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Tomasz Goban-Klas
Wyższa Szkoła Zarządzania i Informatyki w Rzeszowie
tomaszgobanklas@gmail.com

I dedicate this article to the memory of Marek Szczepański – my colleague, sociologist and friend

Universities in the context of new media and information technologies[1]

One of the major challenges facing universities in the next decade is to reinvent themselves as information organizations[2].
John Unsworth

We need to be aware of the very profound, significant and multi-sectoral changes in the environment of all higher education institutions, the oldest and the youngest, public and private, as well as changes in the higher education system and in individual universities in all countries.

There is no doubt that the universities have entered the next, fourth phase of the great transformation. Bjorn Wittrock refers the first three phases to the model associated with Wilhelm and Alexander von Humboldt and shaped at the beginning of the 19th century, the birth of a great scientific research university at the end of that century, and then the transition from an elite to a mass system of higher education from the mid-20th century.[3] This third phase was undergoing constant

[1] Based on my own article *Uniwersytet w kontekście nowych mediów i technologii informacyjnych, in:* "Idea uniwersytetu. Reaktywacja", ed. P. Sztompka, K. Matuszek, Kraków 2014, pp. 299—318.

[2] J. Unsworth, *University 2.0*, accessed: http://net.educause.edu/ir/library/pdf/PUB7202w.pdf

[3] B. Wittrock, *The Modern University in Its Historical Contexts: Rethinking Three Transformations*, accessed http://kongresakademicki.pl/dzial/teksty-nadeslane/

modification, expansion and reconfiguration. It has led to a gigantic growth of the higher education sector, in terms of the number of institutions and the number of students, fields of study, but also a huge diversification of growing problems. It has led to the commercialization of education and research, as well as increasing their costs, causing growing competition from various institutions, including non-university ones, on a national and international scale. In his book "University in the Digital Age", William Bowen, a former president of Princeton University indicates two main factors currently changing education, i.e., commercialization and digitization of education[4].

Remarkable success brings the specter of failure[5]. The category of threats includes competitive new forms of universal higher education, such as open online courses called MOOCs (Massive Open Online Course), and hybrid remote digitization of education which to some extent are seen both as a threat but also an opportunity.

The digitalization of education directs us towards the problems of using new technologies in the university, but also in its social environment. The first, and probably the most prominent issue, is almost universal education at a higher level. The attention is primarily focused on the problems resulting from the massification of this education (undoubtedly necessary and having many positive effects), but in addition to them, there are also problems resulting from changes at the level of preparation, orientation and social personality of new generations.

Several symposia of the Academic Culture Congress of the Jagiellonian University already in 2014 have identified new challenges related to new media and information technologies[6].

— Do the new means of communication and their application in teaching lead to the depersonalization of the relationships between teaching staff and students? (prof. Jan Woleński),
— How does universal access to unlimited information resources of the Internet change the paradigm of university teaching? (prof. Mariola. Flis),
— Is there still room for "master-student" relationships in a situation where in the information society an individual expert is replaced by thousands of information sources, opinions and e-learning offers? (prof. Mariola Flis).

The issue of plagiarism is also closely related to the possibilities of searching for digital information and preparing texts using the *copy and paste* method.

The analysis of the above questions and problems indicates the areas of change which digital technologies are intensively entering, when encompassing all the main university functions, including;

- teaching,
- science and research,
- library,
- management, and administration.

[4] W. Bowen, *University in the Digital Age*, Princeton University Press, 2012.

[5] J. Hausner, *Nadchodzi koniec uniwersytetów, zmieniają się w fabryki dyplomów*, "Tygodnik Powszechny" 2013, 2 listopada.

[6] In: "Idea uniwersytetu. Reaktywacja", ed. P. Sztompka, K. Matuszek, Kraków 2014.

Changes in the implementation of these functions are becoming increasingly visible, and some technology enthusiasts even proclaim the vision of the birth of a new form of University (with a capital U) — **University 2.07**[7]. The Google search engine for the Polish phrase "Universytet 2.0" shows 1,210,000 results, while for its English equivalent, "University 2.0", as many as 780 million[8]. But what is hidden behind this phrase? Is it a reference to the new phase of the modern, yet already traditional University 1.0, which is also called the Humboldt University?[9]

According to the numbering appropriate for successively revised, improved and developed versions of the software, University 2.0 is to be different, although continuing some of the goals of its predecessor(s). Its roots can be found in the USA, because the American higher education system is the most pluralistic and diverse system in the world. It inherited most of the university ideas existing in Europe and adopted them in the most flexible way[10].

