

Conference Paper

Designing an Educational and Communication System at University 4.0 as a Model of a Democratic Society: Structural Transformations

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Abstract

The article discusses some global trends in the field of education and higher education studies and their acceptance in the Republic of Kazakhstan, in particular, the transformations associated with the concept of Industry 4.0. The study will examine the following questions: How does the university change in the conditions of the digitalization of all areas of human activity, including knowledge? What will be the consequences of such changes for society? The digital transformation of the university is primarily changing its communication practices. It is communication and its structural changes that underlie structural changes in power. According to some theorists (Hannah Arendt, Jürgen Habermas), public communication is possible only if there is a public space (public sphere). These ideas are based on the idea of 'public' expressed in Kant's political work. The study will attempt to theorize whether communication design is possible and which academic communication is better suited to the ideals of a democratic society.

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Received: 13 January 2020

Accepted: 22 January 2020

Published: 30 January 2020

Publishing services provided by
Knowledge E**Keywords:** the Republic of Kazakhstan, 4th Modernization, Industry 4.0, University 4.0

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Selection and Peer-review under the responsibility of the 4th CTPE 2019 Conference Committee.

1. Introduction

Since 2017, the term "Industry 4.0" has become a watchword for officials of the Republic of Kazakhstan. The presidential text of the program of December 31, 2017 "pointed a finger" at the much-needed changes related to the digital transformation of the world [1]. Without discussing the public reaction to certain points in this program, we cannot but agree with the evidence of these social transformations not only in Kazakhstan, but also in the world.

One of the priorities of the program is one that has attracted the attention of the academic community. It is about improving the quality of human resources, the primary responsibility of which is national education. "Our goal is to make education the central

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link in the new model of economic development," the text reads on the official presidential website. Several academic forces understood it as a guide to action and responded with their own programs for transforming universities into University 4.0, that is, first of all, into a digital university. And what exactly will this mean?

According to the "Industry 4.0" concept, the added value in the process of production of goods is ensured by the integration of physical objects, processes and digital technologies. The physical processes are monitored in real time, and the interaction between machines and human beings is emphasized. The program affirms: 'Emphasis will be placed on the development of creative and critical thinking, as well as the use of modern educational technologies in the learning process.' [1]

It is clear that in the area of higher education digital communication skills need to be implemented at all levels, while providing adequate communication with youth and with the academia in the process of internationalizing higher education and research. Responding to the challenges of the fourth industrial revolution, University 4.0 must integrate the cyberphysical complex and the digital ecosystem into a single world -- a combination that simultaneously includes real academic work and research and their virtual counterparts. The concept of "University 4.0" involves the use of cloud technologies; automation of the University's various activities; implementation of intelligent technologies in campus infrastructure management; and using Big Data technologies to create an analytical base [2].

The main consequence of the introduction of digital communications in university life will be a change in the model of academic communication at all stages. This is probably where academic communication design theories can fulfill their main role. In fact, the theory of academic communicative design itself must be based on a critical basis, because several hypotheses are at the core of this theory. Firstly, this is the hypothesis itself about the possibility of voluntary transformation of the societal structure. Indeed, is it possible to act on society? Is it not a utopian idea to make society learn to work for the best? Thus, the Kantian political idea is at the heart of the discussion about the possibility of structural transformation (design) of society (and, consequently, the university).

Secondly, if such a design is possible, which theory is best applied? Does a structural change in the public sphere lead to transformations of academic communication, or, on the contrary, does design in the field of academic communication turn the public sphere into a democratic one? For Kant [3], [4], the first condition for the possibility of the existence of a free state and educated citizens is the ability for an intellectual to

express himself publicly. So where is the cause and where are its consequences? In the freedom of public expression or in the design of a public space that entails freedom?

Finally, thirdly (but the list of questions is not exhaustive), are the theories of bourgeois-democratic public space applicable to the society of Central Asia, which did not spend the same historical periods of transformation of public space?

The following sections of the article analyze some theories that will serve as a starting point for understanding which designs would be acceptable to University 4.0 in a democratic society.

