pervasiveness.

Noteworthy, beside open digital resources and freely distributed software (free and open source software), there is a fairly large number of commercial resources (publishing platforms, abstract databases of research publications, digital libraries) and commercial software. This gives rise to the problem of ‘digital inequality’ in the academic environment and educational space, because not all researchers, teachers and students have an opportunity to use commercial resources and software tools in their cultural studies. In this regard, the effective implementation of the considered methods of ‘Digital Humanities’ in the cultural studies is based on the priority of using precisely available digital information resources and software tools.

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Развитие методов изучения образа культуры в цифровую эпоху

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Развитие культуры в информационную эру обладает рядом специфических особенностей. Одна из основных — это влияние на развитие культуры современных информационно-коммуникационных технологий, что приводит к формированию новых смыслов и образов культуры. Она предлагает перед нами как в реальном, традиционном воплощении, так и в новом — цифровом. Притом оба этих образа взаимосвязаны и зачастую являются двумя сторонами какого-либо культурного образа, явления или феномена. Повсеместное использование информационно-коммуникационных технологий в культурной сфере позволяет человеку реализовывать свой культуротворческий потенциал. В результате пространство культуры постепенно насыщается произведениями и объектами цифровой культуры, цифрового искусства. И такие объекты уже не имеют аналогов в реальном мире. Они выступают как самостоятельные культурные феномены и доминанты, порождая новые культурные смыслы. Поэтому эффективное и всестороннее изучение образов культуры возможно только с применением новых методов, основанных на использовании информационно-коммуникационных технологий, т. е. методов Digital Humanities. Методы Digital Humanities не только основаны на применении информационно-коммуникационных технологий, но и нацелены на использование в качестве эмпирической базы научных исследований информации, представленной в цифровой форме на различного рода электронных сетевых ресурсах. Мы предлагаем несколько новых подходов к изучению культуры, применение которых позволяет более эффективно изучать современное первоначальное социокультурное пространство. Эти методы и подходы используются как в проводимых авторами научных исследованиях, так и для изучения культуры студентами Санкт-Петербургского государственного университета. Развитие этих методов актуализирует изучение культуры в условиях первоначального социокультурной среды.

Ключевые слова: цифровая эпоха, образ культуры, методы обучения, информационно-коммуникационные технологии, цифровые гуманитарные науки.

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