The term "University 2.0" includes, among others, the idea of its reconstruction as an information organization. Of course, since its birth, the university has been such an organization, and in its beginnings, apart from royal and temple libraries, it was the only specialized organization collecting books and — following the example of Plato's Academy — conducting a combination of teaching as well as expanding and deepening knowledge. However, until the formation of the 19th century Humboldt model, access to the resources of this knowledge in the form of scientific publications was unequal. Professors from the Middle Ages to early modernity had an incomparably easier access to library resources than students, who primarily listened to lectures and took their own notes. Gutenberg's invention democratized the book, and thus the availability of university book collections. The progress of printing provided mass, cheaper, graphically richer textbooks, books for pupils and students. It also provided the basis for the slow massification of education at all levels. Nowadays, we are experiencing another breakthrough on Gutenberg's scale, namely, new digital media.

The new basic methods of knowledge distribution using new media from the universities that provide scientific content online include among others:

— science blogs
— recorded lectures and podcasts, distributed via dedicated university channels http://diverseeducation.com/article/59873/ such as YouTube and iTunesU as well as their own streaming servers or e-learning platforms such as the Wiziq

[7] This is not about the University of Magical Sciences, http://www.hogwart.edu.pl/, but about a real University — see A. Munoz "We urgently need a university 2.0", (New Technologies and Educational innovation in our universities, 14th Toulon-Verona Conference. A think-tank on Excellence in Services), https://docs.google.com/document/d/1YO4MLj92cv6682AecCJdCq0dklYzxuNtJ4o1VWYSM3E/edit?hl=es

[8] Accessed: 14.09.2023

[9] *Uniwersytet przedsiębiorczy — uniwersytet III-ej generacji — Wyzwania, możliwości, Ograniczenia*, J. Guliński http://www.pi.gov.pl/PARPFiles/file/OIB/SOIB/wizyty_studyjne/20101206_BIOS_DVZ3_wizyta1_Poznan_prezentacja2.pdf

[10] Sarah Guri-Rosenblit, *op.cit*.

synchronous learning environment on Moodle platform, as well as open online lectures, including massive open courses (MOOCs).

The advocates of the University 2.0 term should use McLuhan's famous tetrad[11], which formulates four laws of transformation of each medium (and in the light of Règis Debrey's mediaological concept, the university is a medium of inheriting and transmitting knowledge and values). Its questions and short answers in the case of University 2.0 are as follows:

— ***What does University 2.0 enhance or improve compared to University 1.0?*** — *Access to e-resources, Professor Google's help, study control*
— ***What does University 2.0 eliminate?*** — *Traditions, history, memory, profoundness*
— ***What does University 2.0 restore?*** — *contact (even if remote) between professors and students* ***— What can University 2.0 transform into?*** — *into* ***the NEXT University — 5.0***[12]

However, the ongoing change and visions of future transformation ask more specific questions and raise new, unresolved problems of higher education. They refer to the use of new media in studying and scientific work.

I. Student and e-learning

Do new media — information and communication technologies (ICT) — support and strengthen the education process in higher education institutions in terms of knowledge, skills and competences? What are the conditions for their introduction? And what components of education do their effective use require — what media knowledge, skills and media competences? Can we agree with Marc Prensky, who claims that "**Our students have changed fundamentally. Today's students are no longer the people for whom our education system was adapted**" (bold M. Prensky)?, and with his conclusion that: "The single biggest problem of contemporary education is the incompatibility of the language of lecturers, digital immigrants, and even digital aliens, using an outdated style, and the completely new language of students, digital natives"?[13] Professor Tomasz Szlendak agrees with the thesis about the change, but considers it as rather worse[14].

It is therefore worth considering whether the right response to the changes being signaled is the so-called connectivism (knowledge is on the Internet, and

[11] J. Morbitzer J., *McLuhan, prawa mediów i komputery*. in: "Techniki komputerowe w przekazie edukacyjnym", ed. J. Morbitzera, Kraków 2001.

[12] T. Goban-Klas, *Uniwersytet 2.0 — regres czy progres*? Accessed: http://www.ktime.up.krakow.pl/symp2013/referaty_2013_10/goban.pdf

[13] M. Prensky, *Digital Natives, Digital Immigrants*, "On the Horizon" 2001 nr 5.

[14] T. Szlęzak, *Żacy XXI*, "Niezbędnik inteligenta" in "Polityka" 2014 nr 4., pp. 86—90.

generating connections between network nodes is the metaphor of learning)? This reflection can be related to three specific issues:

a. Does the new generation of students — *new millennials* (Generation Z), *digital natives*, demonstrate the ability to use ICT creatively in their studies? Do students demonstrate new analytical and research skills?
b. What real educational opportunities do the new social media Web 2.0 provide? What social communication and cooperation between students and lecturers is possible thanks to them?
c. Are the so-called "*flipped classrooms*", i.e., learning at home, online materials, and debate in class better than a traditional lecture?