2. Public Space As a Condition for a Democratic Society

The study begins with certain assumptions, taken as axiomatic. The first premise will consider a certain type of vision of democracy as a fundamental ideal for all possible particular types of democracy. In connection with the subject of the article (education), the theory of what democracy is expressed by the pragmatist John Dewey in his book *Democracy and Education*, and especially in his work *Creative Democracy --The Task Before Us*. As Dewey said:

“Democracy is a way of life controlled by a working faith in the possibilities of human nature. Belief in the Common Man is a familiar article in the democratic creed. (...) Democracy as compared with other ways of life is the sole way of living which believes wholeheartedly in the process of experience as end and as means; as that which is capable of generating the science which is the sole dependable authority for the direction of further experience and which releases emotions, needs and desires so as to call into being the things that have not existed in the past. For every way of life that fails in its democracy limits the contacts, the exchanges, the communications, the interactions by which experience is steadied while it is also enlarged and enriched. The task of this release and enrichment is one that has to be carried on day by day. Since it is one that can have no end till experience itself comes to an end, the task of democracy is forever that of creation of a freer and more humane experience in which all share and to which all contribute.”[5, 242-243]

In other words, democracy is not a democratic form, but a democratic ideal or belief in an ordinary person and his creative capacities. To fully develop our talents, we need what is called a democratic public space, where a free and unlimited exchange of experience is possible. This ideal of a democratic society has existed not only since Dewey formulated it, but also from the 18th century. Immanuel Kant expressed this in 1784:

"This enlightenment requires nothing but freedom -- and the most innocent of all that may be called "freedom": freedom to make public use of one's reason in all matters. (...) By "public use of one's reason" I mean that use which a man, as scholar, makes of it before the reading public. I call "private use" that use which a man makes of his reason in a civic post that has been entrusted to him." [3, 11-12]

Such a Kantian "public space for scholars" or Dewey's "education" which is the "midwife of democracy"; democracy is born again and again every time with each new generation, we consider it the second axiomatic premise of our study.

Finally, the third axiomatic premise assumes that the condition of the existence of this democracy is the presence of communication in the public space. It is through the process of communication that society exists. Suppose, therefore, that this communication can be manipulated and transformed voluntarily, that is, it becomes an object of 'designs' of communication. Hannah Arendt in her *Lectures on Kant's Political Philosophy* wrote that, according to Kant, the most important political freedom for him was the freedom to speak and to publish [6, 39]. Therefore, we must recognize that if Kant and / or Arendt are correct, the public use of the mind by scientists is currently dependent on the design of academic communication.

So, let's recall these three premises, which we will accept, at least in the context of this article, as axiomatic:

1. Democracy is not a democratic form, but a democratic ideal that everyone realizes during their own individual lives. Democracy is a belief in an ordinary human being and his creative capacities.
2. Public education is seen as the midwife of democracy, because each new generation is once again learning how to be democratic. Democracy comes through education.
3. Public space is a 'place' (not a physical one) where "scholars" and intellectuals can express freely. The condition of a free expression or public use of reason exists in the communication process.

That is why academic communication seems so important to us. Whether we can manipulate or design this academic communication, we ask this question in the following parts of our discourse on changes in the university communication process caused by the transformation of a traditional university at University 4.0.

3. Two Main Types of Social Government and Its Communication Models

In chapter VII of his book *Democracy and Education*, Dewey examines two main types of government, namely, a despotic governed state and, in his words, "the democratic ideal". Even if, according to Dewey, it would be a mistake to believe that despotically governed societies do not have common interests of citizens, nevertheless, the main function of the type of communication adopted in them is "just the ability to be afraid". Fear is the leading leitmotif in a despotic state, and this is not the fear that makes us care about the future, about our health or saving money. This fear is an isolated fear, fear as such.

In such a situation when fear becomes the first motivation for an individual, the meaning of his activity is completely lost in his emotions. There is no place for a united communicative experience, exchange and mutual and meaningful interaction of people. Then communication takes a pyramidal and vertical (top to bottom) form of information exchange. This communication model assumes that fear affects the forms of communication that serve to transfer knowledge, information, and experience. The pyramidal form of communication is an expression of fear, and this particular model has been adopted at all levels of social organization, including the university.

On the contrary, a democratically organized society needs more than other types of government to have a deliberate and systematic education, because of its form of social life in which the interests of its members mutually penetrate one another.

