ROBO-JOURNALISM AND ITS IMPLEMENTATION IN EDITORIAL PRACTICE

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ABSTRACT

Due to the development of artificial intelligence and language-based software, automatic machines, which can generate news contents from data, are starting to be used in the editorial practice. Despite the fact that this field of editorial work is currently at its advent, it has been developing and improving relatively quickly. At present, robots for production of contents are implemented in editorial offices of large media, and are able to process huge amounts of data, while saving journalists' work. Robo-journalism, which is the result of an effective interconnection among informatics, statistics and reporting, is being vividly discussed not only in media practice, but also in professional circles. The study deals with robot journalism that uses intelligent software to produce news articles. Its application fundamentally redefines editorial routines, journalistic practices and existing models of editorial work. Media and journalism theorists are interested in the influence of robo-journalism on the editing process, the journalistic profession, the journalist as a creative person and their competences. The authors of the paper intend to broaden the awareness of this dynamically developing segment of new coverage and to point out its selected aspects in relation to media practice, but also theoretical reflection.

Keywords: *artificial intelligence, author, editorial office, journalist, robo-journalism*

INTRODUCTION

Although the application of innovations as a tool of technological, social and economic developments in different areas of practice is not always met with positive feedback and understanding, the media segment represents a space in which changes are adapted relatively quickly. Thus, media institutions are becoming pioneers in the implementation of technical and technological innovations while helping to adjust them to society on the one hand, and using of modern achievements to further improve them on the other hand. In the practice of foreign news media, podcasts, the use of virtual reality, 360-degree videos or chatbots, have recently emerged. For example, as drones have become a means of collecting news material, artificial intelligence has begun to be applied in the process of news contents production. Journalism has attained to mobile phones, social networks and popular user channels (*YouTube* and others) [1]. On all these platforms, there is a struggle for the attention of the recipient, which increases the necessity for the origin of new (and entrepreneurial) strategies in the media business. In this context A. Sámelová pointed out the technologization of mass media environment, which resulted into the forms of visualisations of texts, sounds and images of modern journalism [2].

In the paper, the authors discuss robo-journalism, which represents the use of automatic machines, artificial intelligence and specialized software that works with the natural language to produce news contents. The aim is to raise awareness of this fast-growing segment of the newspaper world, which is carried out by means of the web, mobile technologies, and social networks.

DEFINING ROBO-JOURNALISM

Despite the fact that the first data-generated software was created more than 40 years ago, it has been currently discussed in terms of its implementation in journalistic practice, mainly due to the effective interconnection of informatics, statistics and the newspaper business [3]. In 2014, the American *Associated Press* reported that more than 3,000 of its news items were generated by "robots" in a year. They included especially flash news from sports events. While previously used in weather forecasting, medical data processing or financial reporting, intelligent software today produces texts that are indistinguishable from those created by journalists. *Tobi* software made more than 40,000 reports in German and French language during the November 2018 elections in Switzerland [4]. The *BBC* expects to have generated 90 % of news texts by intelligent software by 2022 [5].

Robo-journalism has brought new journalistic processes to the production of newspaper outputs, which has a significant impact on human resources and journalistic profession as such. At the same time, it provides reporters with freedom, space and time to pay attention to surveying and looking for connections. The software works on the principle of analyzing large amounts of data, from which it generates texts, animations and information graphics through algorithms.

One of the most famous software in robo-journalism is *Quill*, created by the American company Narrative Science. It analyzes data and then creates texts. The company currently owns 19 software patents to work with data [6]. The British company ARRIA has created technology called *Natural Language Generation* (NLG), which also allows the production of the texts from "raw" data in such a way that news items are impressed as if they were written by a professional. NLG is an intelligent automation platform that transforms data into a language that the reader can understand.

However, the application of "robots" in the text construction also has its limitations. While intelligent software may be implemented, for example, in the production of sports news, financial and economic reports, thus where large numbers of numerical data need to be processed, they cannot find deeper connections between events and phenomena, or draw conclusions or generalizations. Their development is relatively time-consuming and costly, so only large media organizations and news agencies can procure such software.