II. University library or *information resource center*?

The transformation of the University Library into Library 2.0, or rather *Information Center*, which offers remote access to electronic resources, not only text resources, is an example of transformation. Similar transformations can be observed in the forms of participation in lectures (students equipped with devices for recording attendance at lectures, exchanging information with the lecturer during classes), not to mention the almost universal use of presentations (most often *Power Point*), the development of e-learning platforms, etc. For students, Wikipedia is becoming the basic knowledge base, available anywhere and anytime on smartphones and tablets, while Professor Google is the tutor.

Perceiving the library as a place for collecting digital information resources leads to the formulation of the following questions:

a. Does introducing a hypertext collection of online digital resources, including databases, online journals, e-books, etc., in addition to a traditional library (printed book library) and reading room (mainly journals), only facilitate and enrich access to knowledge, or does it have additional consequences for research and study?
b. Is a digital library a library or just a metaphor for a library? Do digital libraries reduce or increase the costs of access to information?
c. How should access to purchased online collections of universities be regulated? Should it be *open access* for libraries? What are the costs of such access for universities?

III. University eGovernance — university as a Turing machine or an Orwellian system?

a. Do new algorithmic technologies of academic science management, i.e., human resources management programs (ERP), accreditation and parameterization of units, etc., facilitate or hinder educational and research work? Do they strengthen creativity, and if so, what kind of?
b. Can standardization of the measurement of scientific achievements *via* university rankings or individual indexes (e.g., Hirsch), based on data available in digital databases (Internet), be a fundamental or auxiliary element of the overall assessment of higher education institutions and staff?
c. Does e-governance reduce the role of collegial bodies and professorate?
d. Does registration of the course of studies in University Support System of Studies (USOS software and database), records of discussions in social and humanities fields in the form of chats, online exercises, etc., lead to the collection of detailed personal data, the creation of Big Data collections in relation to the student population and student profiling, which allows for the determination of social, even political preferences? Who can access this data — the Polish Accreditation Committee (PKA), the Council for Scientific Excellence (RDN)?

IV. Are Professors and lecturers the avant-garde or arrer-garde of new teaching technologies

a. Does the young generation of lecturers (*digital immigrants*) use the potential of ICT in their scientific and didactic work? Does the visualization (usually limited to power-pointing) of teaching strengthen or weaken understanding?
b. Does the older generation of professors remain *digital aliens* or adapt and support the introduction of new technologies in studying and research?
c. Do MOOCs (*Massive Open Online Courses*) threaten university education and its level? Is there a place for them in traditional universities, and if so, what? How can we encourage professors to prepare them? Does it not threaten the "tabloidization" of lectures and the reduction of studying to teaching (testing) and certification?

AI revolution – transforming everything at university with, and through AI

Artificial intelligence (AI) is playing an increasingly vital role in universities around the world. It is used in various fields, from scientific research to administra-

tion and education. AI helps in analyzing large data sets, which is especially useful in scientific research. For example, AI algorithms can analyze genetic data, predict climate change, or support research on new drugs.

In education, AI can personalize the teaching process, adapting materials to individual student needs. AI-based systems can also automate administrative tasks, such as student recruitment, course management, or grading papers.

Here are some examples of how AI can be used in University 5.0:

Personalizing learning: AI can analyze student progress data and adapt teaching materials to their individual needs, which allows for more effective teaching1.

Automation of administrative tasks: AI can automatically grade papers, manage class schedules, and answer students' questions, which allows the lecturers to focus on more creative aspects of teaching2.

Interactive teaching tools: AI can create interactive presentations, generate discussion questions, and analyze teaching materials, which increases student engagement2.

Support in scientific research: AI can analyze large data sets, which is especially useful in scientific research. It can also support the process of writing and publishing scientific papers. AI can analyze large data sets, which is especially useful in scientific research. It can also support the process of writing and publishing scientific papers.

The above topic is too new and at the same time too broad to be analyzed in a short article. Therefore, it is limited to indicating it, and the future will show what will happen next.

General Issue — Towards NeXT 5.0 (innovative) University — In 1963, Clark Kerr, then the president of the University of California, perceived the modern university as a "multiversity", i.e., committed to teaching and research, and animated by its ability to contribute to "modernization…continuous discovery, change, growth, and national development." Therefore, a series of questions arises:

— Does the combined impact of the introduction and use of new media and the marketization of higher education lead to the "creative destruction" (Schumpeter) of the traditional university model or its subsequent transformation into an "innovative university"? What are the determinants for both variants of transformation?
— Is the new generation of students really so proficient and immersed in digital technologies, so creative in Web 2.0, that they can be separated from the "digital immigrants," i.e., the older but somewhat Internet-savvy generation? Are they really "guests" on the Net, while the younger generation are "residents" there?