"Democracy is more than a form of government; it is primarily a way of living together, sharing experience of communication. The expansion in space of the number of persons participate in the interest, so that everyone should relate his own action to the actions of others to give a point and direction to his own, is equivalent to the destruction of those barriers of class, race and national territory that prevented men from feeling the importance of their work." [7, 101]

Thus, in an ideal democratic society there is no room for obstacles for the free exchange of experience. A democratically organized society and its model of communication have more numerous and diverse points of contact between common interests and, at the same time, are more dependent on the recognition of mutual interests as a factor of social control. In addition, this type of government and communication means not only freer interaction between social groups (once isolated so that the intention can maintain separation), but also a change in social habit, its constant restructuring by satisfying new situations generated by diverse communication. [7, 100].

In this type of communication, which we dare to call "rhizomatic" here, another type of intelligence arises, not a subjective or collective mind. Some philosophers advocated this type of intelligence, which challenges the idea of subjective intellect. Among them are Arendt and Habermas.

Building on Arendt's work, Habermas sought to bring Kant's original ideas of secrecy and visibility into line with his conceptualization of the bourgeois public sphere, which he regarded as a historical category and a normative idea. Habermas argued that the new habits of the bourgeois 17th and 18th century public, such as reading, meetings, public discussions of new publications, literary works and articles, the emergence of professional journalism and mass periodicals, allowed people to exercise self-reflection in order to acquire a critical intellectual perspective that soon became political. Hence the emergence of the concept of modern subjectivity, as well as the bourgeois-democratic public sphere.

Habermas is known as a proponent of the idea of unfinished modernism. Any criticism of the ideals of the Enlightenment and modernity, from his point of view, is dialectically assimilated by modernity [8]. The ideas of modern philosophy are the product of the Enlightenment, they are based on the ideals of reason, rationality, democracy. Good society and good democracy for Habermas remain possible. Thus, the very idea of enlightenment is not limited to the ideas of education as a process of transferring knowledge and skills from generation to generation. Such an interpretation would be too primitive and would not reveal the whole essence of the problem of enlightenment.

The ideas of the Enlightenment and the ideals of the modern era are closely related. From this point of view and following the logic of Habermas, the project of modernism is not yet complete. According to Kant, "Are we now living in an enlightened age? the answer is, No, but we live in an age of enlightenment." [3, 12]

Thus, two types of communication correspond: the first, pyramidal and vertical, to a society governed by a despotic manner, and the second, rhizomatic, to an ideal democratic society. For the first, there is no public space, because the only function of communication is not the exchange of experience, but a simple function to scare. For the second, public space is an indispensable condition, as it allows and even provokes a free and unlimited exchange between the members of such an ideal democratic society. If a society follows democratic ideals, the preferred type of communication design should be rhizomatic. Let's see how these two projects are made at a modern university in Kazakhstan.

4. University 4.0 and Academic Communication Design Possibilities

There are two main types of academic communication---formal and non-formal communication. It includes: formal verbal and written; secondary primary and formal; direct non-formal; and non-direct communication. These two main types of communication (between at least two people) may involve vertical relationships (from a higher-level person to a subordinate). Or, it may involve horizontal relationships ('researcher to researcher,' 'teacher to student,' or 'department to department', etc.). This corresponds to the two aforementioned (pyramidal / rhizomatic) models of communication [2], [9].

The analysis of existing school practices accepted in Soviet and post-Soviet Kazakhstan helps understand this kind of communication design on the example of formal academic communication existing between the teacher and the student. This is a common practice adopted in the methodology of school exercises in post-Soviet schools. This methodology is based on what is defined as *referat* (Latin *referere*, English *essay*) which can be translated as a 'summary.' *Referat* is done to communicate; to report on the content of one or a few sources---a kind of school compilation with the aim of better studying a particular subject. *Referat* was often a most frequently requested exercise for undergraduate students and students in schools and universities in the Soviet Union and, consequently, in Soviet (and post-Soviet) Kazakhstan.