USE OF INTELLIGENT SOFTWARE TO CREATE CONTENT AND ITS IMPLEMENTATION IN EDITORIAL PRACTICE

"Robots" are applied in particular where large amounts of data need to be processed (sports, economy, statistics, etc.), thanks to which journalists can save time. Their next advantage is that they work rather fast and without errors. This allows news people to focus on analyizng or commenting on events that require the necessary resources to be studied. They will also find assertion in news agencies that make thousands of texts a day.

At present, many media companies and news agencies have been experimenting with the usage of artificial intelligence to process data and produce short reports. Automated journalism is applied in practice by the editors of the German titles *Bild* and *Die Welt*, especially in the creation of sports news. Mathias Doepher, the General Director of the media house Axel Springer said that the emergence of robo-journalism and texts constructed by artificial intelligence does not pose a threat to current journalists. In his words, there will come to an opposite effect in the journalistic era, which is the growth of work efficiency and origin of new jobs [7].

In the *British Press Association*, one of the largest providers of multimedia information and services in the United Kingdom, there is a team of journalists and software engineers whose task is to experiment and develop robo-journalism. For example, researchers wish to know if journalists can distinguish a text produced by artificial intelligence from the text written by a reporter. According to the director P. Clifton, the contents created by artificial intelligence appear not only on the Web, but also in the press. He favours the idea that robo-journalism supports journalistic profession since it allows generation and analysis of large volumes of data in the short term, although he admits the possibility of making errors. For instance, the American title *The Los Angeles Times* reported on an earthquake with a magnitude of 6.8 in 2014, however it was actually a 1925 record. *Press Association* produces about 30,000 reports every month through intelligent software [8]. They are also used by *Reuters* news agency and the American daily *The New York Times*.

Nevertheless, not only software companies and media houses pay attention to the development of this segment of the newspaper world. In 2010, at the American Columbia Journalism School, the Tow Centre for Digital Journalism was set up to provide journalists with knowledge and skills in the field of digital journalism while serving as a research and development centre. One area of research for this centre is the field of robo-journalism [9].

As far as the Central Europe is concerned, the *Czech News Agency* (ČTK) has become a pioneer in the application of automatic reporting machines, when it was first used in the processing of municipal elections held in the Czech Republic in October 2018. The role of the software was to help editors and reporters at transcribing data from the Czech Statistical Office so that when the Office published the election results, the automatic machine put it in a ready-made template and sent it to the editorial team for review. The purpose of this system was to try to eliminate human mistakes and facilitate the work of journalists. According to J. Kodera, the

technical director of ČTK, the development of artificial intelligence algorithms will definitely lead to the fact that generated texts will not be distinguishable from handwritten ones. We even believe that in the future, texts prepared by the machine could be better. In fact, a computer can work with a much larger database. Another question is, however, the choice of topics and how they are sorted out. Machine-based processing can significantly help, but the role of human in this respect will be still irreplaceable [10].

And with regard to the impact of the editors´ work and their competences, J. Kodera distinguishes between the different uses of the automatic machines: In case of the implementation of templates, they are prepared by more or less specially trained editors who also liaise with IT staff. However, if a specifically focused algorithm is used (e.g. to make reports from sports events), then most of human work will focus on the phase of its development and preparation. In the case of our election pilot project, in our editorial office we prepared templates in several versions for each type of report and code lists, which included, for instance, political subjects, municipalities and other data. Data processing was managed by IT staff and the generated items then went through standard editorial procedures like any other news reports. [11]

The implementation of the artificial intelligence in the process of news reporting production naturally opens the debate on the author as such. Journalism represents a creative activity, and its outputs are results of a human´s intellectual creative activity. A. Tušer and Z. Kresák Kamenská define the author as an individual who has created a journalistic, literary, scientific or artistic piece. The product is their intellectual work that comes under copyright protection. They also emphasize that in the media products, the authors are perceived differently, depending on the nature of the media, stylistic and genre aspects, or their stance to the contend being rendered. Thus, we may talk about an editor, correspondent, publicist, blogger, etc. [12]

According to Section 13 of the Copyright Law, the author is a natural person who created a piece of work, or whose name and surname appear on the composition, or a person who after the expiration of the property rights will issue a previously unpublished work, and by that publication they exercise property rights to the work [13].