The research results reveal:

Young students do not demonstrate the expected significant media competences or predilections for online learning, including mastering computer techniques as innovative forms of acquiring information.

— PhD students are increasingly dependent on additional research resources (e.g., journal articles, books), abandoning primary sources (e.g., primary archives and large data sets).
— Access to appropriate resources limited by considerable costs is a major obstacle to PhD student development, especially in the social sciences and humanities. The need for having appropriate permissions (logins) as well as restrictions to the access to subscription-based resources such as e-journals are particularly burdensome; they seem to be a source of misunderstanding for Generation Z and PhD students, and do not encourage innovation and collaboration in research.
— The current generation of PhD students work in an environment where their research behavior does not fully exploit the potential of innovative technologies. PhD students are not sufficiently trained or informed to fully use the new possibilities in the digital information environment.

These findings indicate the need to analyze the development, training and support of scientific research conducted within universities and research institutions, as well as the openness and sharing of research results in the conditions of restrictions imposed on by copyright, costs of access to databases, etc.

Years ago, in a report for the OECD, Franceso Pedro formulated the following conclusions in the conclusions of "Looking to the Future" (*The New Millennium Learners: Challenging our Views on ICT and Learning*, OECD, 2006). They are still relevant:

— Students want to use technology to improve teaching and learning, but they do not seek to radically change the way they study. The use of technology is to increase the value of teaching and learning, provided that it increases convenience and productivity in academic work and the course of studies.
— At the same time, a tendency to overestimate the degree to which the lecturers accept new technologies in teaching can be observed in the way lecturers perceive students' expectations. As a result, the image of digital competences of students of this millennium goes far beyond what the actual expectations of today's students are. There is no indication that they will change in the short term.
— It is a fact that the young generation reads much less than the previous ones. The basis of studying is moving to the Internet, and Wikipedia and Professor Google reign supreme there. The temptation to use them reprehensibly is great. That is why more prestigious universities are introducing computer anti-plagiarism programs, although with rather poor results. Any algorithm can be fooled.

The concept of creating *Personal Learning Environments* (PLE) is an interesting attempt to use the habits of the young generation to use new media. The learner independently defines their own learning goals and then manages both the content they use in the learning process and the very process. They also decide how they cooperate and communicate with other participants in the learning process. Technically, PLE means the integration of many Web 2.0 technologies, such as blogs, wikis, RSS, Twitter, Facebook and applications supporting the crea-

tion, aggregation and presentation of content. It is intended to create conditions for better control and management of one's own learning process.

But there is also a question for the young staff of whether the professor, a fundamental figure and role for the university, has not changed either? Are they, in the humanities, still bookworms? Do they use technological tools and how?, Or maybe they are potential plagiarists, or users of Wikipedia and Google and Chat GPT search engines, too ?

The new context of higher education requires the reconstruction of almost everything, but a careful reconstruction, not subject to marketing by the praisers of new technologies as a panacea for the problems of the university, based on the recognition of the level of intellectual, social and psychological preparation of new students, and therefore sociological and psychological-pedagogical research.

The industry magazine "eMentor" indicates that meetings of experts where one can learn and learn how to improve one's teaching skills are needed. They should be treated as a crucial element of the so-called Personal Development Plan (as is the case in countries where this PDP is an integral part of the university strategy), and participation in them should be financed on an equal basis with participation in strictly scientific events.

If the new university is to remain a good university, then, along with funding research *via* grants and teaching competitions it is urgently needed to prepare new frameworks and styles of education, just like the best modern teachers, consulting on the principles of good practice.

Finally, a general issue appears raised by Clive Thompson in his book *Smarter Than You Think*, subtitled *How Technology is Changing Our Minds for the Better*[15]. It refers to the ability to use technology to support human memory and data analysis for creative thinking in such an immensely complex world. Computer engineer Pedro Domingos predicted years ago that personal digital assistants would be more important than smartphones. Their ability to gather information from various applications allows us to anticipate our needs before we even identify them.

If we adapt the styles of education to the new global social context (Continento Digitale, as Benedict XVI called it), we can speak of saving the university DNA, of surviving teaching and studying in fluid modernity. A small boat can be placed on the waves next to the university coats of arms, as in the coat of arms of the city of Paris, the city of the famous Sorbonne, and next to it the following motto:

Fluctuat nec mergitur.
Tossed but never sunk.

[15] C. Thompson, Smarter *Than You Think*, Penguin Group (Kindle Edition), 2013.