This type of methodology should be called extensive (Latin *extendere*---extend). It is about the action of extending; of lengthening; but also, of the action of pushing the limits of something; enlarging; increasing the scope of something; increasing importance; increasing in volume; in scope. This practice of school communication has its traditions and forms. As for its form, the text is divided into three parts:

1. **Introduction** (information about the origin of the sources, about the author name and their number, as well as about the problem and its relevance);
2. **Main part** (the content of the text studied is communicated briefly, and the existing points of view are described; this part may contain an undefined number of parts and chapters, a balancing of the structure of the text is not required);
3. **Conclusion** (a general conclusion of the issue announced).

Other types of written theoretical works, such as master's or doctoral dissertations, are structured in the same way. In addition, the requirements for such work are usually much more complicated, since the transition from obtaining a bachelor's degree to a master's and doctoral programs is much more complicated. Acknowledging this increased level

of complexity as a given, this work (which is theoretical in nature) focuses on one facet of extensive methodology---specifically, the task of increasing volume. Volume is essential to success. For instance, such works require a large number of pages and a large bibliography. Success is based on the authority of the sources, and above all on the authority of many of the sources used, the number of which is gradually expanding.

The development of the Internet has led to the fact that universities in post-Soviet countries (and around the world) have begun the active dissemination of *referats* already prepared in various fields of knowledge. Some resources offer to download finished works for money or for free, despite statements by academic authorities about the unacceptability of these practices. There are at least some problems which *referat* as a model of academic exercise poses: firstly, the problem of plagiarism; and secondly, the problem of students losing their ability to analyze and think critically.

Some recent pedagogical models at Kazakh universities include the discipline of "critical thinking". This discipline---relatively new in terms of methodological practice---is based on a model corresponding to a "dissertation." One could call it a model of intense communication (one that manifests itself at high voltage, with great strength; which gives the greatest performance). There is a predefined text structure and a requirement to balance the plan. The structure traditionally includes an introduction, three main parts, structured according to the principle "thesis---antithesis---synthesis", and a conclusion. Analytical effort is clearly required of students.

There are also other approaches to the methodology of school and university exercises and/or to the research methodology in general. For example, some university programs are based on the practices advertised in university manuals at universities in the Anglo-Saxon world (Harvard, Oxford, etc.). However, of these, we distinguish only two:

Extensive practice, based on the potentially unlimited widening of sources, and with minimal analysis required; and

Intensive practice, based on an intensive, analytical, and in-depth exploration of a minimum number of sources; putting forth an explicitly requested analytical (and speculative) effort.

These two main practices and their use are carried out in parallel with the universities of Kazakhstan and reflect the state of affairs of the smallest and most revealing form of academic communication: formal communication at school. At the same time, the problematization of these pedagogical practices brings us back to a more global problem, namely the problem of the democratization of university life during the political transition in the post-Soviet country in the process of development. The case of Kazakhstan is

not only a special case of the country. It is also exemplary in terms of the processes of change in the post-Soviet space.

These two types of formal communication practices between teacher and student can describe the types of academic communication schemes that pursue different goals. For example, *referat* (extensive) communication is probably unique to a top-down or a pyramidal design. The simple ability of fear becomes there fear of the authority of the volume of work and, of course, of the authority of the source. Another type of communication, formal written communication, which we called intense, probably aims at creating a network of ideas in which a connection is established between ideas and not between accumulated sources.

Obviously, these are only the first areas of future research in which formal and informal academic communication will be studied.

5. Conclusion

The most important conclusion is that University 4.0 will be a good basis for implementing democratic academic communication projects. As suggested in the previous parts of the article, this democratic academic communication design should have the following properties:

1. Rhizomatic structure.
2. Absence or limitation of the authority of the volume and source to a minimum.
3. Absence or restrictions of top-down connections to a minimum.

These properties will be used to create the so-called public space, understood as a communication space or "ideal speech situation" [10]. Of course, as noted in the previous parts of the article, this "ideal speech situation", in which no external noise interferes with communication, cannot really be created. But nothing prevents us from thinking about it. Good society is possible.

Funding

This work was supported by 'Multidimensional research of the history, problems and perspectives of implementation of international educational projects in the Republic of Kazakhstan' project funded by the Ministry of Education and Research of the Republic

of Kazakhstan for the years 2018-2020, the priority area 'Scientific basis of Mangilik el (education in XXIst century, fundamental and applied research in Humanities).'

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