These definitions thus consider the author to be the creator of the work that may be of different nature. However, they also emphasize the creative potential of the origin of the composition, i.e. taking appropriate action to produce the piece of work. Naturally, discussions about software-generated communications evoke the question of their authorship and the extent of the creative potential, by means of which they were made. For example, several critics fear that media contents created by robots loose "humanity", and they have expressed concern about potential manipulation of the contents by intelligent computer programmes. This issue involves considerably broader connotations, for instance, in the light of citizen – amateur journalism, which has emerged with the arrival of the Internet and mobile technologies. Suddenly anyone who can write, take pictures or film has become an editor, reporter, screenwriter, director, camera operator or photographer. However, we still do not

have a satisfactory answer to the question of who may be considered as a citizen, or amateur journalist.

VIRTUAL REALITY AND 360-DEGREE VIDEOS AS NEW FORMS OF NEWS CONTENTS

Several news media, such as *The New York Times*, *The Huffington* or *The Guardian* have started to make a 360-degree video (also called immersive or spherical video) in order to more effectively take advantage of the popularity of social and mobile media. The era of virtual reality and immersive videos is the transition from informedness towards stories. The audience enters a virtual scenario, which is represented by a "journalistic story". However, in order to engage journalists into these innovative forms, they need to master production, film mode, video editing and video graphics. It is still unclear when the users will be willing to pay for these forms of reporting and vice versa, whether advertisers will support this form of processing.

Reuters carried out a study on how virtual reality began to be applied in news reporting and online journalism. Based on the results of the survey, they came to an opinion that the majority of the news institutions promote a 360-degree video. Some editors are of the opinion that a spherical video is a better and cheaper alternative than virtual reality [14]. According to journalists, it is too early to judge the views of the audience, as people have a vague understanding of virtual reality and have only started to explore this area. In their view, the audience´s experience is inadequate in this field. On the contrary, 360-degree cameras along with their virtual equivalents allow the user to be editorially passive. They can add presenters into the camera or otherwise get integrated, for example, by text overlay, sound or motion. Cameras with 360-degree interface can frustrate the viewer, but on the other hand they open up quite broad possibilities. This type of innovation focuses not only on the event, but also on the internal, more personal experience. At some moments, for instance, we can look at things from different angles of the creator themselves.

The implementation of these technologies into the editorial practice is time-consuming and costly not only for the media, but also for the viewer, which may lead to limited availability of such created reports. Neither virtual reality nor immersive videos will replace television, the press or radio, though they can bring more new opportunities and challenges to the development of these media in the future. Media and journalists should be aware that these practices open on to stronger competition and the ability to attract users. At the same time, it is a challenge for journalists who ought to start implementing social networks to create new strategies and opportunities.

CONCLUSION

Despite tentative reactions that the application of the automatic machines and the intelligent software for the production of news contents causes, it may be said that it is one of the most progressively developing fields. Of course, putting it into practice requires relatively high financial inputs. On the other hand, the successful operation of the "robots" in journalism may result in the speed of publishing contents and

eliminating the occurrence of erroneous data. However, as the technical director of ČTK J. Kodera stated, in the case of robo-journalism this is not a technological boom or revolution, but one of the natural directions of the newspaper world development: For years we have been automatically creating lists of events, publishing updated graphical visualizations and last year we prepared election results reports to speed up the reporting of the election returns.... Other world news agencies or other media are currently working on similar projects, as well. We exchange experience with our colleagues [15]. However, managements of media houses also face new challenges, and in the case of broader and successful implementation of robots they will be forced to consider the transformation of the personnel policy. It is also vital for journalists to acquire the important skills to be able to work with robots and use them to their advantage.

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